

Feb. 26, 1929.

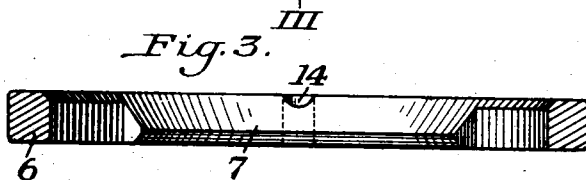
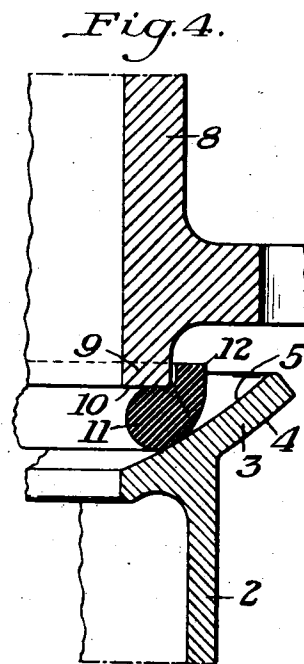
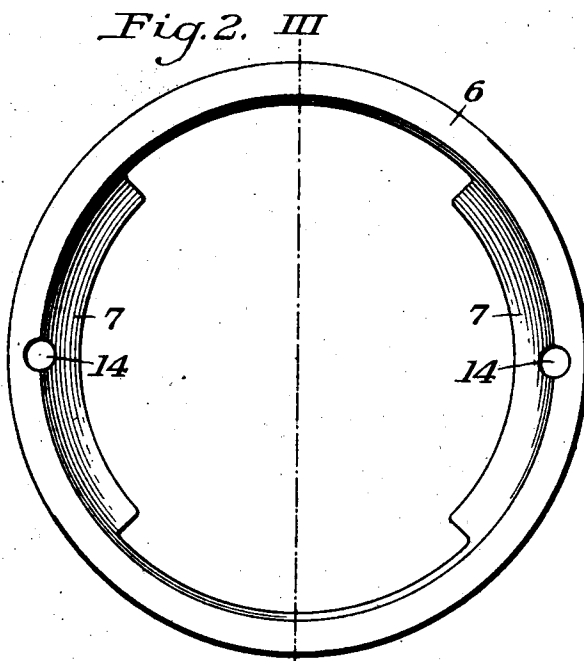
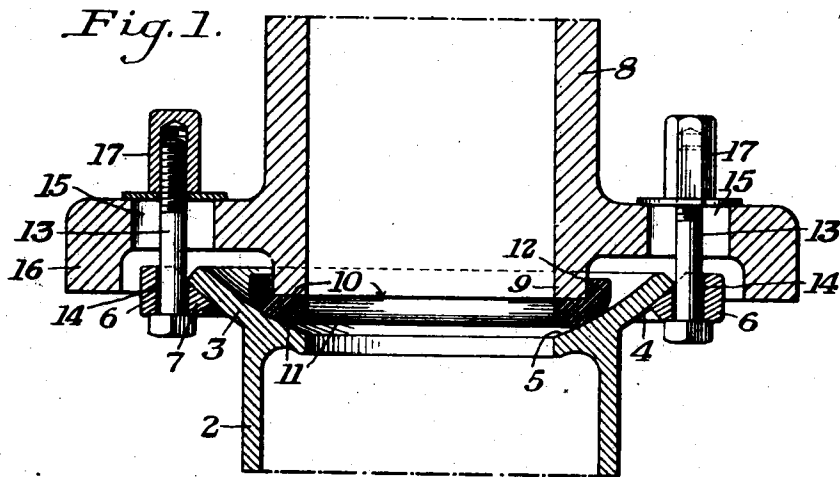
1,703,725

J. C. CROMWELL

CLOSET CONNECTION

Filed Jan. 12, 1923

2 Sheets-Sheet 1



INVENTOR
John C. Cromwell
Byrne, Pittman & Carmichael
his attys.

Feb. 26, 1929.

