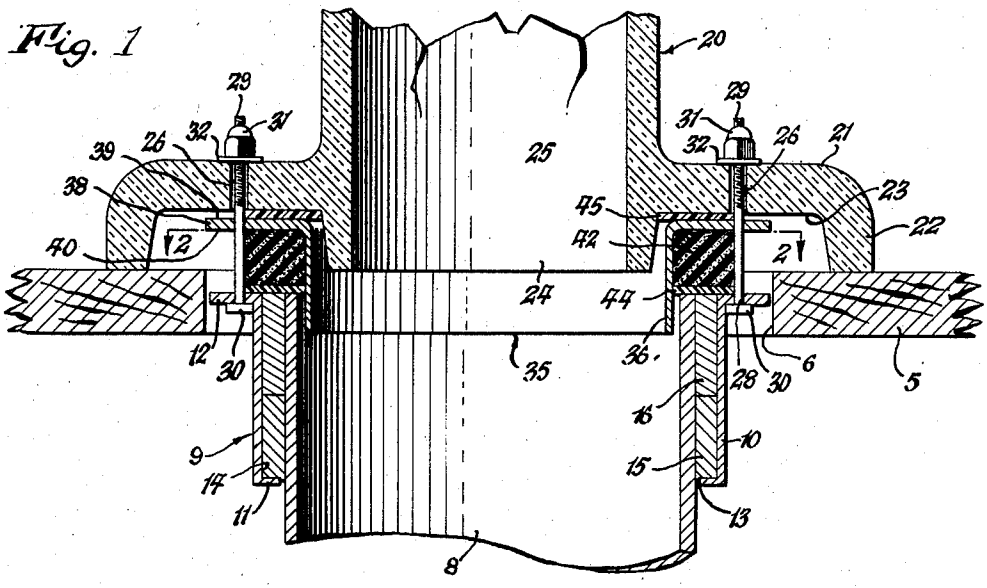
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FLOOR LEVEL COUPLING FOR WATER CLOSETS

Filed Oct. 18, 1956

Fig. 1



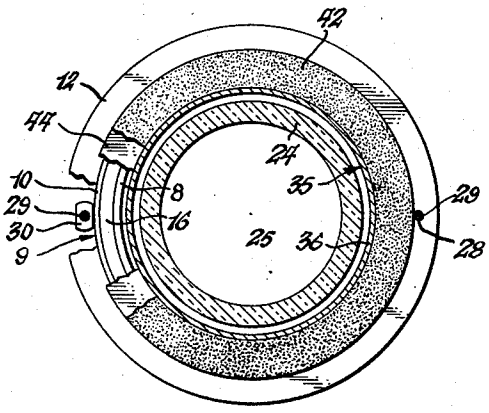
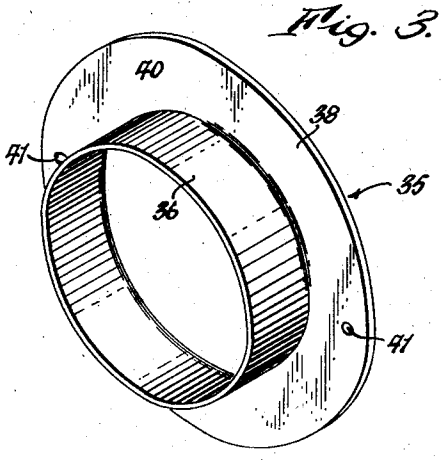


Fig. 2.

Fig. 3.



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FLOOR LEVEL COUPLING FOR WATER CLOSETS

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1 Claim. (Cl. 285—58)

This invention relates to a floor level coupling for water closets and more particularly to such a coupling which will provide a permanently gas and moisture-tight seal between the tubular horn or outlet of a ceramic water closet bowl and the upper end of an upstanding soil pipe.

One of the principal objects of the invention is to provide such a coupling which will yieldingly adapt itself to any repositioning of the bowl with reference to the soil pipe during installation of the plumbing or thereafter and at all times provide a gas and moisture-tight seal.

Another object of the invention is to provide such a coupling in which the water discharged from the bowl is prevented from creeping around to the resilient members providing the moisture and gas-tight seal so as to avoid impairing the efficacy of these members.

Another object is to provide such a coupling all parts of which stay in proper operative position regardless of any misalinement of the bowl with reference to the soil pipe.

Another object is to provide such a coupling which can readily be adapted to variations in height of the upper end of the soil pipe with reference to floor level and similar variations in height between the usual caulk flange provided at the upper end of the soil pipe.

Another object is to provide such a coupling in which the sealing action is essentially obtained from a resilient gasket having both a high degree of give and also ability to return to its original shape and which is at the same time fully protected against creeping liquid and gas by an additional yielding gasket or gaskets which are unaffected by moisture or gas.

Another object is to provide such a coupling which is particularly adapted to be used with ceramic bowls which have short horns as compared with those formerly in current use and which short horns have proved to present difficulty in obtaining a desirable seal with the floor soil pipe.

Another object is to provide such a seal which can readily be installed and which requires no special tools, experience or instruction as to installation.

