Feb. 15, 1938. B. O. TILDEN 2,108,625

WATER CLOSET COMBINATION

Filed Dec. 31, 1936 2 Sheets-Sheet 1

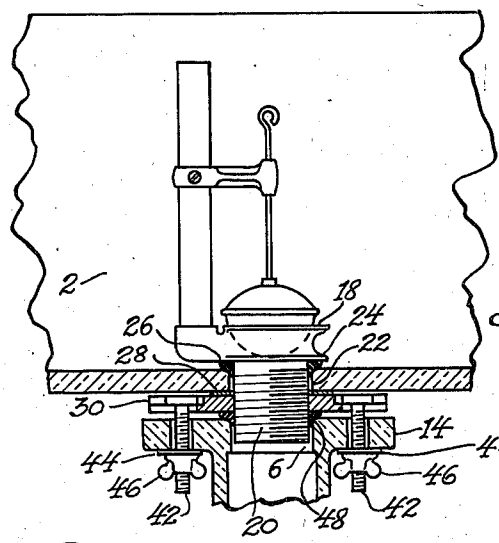


Fig. 1

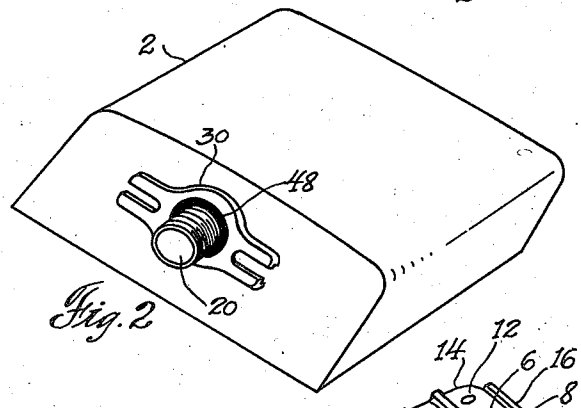


Fig. 2

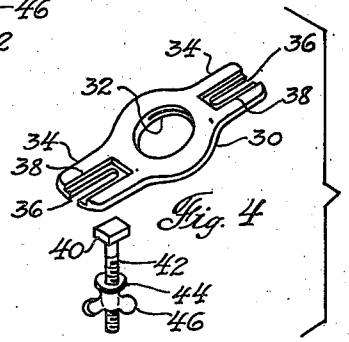


Fig. 4

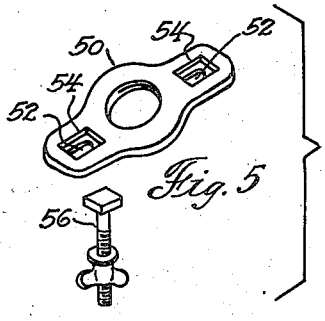


Fig. 5

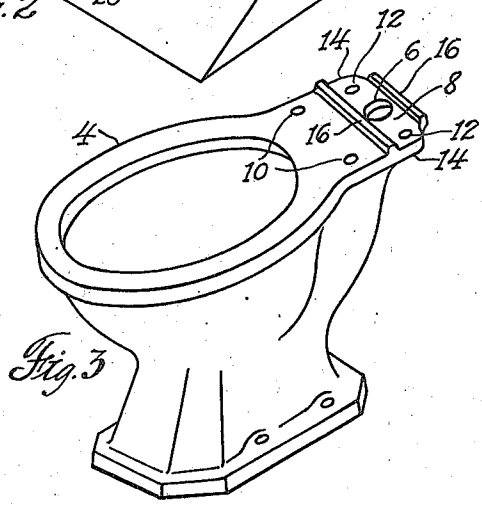


Fig. 3

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WATER CLOSET COMBINATION

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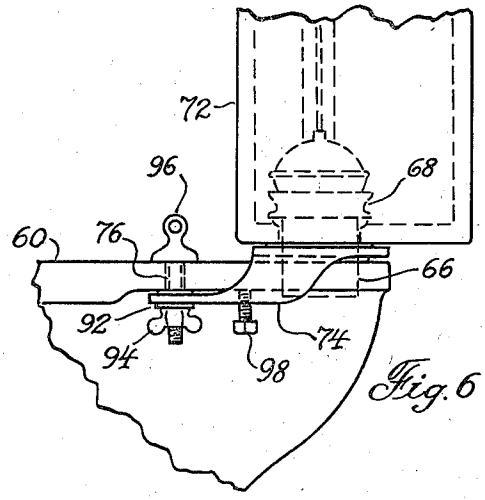