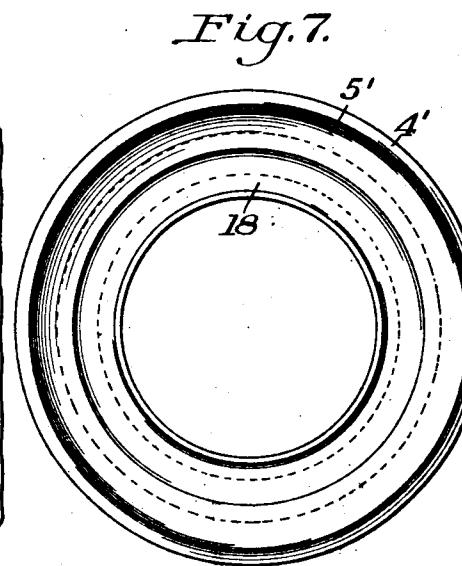
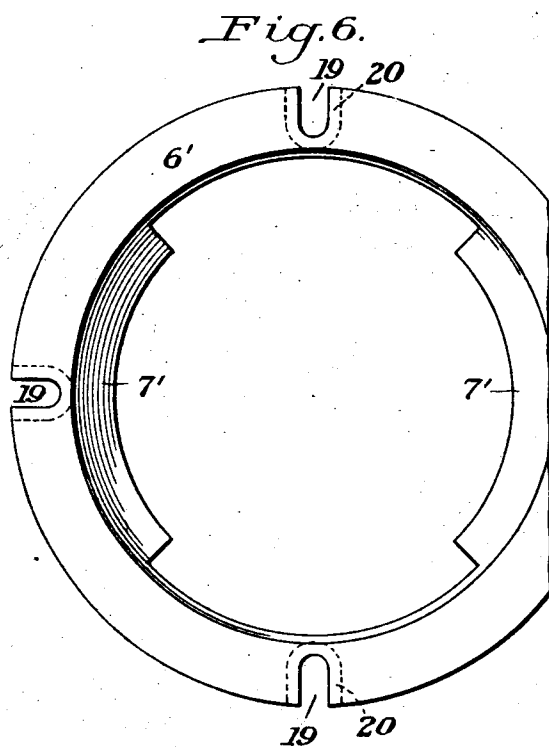
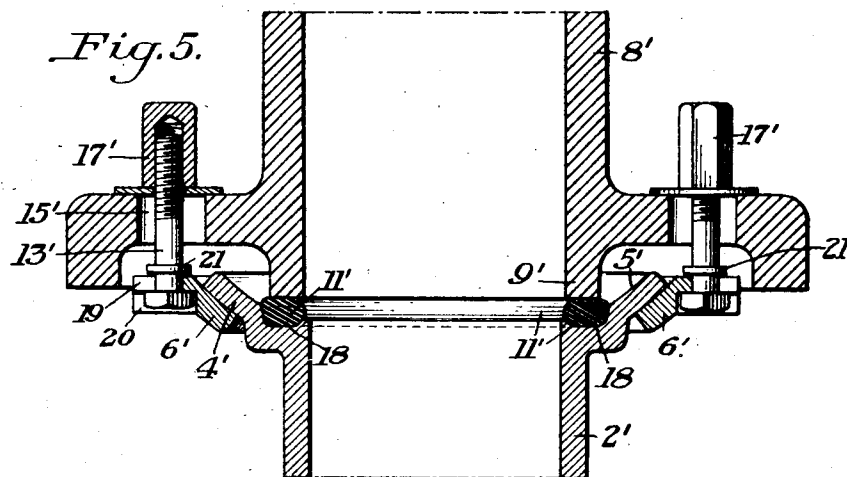
1,703,725

J. C. CROMWELL

CLOSET CONNECTION

Filed Jan. 12, 1923

2 Sheets-Sheet 2



INVENTOR
John C. Cromwell,
By James H. Little, Attorney

UNITED STATES PATENT OFFICE.

JOHN C. CROMWELL, OF COLUMBUS, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
THE TESTITE COMPANY, A CORPORATION.

CLOSET CONNECTION.

Application filed January 12, 1923. Serial No. 612,257.

The present invention has relation broadly to plumbing connections, and more particularly to connections such as required between the outlet horn of a water closet and the usual soil pipe.

In some installations of this character as made at the present time, there are provided closet bowls having outlet horns of special construction adapted to provide a ball and socket joint between the outlet horn and the soil pipe. It is highly desirable, however, to provide connections of such character that it is unnecessary to make any change in the standard short or long outlet horn. This is true for the reason that good plumbing practice requires all standard articles to be of such construction that interchange thereof with a minimum of labor is possible. Furthermore, when it is considered that an allowance as high as one-eighth of an inch in an inch is permissible in porcelain articles of this character due to the variations in shrinkage during drying and firing, it will be appreciated that it is practically impossible to provide an accurate ball and socket connection between a specially shaped outlet horn and the soil pipe.

This invention overcomes objections of the character pointed out, and provides a connection adapted for use with closet bowls of standard construction without any change in the shape of the outlet horn.

In the accompanying drawings, there are shown for purposes of illustration only, certain embodiments of the present invention, it being understood that the drawings do not define the limits of the invention, but that changes may be made in the construction and operation disclosed therein without departing from the spirit of the invention or scope of my broader claims.

In the drawings,—

Figure 1 is a vertical sectional view through one form of connection constructed in accordance with the present invention;

Figure 2 is a top plan view of one of the bearing members for the connection shown in Figure 1;

Figure 3 is a transverse sectional view on the line III—III of Figure 2;

Figure 4 is a view, on an enlarged scale and partly broken away, illustrating the relative position of certain of the parts before the packing is compressed;

Figure 5 is a view corresponding to Figure 1, illustrating a slightly modified form of the invention;

Figure 6 is a top plan view of one of the bearing members shown in Figure 5; and

Figure 7 is a top plan view of the upper end of the soil pipe shown in Figure 5.

