ABSTRACT

A drainage fitting for use with a toilet having a toilet horn and with a toilet flange having a ledge upwardly adjacent an outlet includes an outer wall having a tapered-cylindrical or cylindrical configuration and defining a channel there-through for receiving the horn of a toilet therein. The fitting includes an upper segment for receiving the horn and a lower segment configured to nest in the ledge of a toilet flange for interfacing the toilet with a plumbing drainpipe. The drainage fitting enables a toilet to be mounted to a drainpipe without using a wax ring. Alternatively, the drainage fitting may include an enlarged collar having upwardly extending toilet mounting bolts that eliminates the need to use a separate toilet flange.
DRAINAGE FITTING FOR A TOILET

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to a plumbing device and system and, more particularly, to a drainage fitting for a toilet that increases the speed, efficiency, and ease of toilet installation or replacement.

[0002] A toilet is typically installed using a toilet flange and a wax ring. The toilet flange is installed on the floor surface around the hole that gives access to the drain pipe. The wax ring is positioned on the flange and the toilet is lowered onto it to create a seal. The interface between the toilet and the wax ring is a potential source of leakage if not installed properly. Further, the wax ring must be replaced whenever the toilet itself is replaced or moved and ring replacement is a messy and undesirable task.

[0003] Various proposals have been made in the art for connecting two segments of pipe together. While assumably effective for their intended purposes, the existing products and proposals do not provide a user-friendly fitting for efficiently installing a toilet using a toilet flange or connecting to a toilet drain pipe without the use of a wax ring.

[0004] Therefore, it would be desirable to have drainage fitting for use with a toilet that efficiently interfaces a toilet flange with a toilet horn without a need for a wax ring and that seals this interface from leaking.

SUMMARY OF THE INVENTION

[0005] A general object of this invention is to provide a drainage fitting for efficiently mounting a toilet to a toilet drain pipe.

[0006] Another object of this invention is to provide a drainage fitting, as aforesaid, that interfaces a toilet horn of a toilet fixture to a toilet flange connected to the drain pipe.

[0007] Still another object of this invention is to provide a drainage fitting, as aforesaid, that eliminates the use of a wax ring when installing or replacing a toilet.

[0008] A further object of this invention is to provide a drainage fitting, as aforesaid, that integrates construction of the drainage fitting with a toilet flange.

[0009] A still further object of this invention is to provide a drainage fitting, as aforesaid, having a collar configured to support the fitting in an upright position when engaging the channel of a toilet flange or floor drain hole.

[0010] Accordingly, the unique drainage fitting described in more detail below satisfies the above stated objectives. Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein is set forth by way of illustration and example, embodiments of this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of a drainage fitting installed with a toilet flange in the drain hole of a floor according to one embodiment of the present invention;

[0012] FIG. 2 is an exploded view of the drainage fitting as in FIG. 1;

[0013] FIG. 3a is a top view of a toilet seated on the drainage fitting as in FIG. 2;

[0014] FIG. 3b is a sectional view taken along line 3b-3b of FIG. 3a;

[0015] FIG. 3c is an isolated view on an enlarged scale of the drainage fitting shown in FIG. 3b;

[0016] FIG. 4a is a side view of the drainage fitting as in FIG. 2 removed from a toilet flange;

[0017] FIG. 4b is a perspective view of the drainage fitting as in FIG. 4a;

[0018] FIG. 4c is a side view of the drainage fitting seated in a toilet flange;

[0019] FIG. 4d is a perspective view of the drainage fitting as in FIG. 4c;

[0020] FIG. 5a is a top view of a toilet seated on the drainage fitting as in FIG. 2 according to another embodiment of the present invention;

[0021] FIG. 5b is a sectional view taken along line 5b-5b of FIG. 5a; and

[0022] FIG. 5c is an isolated view on an enlarged scale of the drainage fitting shown in FIG. 5b.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0023] A drainage fitting for a toilet according to the present invention will now be described in detail with reference to FIGS. 1 through 5c of the accompanying drawings. More particularly, a drainage fitting 10 according to one embodiment is shown in FIGS. 1 to 4a. The fitting 10 includes a continuous outer wall 12 having a generally tubular configuration with top 14 and bottom 16 ends and defining a channel therebetween. The fitting may be gradually tapered from the top end 14 downward (e.g. gradually decreasing diameter) to have a configuration complementary to a tapered configuration of a toilet flange 5 (FIG. 1). As will be further described later, this complementarily tapered configuration contributes to a watertight seal between the horn 4 and fitting 10. As can be seen most clearly in FIGS. 4a to 4c, the outer wall 12 of the fitting preferably includes an upper segment 18 having a tapered-cylindrical configuration and a generally tubular lower segment 20. It is understood, however, that the upper segment 18 may be include either a tapered-cylindrical or cylindrical configuration and is capable of receiving toilet horns having either configuration.