Another object is to provide such a coupling which is low in cost and which will stand up for a long period of time without failure.

Other objects and advantages of the invention will be apparent from the following description and drawings in which:

Fig. 1 is a vertical section through the floor of a building and a soil pipe terminating at or about floor level and showing the present coupling interposed between the soil pipe and the base of a water closet bowl supported on the floor.

Fig. 2 is a horizontal section taken on line 2—2, Fig. 1 with parts broken away.

Fig. 3 is a perspective view of the tubular horn extension piece which forms a part of the coupling.

In the accompanying drawings, the numeral 5 represents the flooring of a building and which has a circular opening 6 in which the upper open end of a piece of upstanding soil pipe 8 is arranged and which leads to the sewer. To the upper end of the soil pipe 8 is attached a conventional brass caulk flange 9 and which consists of

a cylindrical body part 10 surrounding the soil pipe 8 in spaced relation thereto and having an inwardly projecting annular flange 11 at its lower end and an outwardly projecting annular flange 12 at its upper end. The inwardly projecting flange 11 terminates in an opening 13 loosely fitting the periphery of the soil pipe 8 and the upper flange 12 loosely fits the opening 6. The space 14 between the brass caulk flange 9 and the periphery of the soil pipe 8 can be caulked with oakum 15 and lead 16 in the usual and well-known manner.

The ceramic water closet bowl 20 is shown as having a horizontal outwardly extending base 21 provided with an outer marginal depending rim 22 so as to provide a central recess 23 in the under side of this base. The bowl discharges through a horn 24 which is integral with the water closet bowl and surrounds the discharge duct 25. This horn 24 projects downwardly into the recess 23 and under present code requirements is made comparatively short and does not extend into the soil pipe 8. The base 21 of the water closet bowl is provided with a pair of vertical openings 26 arranged on diametrically opposite sides of the horn 24 and arranged to aline with similar holes 28 provided in the outwardly extending flange 12 of the brass caulk flange 9. These holes are adapted to receive bolts 29 having heads 30 at their lower ends and having nuts 31 at their upper ends bearing against washers 32 which lay on top of the base 21. It will be seen that by tightening the bolts 29, the rim 22 of the base is brought firmly against the floor 5 so as to secure the water closet in position.

The coupling forming the subject of the present invention includes a tubular horn extension piece indicated generally at 35 and which is preferably made of a relatively rigid material which is highly resistive to corrosive action, such as lead or many of the currently used plastics. This horn extension piece comprises an open-ended vertical tube 36, the inside diameter of which is substantially greater than the outside diameter of the ceramic horn 24 of the water closet bowl and the outside diameter of which is substantially less than the inside diameter of the soil pipe 8. The horn extension piece 35 is designed to fit freely around the ceramic horn 24 of the water closet bowl and freely into the soil pipe 8 and it will be seen that by providing clearance between this horn extension piece 35 and both the ceramic horn 24 and the soil pipe 8, the water closet bowl does not have to be alined with extreme accuracy but substantial leeway is provided in making the installation.

The horn extension piece 35 is provided at its upper end with a horizontal outwardly extending integral flange 38 provided with upper and lower horizontal surfaces 39 and 40. For strength this flange 38 is thicker than the tubular body portion 36 of the horn extension piece, the latter being preferably thin in order to provide the maximum inside diameter and minimum outside diameter in providing the required clearance between the ceramic horn 24 and soil pipe 8 as above described. This flange 38 is also penetrated by the bolts 29 and for this purpose, it has holes 41 provided in its opposite sides, these holes and bolts serving to insure a proper alinement of the parts during assembly and also indexing the horn extension piece 35 into spaced coaxial relation with the horn 24 and soil pipe 8 and so as to be full floating as hereinafter described.

The lower face 40 of the flange 38 is engaged by an annular sponge rubber gasket 42. This gasket is interposed between the tubular body part 36 of the horn piece extension 35 and the bolts 29 and is arranged above the caulking 15, 16 and the upper ends of the soil pipe 8 and brass caulk flange 9. The composition of the rubber forming the sponge rubber gasket 42 is selected to have a high degree of resiliency for a long time and

to provide the required degree of movement in compression. Rubber having such characteristics and ability to be produced in sponge form is susceptible to the action of sewer moisture and gases and to protect the sponge rubber gasket **42**, a flat annular gasket **44** of neoprene or similar snythetic rubber is snugly fitted to the tubular portion of the horn extension piece **35** after the sponge rubber gasket **42** has been fitted thereon so as to be interposed between this sponge rubber gasket and the caulked upper end of the soil pipe **8**. This neoprene gasket **44** snugly fits the horn extension piece **35** so as to prevent moisture and sewer gases from contacting the sponge rubber gasket **42** and is also in compressive relation with the caulked upper end of the soil pipe **8** so as to prevent the escape of moisture or gases at this point.

The coupling is completed by a second flat annular neoprene gasket **45** which rests on the upper face **39** of the horizontal flange of the horn extension piece **35**. This neoprene gasket **45** is in compressive relation with this flange and the base **21** of the water closet bowl so as to positively prevent the escape of moisture or gas at this point.