Fig. 6

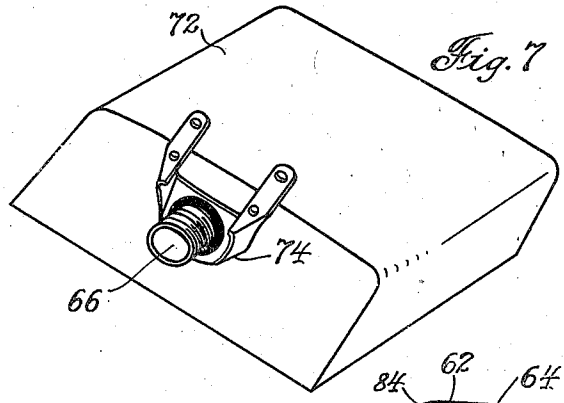


Fig. 7

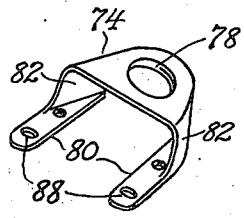


Fig. 9

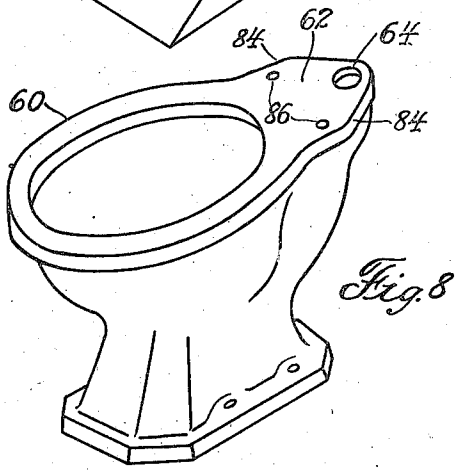


Fig. 8

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UNITED STATES PATENT OFFICE

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WATER CLOSET COMBINATION

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Application December 31, 1936, Serial No. 118,456

8 Claims. (Cl. 4—68)

My invention relates to water closet combinations and particularly to combinations of the close connected type, wherein the tank is secured to and rests upon or is supported by the bowl.

Close connected water closet combinations as heretofore constructed have either been of the type shown in my issued Patent No. 1,867,118, dated July 12, 1932, wherein the tank is secured to the bowl by means of bolts, the heads of which rest upon the bottom of the tank and project downwardly therefrom and extend through bolt holes formed in a rearwardly extending portion of the seat shelf, or they have been of the type wherein the tank is secured to the bowl by means of a bolt which is carried by a spider secured to the shank of the valve member and extending downwardly through an opening in the earthenware below the shank.

In each of these constructions it is necessary to employ some means for preventing leakage of water about the attaching bolts. In constructions of the type shown in my issued patent, this is accomplished by providing housings or washers within the tank for covering or sealing the openings through which the bolts extend, whereas constructions employing a bolt extending through the shank of the valve member require the use of a washer for sealing the opening in the earthenware below the shank, through which the attaching bolt extends. There is always danger that constructions in which a washer is used will leak, particularly after the construction has been installed for some time, whereas the provision of housings within the tank requires a construction that is slightly more expensive than are standard water closet tanks. Furthermore, conventional tanks of the type secured to the wall are not adapted for use in close connected combinations of the type shown in my issued patent because the necessary bolt holes are not present in the tank, whereas conventional bowls cannot be used in producing close connected constructions having a bolt passing through the shank of the valve member because the necessary bolt hole in the bowl is not present. It is, therefore, necessary for the manufacturer, when marketing either type of close connected combination, to produce a special tank or a special bowl or both must be specially constructed in order that he may supply both close connected combinations and wall-hung tank combinations.

In accordance with my invention, these objections to constructions of the prior art are overcome and means are provided for securing a tank to a bowl to produce a close connected combination without employing any means extending through water receiving portions of the construction. Washers and special housings, therefore, need not be used and all danger of leakage is eliminated. My invention also renders it possible to connect any conventional type of tank to either a bowl of the type now used in producing close connected combinations, such as that of my issued patent, or to a bowl of the type used in ordinary wall-hung tank combinations. Thus the manufacturer may reduce the number and style of pieces produced and may effect a substantial saving in manufacturing operations. Moreover, the plumber can install the fixture without the use of special tools and may replace one tank with another of a different style or design in making repairs.