[0024] A collar 22 extends about the outer wall 12 of the fitting at a point between the top 14 and bottom 16 ends thereof for nesting the fitting in a toilet flange 5 (FIG. 2), as will be further described below. The channel includes a diameter at the top end 14 that is larger than a diameter at the collar 22. The lower segment 20 of the fitting is cylindrical and thus its diameter is constant. A seal 24, such as an O-ring seal, may be positioned within the channel of the upper segment of the fitting 10 so as to contribute to a watertight seal between the toilet horn 4 and the fitting 10 when the horn 4 is inserted therein (FIG. 3c).
A toilet flange 5 utilized with the fitting 10 disclosed herein includes a generally tubular configuration having a ledge 6 (FIG. 2). The tubular configuration of the toilet flange 5 defines an open top and bottom with a hollow channel extending therebetween, the bottom opening referred to herein as the toilet flange outlet 7. The toilet flange ledge 6 defines a recessed lip 8 into which the collar 22 of the fitting 10 may be nested as shown in FIGS. 3c and FIGS. 4a to 4d. This nested relationship also contributes to a watertight seal. It should be observed that the tubular configuration of the toilet flange 5 is substantially similar to the tubular configuration of the lower segment 20 of the fitting 10 such that they mate together efficiently. The toilet flange 5 also includes a pair of toilet attachment bolts 9 extending upwardly from the ledge 6 for securing a toilet 3 thereto in a conventional manner (FIG. 1). It should be clear that the toilet flange 5 may be inserted into the drainpipe 2 of a plumbing system for connection to a sewer system (FIG. 1).

In use, a toilet flange 5 may be inserted into a standard toilet drain hole in the floor 1 of a home or business. Then, the drainage fitting 10 according to the present invention may be inserted into the channel of the toilet flange 5 such that the collar 22 nests in the lip 8 of the toilet flange 5. Then, a toilet 3 may be mounted to the upstanding bolts 9 of the toilet flange 5 without the conventional use of a wax ring. Specifically, the horn 4 on the underside of the toilet 3 may engage the upper segment 18 of the drainage fitting 10 such that the complementary configurations and O-ring seal 24 provide a watertight seal.

Another embodiment of the drainage fitting 30 is shown in FIGS. 5a to 5c and includes a construction substantially similar to that of the embodiment described above except as specifically noted below. The drainage fitting 30 according to this embodiment may also be clearly understood with reference to FIG. 4d in that the drainage fitting 30 includes an integrated construction of the previously described fitting 10 and the previously described toilet flange 5. More particularly, the drainage fitting 30 includes an enlarged collar 32 substantially similar to the toilet flange ledge 6 described above and a fitting lower segment 34 substantially similar to the tubular portion of the toilet flange described above. As such, it is understood that the toilet mounting bolts extend upwardly from the enlarged collar 32.

Use of the alternative drainage fitting 30 is best described with reference to FIGS. 5a to 5c. The drainage fitting 30 may be inserted into the drain hole connected to the drainpipe 2 in a house or business. Then, a toilet 3 may be mounted thereto in a watertight manner without use of a wax ring. A separate toilet flange is also unnecessary. More particularly, the horn 4 situated on the underside of the toilet 3 may be received into an upper segment 36 of the fitting and sealed by the complementary configurations thereof and an O-ring seal 38 (FIG. 5c). The enlarged collar 32 rests directly upon the floor surface 1 making use of a toilet flange unnecessary.

It is understood that while certain forms of this invention have been illustrated and described, it is not limited thereto except insofar as such limitations are included in the following claims and allowable functional equivalents thereof.