In carrying out the present invention, there may be provided, as shown in Figures 1 to 4, both inclusive, a soil pipe or pipe section 2 of any usual general construction, having a portion of its upper end shaped to provide a projecting flange 3. This flange is preferably so shaped as to form an outer spherical bearing surface 4 and an inner packing receiving surface 5. Conveniently, although not necessarily, the packing receiving surface 5 may be of substantially uniform concavity adapted to provide a portion of a spherical bearing surface corresponding generally to the surface 4.

Cooperating with the flange 3 is an outer bearing ring 6 having diametrically oppositely positioned, inwardly projecting bearing portions 7 shaped to conform to the surface 4. Intermediate the portions 7, the bearing ring is cut away as at 22 to provide an internal diameter which is slightly in excess of the external diameter of the flange 3, to permit the ring to be turned at substantially right angles to the flange and slipped thereover, as will be apparent.

Adapted to cooperate with the upper end of the soil pipe 2, is a closet bowl 8 having the usual outlet horn 9. This outlet horn in standard constructions is of substantially straight cylindrical shape, having a flat lower end 10. The lower end of the outlet horn is shaped to engage a compressible packing 11 which is supported on the packing receiving surface 5. The relative position of the parts before the packing is compressed, is clearly illustrated in Figure 4, while the position of the parts after compression of the packing is shown in Figure 1.

Due to the fact that the packing 11 is supported on a substantially concave bearing surface, it will be apparent that as angular adjustment between the soil pipe 2 and the outlet horn 9 takes place, the packing will tend to shift its position on the surface 5, whereby the effective compression pressure exerted thereon will always be effective at substantially right angles to the end 10 of

the outlet horn. This effects a substantially uniform compression of the packing throughout its entire circumference.

In order to prevent the packing from slipping out of position during the assembly of the parts, and the relative adjustment thereof, it may be so shaped as to provide an upstanding portion 12 adapted to cooperate with the outer cylindrical surface of the outlet horn.

The compression of the packing is accomplished by bolts 13 extending through openings 14 in the bearing member 6 and elongated openings 15 in the base flange 16 of the closet 8. When the parts are in the desired angular positions, the nuts 17 will be screwed on to the bolts to thereby compress the packing and maintain the parts in operative relationship.

In Figures 5 to 7 there is illustrated a slightly modified form of the invention, in which, for sake of brevity, parts corresponding to parts already described are designated by the same reference characters having a prime (') affixed thereto. In this form of the invention the packing receiving surface 5' is especially shaped to provide a packing groove 18, and the packing 11' is shaped to fit within the groove. With such a construction it is unnecessary to provide the packing with an upstanding portion to cooperate with the outlet horn 9'.

For certain purposes, the form of the invention illustrated in Figures 5 to 7 is less desirable than that illustrated in Figures 1 to 4, for the reason that as the angular relationship between the soil pipe and the outlet horn varies, the degree of pressure exerted on the packing at different points will correspondingly vary. This is due to the fact that the packing is fixedly retained within the groove 18 relative to the surface 5'.

In the latter form of the invention, the bearing member 6' is illustrated as provided with slots 19 having undercut portions 20 adapted to receive the heads of the bolts 13'. The bolts are also provided with intermedi-

ate collars 21 adapted to overlie the slots 19 and prevent the bolts from dropping out of position. This construction is made the subject matter of my copending application, Serial No. 612,258, filed January 12, 1923.

The advantages of the present invention arise from the provision of a connection adaptable for use with closets of standard construction and providing a tight joint irrespective of the relative angular positions of the soil pipes with respect to the outlet horns of the closet bowls.

Further advantages of this invention arise from the fact that inaccuracies in the dimensions of the outlet horn will not affect the tightness of the joint formed with this connection.

I claim:

1. In a closet connection, a bearing ring, and a pipe section having an enlarged end, said bearing ring having bearing portions for said end and having oppositely positioned recesses to permit it to be turned substantially parallel to the flow opening through the pipe, slipped over the enlarged end thereof, and then turned at right angles to its original position to cooperate with said pipe end, substantially as described.

2. In a drainage connection for soil pipes, a pipe section having a convex outer bearing surface and a packing supporting inner surface, a packing on said inner surface, and a bearing member surrounding said pipe section and adjustably cooperating with said outer surface, said bearing member having an internal diameter materially less than its external diameter of said pipe section to permit relative angular adjustment between the same, said bearing member being of annular shape and having diametrically opposite portions cut away to permit bodily movement thereof over the pipe section, substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN C. CROMWELL.