In those forms of my invention shown in the drawings and hereinafter described more fully for the purpose of illustrating typical applications of my invention, an attaching member is secured to the tank and securing means such as bolts or the like engage the attaching member and the bowl to secure the attaching member and the tank to the bowl. The attaching member may conveniently be threaded onto the exterior of the projecting shank of the valve member located in the tank and may be secured to the bowl by suitable bolts or other securing means.

One of the objects of my invention is to provide a novel type of attaching means for securing a water closet tank to a bowl to produce a close connected water closet combination.

Another object of my invention is to provide a novel combination of a water closet tank and bowl with means located entirely outside of the water receiving portions of the construction for securing the tank to the bowl.

A further object of my invention is to eliminate the use of washers, housings, or other means for preventing leakage about the bolts or other means employed for securing a tank to a bowl in a close connected water closet combination.

Another object of my invention is to provide attaching means adapted for securing a conventional tank of the type ordinarily secured to the wall to the bowl of a water closet to provide a close connected water closet combination.

These and other objects and features of my invention will appear from the following description thereof, in which reference is made to the accompanying figures of the drawings, wherein I have illustrated typical embodiments of my invention. It will be understood, however, that other means embodying the principle of my

invention may be employed and that my invention is not limited to the particular constructions herein illustrated and described.

In the drawings:

Fig. 1 is a vertical sectional view of a portion of a water closet tank and bowl, wherein the tank is secured to the bowl in accordance with my invention;

Fig. 2 is a perspective of a water closet tank having attaching means embodying my invention applied thereto;

Fig. 3 is a perspective of a conventional type of water closet bowl to which a tank may be secured by the use of an attaching member such as that shown in Fig. 2;

Fig. 4 is a perspective of one form of attaching means embodying my invention;

Fig. 5 is a perspective of an alternative form of attaching means embodying my invention;

Fig. 6 is a side view of a portion of a tank and bowl showing an alternative form of attaching means adapted for use in securing a tank to a water closet bowl;

Fig. 7 is a perspective of a tank having the attaching means illustrated in Fig. 6 applied thereto;

Fig. 8 is a perspective of an ordinary type of top inlet bowl to which a tank may be connected in accordance with my invention; and

Fig. 9 is a perspective of the form of attaching means illustrated in Figs. 6 and 7.

In that form of my invention chosen for purposes of illustration in Figs. 1 to 4 of the drawings, a tank 2 is secured to a bowl 4, such as that shown in Fig. 3. The bowl is of a conventional type now used in producing close connected water closet combinations and is formed with a rearward extension 8, in which an upwardly facing inlet 6 is located. Bolt holes 10 are provided for securing a seat hinge to the bowl and additional bolt holes 12 are provided in the extension 8 on either side of the inlet 6 for receiving bolts for attaching the tank to the bowl. The bolt holes 12 do not extend through water receiving portions of the fixture but extend only through laterally projecting flange portions 14 of the extension 8. Beads 16 are provided on the rearward extension 8 projecting a short distance above the face of the extension to support the tank 2 and provide a small space between the tank and bowl in which the usual lock nut for the valve member is located.

The tank is provided with the usual valve construction 18 having a threaded shank 20, which extends downward through an opening 22 in the bottom of the tank and into the opening 6 in the rearwardly extending portion 8 of the bowl. The valve member may be of any conventional or desired type and, if desired, may be countersunk into the lower surface of the inside of the tank or may be provided with a lug or other means to prevent rotation of the valve member as is common practice in such constructions. The valve member is provided with a flange 24 and the usual bevel washer 26, which rests against the bottom of the tank to seal the opening 22. The construction of the tank, bowl, and valve member, above described, are well known in the art and do not in themselves constitute features of the present invention except as they are used in combination with other features of the combination.

The threaded portion of the shank 20 extending through the opening 22 preferably is surrounded by a friction ring 28, which bears directly against the lower surface of the tank on the outside thereof, and an attaching member 30 bears against the friction ring. In constructions embodying my invention the attaching member may be secured in place by the usual lock nut heretofore employed for drawing the valve member against the bevelled washer in the bottom of the tank to seal the opening 22. However, I prefer to replace the lock nut altogether and to employ in its place an attaching member 30 having a central opening 32 threaded internally to engage the shank 20. The member 30 then may be screwed tightly against the friction ring 28 to draw the flange 24 against the washer 26 and secure the valve member to the tank just as the usual lock nut heretofore employed has been used.