What is claimed is:
1. A drainage fitting for use with a toilet having a toilet horn and with a toilet flange having a ledge upwardly adjacent an outlet, said fitting comprising:
   a tubular member having an outer wall defining open top and bottom ends and defining a channel therebetween;
   a collar positioned between said top and bottom ends and extending outwardly from said outer wall for supporting said fitting in an upright configuration;
   wherein said channel has a top diameter at said top end that is larger than a diameter of said channel at said collar; and
   wherein the toilet horn is receivable in said channel top end.
2. The fitting as in claim 1 wherein said collar has a configuration complimentary to a configuration of the toilet flange ledge and said fitting bottom end has a configuration complimentary to a configuration of the toilet flange outlet, whereby said fitting is receivable in the toilet flange.
3. The fitting as in claim 2, further comprising a seal located in said channel for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.
4. The fitting as in claim 1, further comprising:
   a plurality of toilet attachment bolts extending upwardly from said collar;
   wherein said collar is attachable to a floor surface; and
   wherein said fitting bottom end is attachable to a drain pipe.
5. The fitting as in claim 4, further comprising a seal located in said channel for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.
6. The fitting as in claim 1, further comprising a seal located in said channel above said collar for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.
7. The fitting as in claim 6, wherein said seal is an O-ring.
8. The fitting as in claim 1, wherein:
   said collar separates said fitting into upper and lower segments; and
   said channel includes a constant diameter throughout said lower segment.
9. The fitting as in claim 1, wherein said top and bottom ends have annular configurations.
10. The fitting as in claim 8, wherein the toilet horn has a tapered configuration that is complementary to a configuration of said fitting upper segment for smooth reception therein.
11. The fitting as in claim 1, wherein the toilet horn has a cylindrical configuration.
12. A drainage fitting for use with a toilet having a toilet horn, said fitting comprising:
   a tubular member having an outer wall defining open top and bottom ends and defining a channel therebetweent, said channel having a top diameter at said top end and a bottom diameter at said bottom end;
   a collar being positioned between said top and bottom ends and extending outwardly from said outer wall for
supporting said fitting in an upright configuration and dividing said tubular member into upper and lower segments;

wherein said channel has a tapered-cylindrical configuration at said upper segment and said channel has a cylindrical configuration at said lower segment, said channel top diameter being larger than a diameter of said channel at said collar; and

wherein the toilet horn is receivable in said tubular member upper segment through said channel top end.

13. The fitting as in claim 12 for use with a toilet flange having a ledge upwardly adjacent an outlet, wherein said collar has a configuration complimentary to a configuration of the toilet flange ledge and said fitting bottom end has a configuration complimentary to a configuration of the toilet flange outlet, whereby said fitting is receivable in the toilet flange.

14. The fitting as in claim 12, further comprising:

a plurality of toilet attachment bolts extending upwardly from said collar for attachment to the toilet;

wherein said collar has a bottom face attachable to a floor surface; and

wherein said fitting bottom end is attachable to a drain pipe.

15. The fitting as in claim 12, wherein the toilet horn has a configuration selected from the group consisting of cylindrical and tapered-cylindrical, said fitting further comprising a seal located in said channel above said collar for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.

16. A drainage fitting for use with a toilet having a toilet horn, said fitting comprising:

a tubular member having an outer wall defining open top and bottom ends and a channel therebetween;

a collar extending outwardly from said outer wall, said collar being positioned between said top and bottom ends for supporting said fitting in an upright configuration;

wherein said outer wall includes a tapered configuration such that a diameter of said channel becomes smaller said top end to said collar, and

wherein the toilet horn is receivable through said channel top end.

17. The fitting as in claim 16 for use with a toilet flange having a ledge upwardly adjacent an outlet, wherein said collar has a configuration complimentary to a configuration of the toilet flange ledge and said fitting bottom end has a configuration complimentary to a configuration of the toilet flange outlet, whereby said fitting is receivable in the toilet flange.

18. The fitting as in claim 17, wherein the toilet horn has a configuration selected from the group consisting of cylindrical and tapered-cylindrical, said fitting further comprising a seal located in said channel above said collar for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.

19. The fitting as in claim 16, further comprising:

a plurality of toilet attachment bolts extending upwardly from said collar;

wherein said collar has a bottom face attachable to a floor surface; and

wherein said fitting bottom end is attachable to a drain pipe.

20. The fitting as in claim 19, wherein the toilet horn has a configuration selected from the group consisting of cylindrical and tapered-cylindrical, said fitting further comprising a seal located in said channel above said collar for sealing said fitting to the toilet horn when the toilet horn is received in said channel top end.