As compared with conventional practices, the present floor level coupling is essentially designed to provide a gas and moisture-tight seal between the bowl of a water closet and the soil pipe and which will permit shifting of the bowl in installing the same without destroying the effectiveness of the seal. Thus, it is now current practice to apply a wax ring to the top flange **12** and lead caulking **16** of the soil pipe and to insert the horn **24** of the bowl into this wax ring in setting the base **21** of the bowl on the floor **5**. The bolts **29** are then tightened. The wax ring is of sufficient axial extent so that it is flattened out in this process to provide a seal. However, the wax ring has no ability to return to its original shape when once distorted and consequently, even if there should be slight shifting of the bowl in the installation or if it should be mounted so as to rock and then this condition corrected by putting shims under the rim **22**, such shifting of the bowl necessarily distorts the wax ring, leaving it in a condition where an opening is provided for the escape of moisture and sewer gases. Further, such rings have a comparatively low melting point and with the short horns **24** now in current use, the wax under softening temperature, gradually flows down past the short horn **24** into the soil pipe **8**, completely destroying the seal.

In contrast, with the present invention, the sponge rubber gasket **42** and neoprene gasket **44** are first slipped over the tubular body part **36** of the horn extension piece **35**. The flange **38** of the tubular extension piece **35** is threaded over the shanks of the bolts **29** and its tubular body part **36** inserted into the soil pipe **8** in full floating or spaced relation of this soil pipe and with the neoprene gasket **44** seated upon the upper ends of the soil pipe **8** and caulk flange **9**. The neoprene gasket **45** is then placed on top of the flange **38** and the bowl **20** set down on the floor with its horn **24** entering the horn extension piece **35** and the bolts **29** entering the holes **26** in the bowl base **22**. Since the bolts **29** pass through the holes **41** in the flange **38** of the horn extension piece **35**, the bolts **29** serve to index the tubular body part **36** of this horn extension piece into spaced centered or coaxial relation with the soil pipe **8** and also with the horn **24** of the bowl. Accordingly, when properly installed, the horn extension piece **35** is supported in full floating relation to both the soil pipe and water closet bowl, that is, out of contact and in spaced relation thereto, and each of the gaskets **42**, **44** and **45** form the sole and floating support for this horn extension piece **35**.

Upon now tightening the nuts **31** of the bolts **29**, the compressive relation between the three gaskets and the parts being sealed is maintained. In such installation, the sponge rubber gasket **42** is compressed to a measurable extent and since the rubber for this gasket is selected to maintain for a long period of time its tendency to return to its original form, this gasket will shift and adapt itself to any resetting or correction of the setting of the bowl **20** while being installed without losing its reliable sealing contact. Since, however, the sponge rubber gasket **42** is subject to deterioration through contact with the moisture and gases from the stand pipe, it will be seen that the neoprene gasket **44**, tightly fitting the tubular body part **36** of the horn extension piece **35**, reliably seals the lower part of the sponge rubber gasket **42** against attack by moisture or gases from the stand pipe **8** as well as providing a reliable seal between the periphery of the horn extension piece **35** and the bore of the stand pipe **8**. The neoprene gasket **45** completes the seal by preventing any creeping of moisture around the under side of the base **20** or over the top of the horn extension piece **35**.

It will particularly be noted that the horn extension piece **35** is in full floating, fully spaced relation to the parts between which the seal is interposed, namely, the water closet bowl **20** and the stand pipe **8**. Accordingly, in any repositioning or resetting of the bowl **20** or if the base **21** is such that the bowl rocks after being set and requires shimming to steady it, the seal of the coupling embodying the present invention adapts itself to all such changes and provides an adequate seal against the escape of moisture and gas.

I claim:

In a toilet closet bowl installation including an upstanding soil pipe having at its upper end an external annular caulking flange provided with circumferentially spaced openings therein and a ceramic water closet bowl having an integral base provided with spaced openings therein in substantial alinement with said openings in said caulking flange and a downwardly projecting rim forming a central recess in the underside of the base, and said base also having an integral tubular horn projecting downwardly into said recess and through which horn the water closet bowl discharges into said soil pipe, the combination therewith of a floor level coupling comprising a horn extension piece having a tubular body fitting freely both within said soil pipe and around said horn in spaced coaxial relation thereto and an external annular flange at the upper end of said tubular body arranged in said recess between the upper ends of said soil pipe and caulking flange and the underside of said base, and said horn extension flange also having circumferentially spaced openings therein in substantial alinement with said openings in said caulking flange and base, a first resilient gasket fitting around said tubular body and interposed between said upper ends of said soil pipe and caulking flange and said horn extension flange, a second resilient gasket fitting around said horn and interposed between said horn extension flange and said base whereby when properly installed said resilient gaskets serve as the sole and floating support between said horn extension piece and said base, horn, soil pipe and caulking flange and said horn extension piece is in full floating, spaced relation to said base, horn, soil pipe and caulking flange, and bolt means extending through said alined openings in said caulking and horn extension flanges and said base for securing said base to said caulking flange and for indexing said horn extension piece into said full floating relation.

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