The attaching member may be of any suitable form and construction but, as illustrated in Figs. 1 to 4, it is provided with laterally extending ears 34, which are slotted at 36 and recessed at 38 to receive the heads 40 of bolts 42 or other securing means. The bolts 42 extend downwardly through the bolt holes 12 in the flanges 14 on the extension 8 and project beneath the flanges to receive washers 44 and wing nuts 46 or other means for securing the bolts in place. These bolts may be of any suitable type such as the inexpensive stock bolts used for floor flanges.

Any suitable sealing means may be provided between the shank 20 of the valve member and the bowl, such as the conventional bevelled washer 48, carried by the shank and located between the attaching member 30 and the upper face of the extension 8. The washer is drawn down tightly against the opening 6 in tightening the bolts 42, so that the opening 6 is sealed and leakage at this point prevented.

When the bolts 42 are tightened to secure the attaching member 30 to the bowl, they also serve to secure the tank to the bowl with the tank resting upon the beads 16 on the rearwardly projecting portion 8 and with the attaching member lying in the space between the bottom of the tank and the upper face of the projecting portion 8. The weight of the tank is thus carried by the bowl and the tank is held in a level position by the attaching member and bolts 42.

In some instances it is found that the beads 16 or the bottom of the tank or both have warped in firing the fixture, so that if the tank is forced down tightly against the beads 16 it will not be level. Heretofore this has been corrected by grinding the surfaces of the beads 16 or the bottom of the tank or both, whereas the attaching means of the present invention render it possible to overcome this difficulty simply by drawing one of the bolts 42 tighter than the other, so that one side of the bevelled washer 48 is compressed more than the other. The tank may be levelled in this way without any grinding operation and at a considerable saving in time and expense.

With the construction shown in Fig. 4, the bolts 42 may be inserted in the slots 36 with their heads in recesses 38 after the attaching member has been threaded onto the shank 20 of the valve member and tightened to hold the valve member in place. The slots 38 permit the bolts to be moved laterally to fit into holes 12 which are spaced different distances apart or which are not accurately located with respect to the opening 6, so that slight differences in position arising during manufacture do not interfere with the attaching of the tank to the bowl.

If the manufacturer should desire to ship the

tank with the valve member secured in place and with the bolts carried by the attaching member the attaching member of Fig. 5 may be used. This construction differs from that of Fig. 4 in that the member **50** has elongated openings **52** countersunk at **54** to receive the heads of bolts **56**, instead of the slots **36** of the construction of Fig. 4. With this construction the bolts **56** are inserted in the openings **52** before the attaching member is screwed up against the tank to draw the valve member and washer against the bottom of the tank on the inside thereof. Thereafter, the bolts **56** cannot be removed or lost without unscrewing the attaching member, so that the tank may be shipped ready for installation without danger of losing the bolts.

Those forms of my invention described above and illustrated in Figs. 1 to 4 and 5 are particularly adapted for use in securing a tank of conventional construction such as those ordinarily secured to the wall to a toilet bowl of the type now used in producing close connected water closet combinations and in which the bowl is provided with a rearwardly extending portion having bolt holes therein.

In that form of my invention illustrated in Figs. 6 to 9 of the drawings, I have shown means for securing a tank to a bowl of the type illustrated in Fig. 7, which represents a typical bowl of the top inlet type which does not provide bolt holes in the rearward extension but does have bolt holes for receiving the bolts which secure the seat hinge to the bowl. In this alternative construction the bowl **60** is provided with a rearwardly extending portion **62** in which the upwardly facing inlet **64** is located and into which the shank **66** of a valve member **68** extends.

An attaching member **74** employed in this construction may be used for securing the valve member to the tank, as in the previously described forms of my invention, and may be secured to the bowl by means of bolts **76** which also serve to secure the hinge for the ordinary seat and cover to the bowl. The attaching member preferably is formed with a central opening **78** threaded internally to engage the shank of the valve member and with forwardly extending arms **80**, which are offset downwardly at **82**, so that they extend beneath the flange **84** in which the bolt holes **86** are formed so as to be concealed by the flange. The forward ends of the arms **80** are provided with holes **88** for receiving the bolts **76** or other means which serve to attach the hinge for the seat or cover to the bowl. The usual washers **92** and nuts **94** or other securing means employed for holding the bolts **76** and hinge **96** in place on the bowl, serve also to hold the arms **80** tightly against the under surface of the flange **84** on the bowl, thereby securing the tank firmly in position on the bowl. Preferably, the rearward portion of arms **80** are also provided with screws **98** or other means located rearwardly of the hinge bolts **76** and adapted to bear against the lower surface of the flange **84**, so that they act as fulcrums. Then after the hinge bolts are tightened to draw the forward ends of the arms **80** up toward the flange **84**, the rearward part of the arms and the attaching member may be drawn downward by screws **98** to urge the tank against the bowl and insure a tight joint between the shank and the bowl.

With this construction a standard form of tank adapted to be secured to the wall may instead be secured directly to a bowl of conventional type, which also is customarily used in a wall-hung tank combination, yet these fixtures may be secured together to produce a close connected combination by the use of simple attaching means. The manufacturer, therefore, may produce a single line of goods and these may be installed as desired by the purchaser, either as a wall-hung or close connected combination by the use of suitable attaching means located entirely outside of the water receiving portions of the construction.

While I have illustrated and described, herein, certain typical embodiments of my invention, it will be apparent that the form and construction thereof may be changed in order to utilize my invention with other types or other designs of tanks and bowls than those shown. Obviously, therefore, various changes in the construction and manner of applying attaching members may be desirable in utilizing my invention on other types of toilet tanks and bowls without departing from the spirit of my invention. It should, therefore be understood that those forms of my invention, herein shown and described, are intended for the purpose of illustrating my invention and are not intended to limit the scope thereof.

I claim:

1. In combination with a water closet bowl having a tank supported thereby, means for securing the tank in position on the bowl located entirely outside of the water receiving portions of the combination, a threaded member carried by the tank to which said means is secured and another threaded member engaging said means for securing said means to the bowl.

2. In a close connected water closet combination embodying a tank, a top inlet bowl, and a valve member located in said tank and having a portion projecting from the bottom thereof into the inlet in said bowl, an attaching member secured to the exterior of the projecting portion of said valve member and located entirely outside of the water receiving portions of the combination and bolts engaging said attaching member and bowl to secure said attaching member and the tank to said bowl.

3. In a close connected water closet combination embodying a tank, a bowl and means for supporting the tank on the bowl providing a space therebetween, an attaching member secured to the tank and located in said space and outside of the water receiving portions of the combination and bolts engaging the attaching member and the bowl for securing the attaching member and the tank to the bowl.

4. In a close connected water closet combination embodying a tank, a top inlet bowl, and a valve member located in the tank and having a shank extending from the bottom of said tank into the inlet in the bowl, an attaching member threaded to the exterior of the shank and located outside of the water receiving portions of the combination and secured to the bowl for holding the tank in position on the bowl.

5. In combination with a water closet bowl having a top inlet and a tank having a valve member with a shank projecting therefrom into said inlet, means spacing said tank from said bowl, an attaching member secured to the shank and located in the space between said tank and bowl and outside of the water receiving portions of the combination and securing means engaging the attaching member and the bowl for securing the attaching member and the tank to the bowl to produce a close connected combination.

6. In combination with a water closet bowl

having a rearward extension provided with a top inlet and with beads for supporting a tank, a tank resting on said beads and having a valve member with a shank projecting therefrom into said inlet, an attaching member threaded onto said shank securing the valve member to the tank and located in the space between the tank and the bowl and entirely outside of the water receiving portions of the combination and bolts engaging the attaching member and projecting through openings in the rearwardly extending portion of the bowl for securing the attaching member and the tank to the bowl to produce a close connected combination.

7. In a close connected water closet combination embodying a bowl having a rearward extension with a top inlet and a tank supported by said bowl having a valve member therein provided with a threaded shank extending into said inlet, the combination of an attaching member threaded onto said shank for securing said valve member to said tank, said attaching member being located entirely outside of the water receiving portions of the combination having arms projecting from opposite sides thereof formed with openings for receiving bolts, and bolts extending through the openings in said arms and through complementary openings in said bowl for securing the attaching member to said bowl.

8. In combination with a water closet bowl having bolt holes for receiving bolts to secure a seat hinge to the bowl and having a portion extending rearwardly of the bolt holes, a tank resting on said rearwardly extending portion, an attaching member secured to the tank and extending forwardly therefrom to register with said bolt holes and securing means extending through said bolt holes for securing said attaching member and said tank to said bowl to produce a close connected combination.

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