United States Patent [19]

O'Connell

[11] **3,896,510**

[45] **July 29, 1975**

[54] **APPARATUS FOR INSTALLING A WATER CLOSET BOWL**

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[21] Appl. No.: **395,411**

[52] **U.S. Cl.** ..... **4/252 R;** 4/DIG. 7; 285/56

[51] **Int. Cl.** **F16l 55/00**

[58] **Field of Search** ..... 4/DIG. 7, 68, 252 R; 285/56, 58; 52/34, 35

[56] **References Cited**

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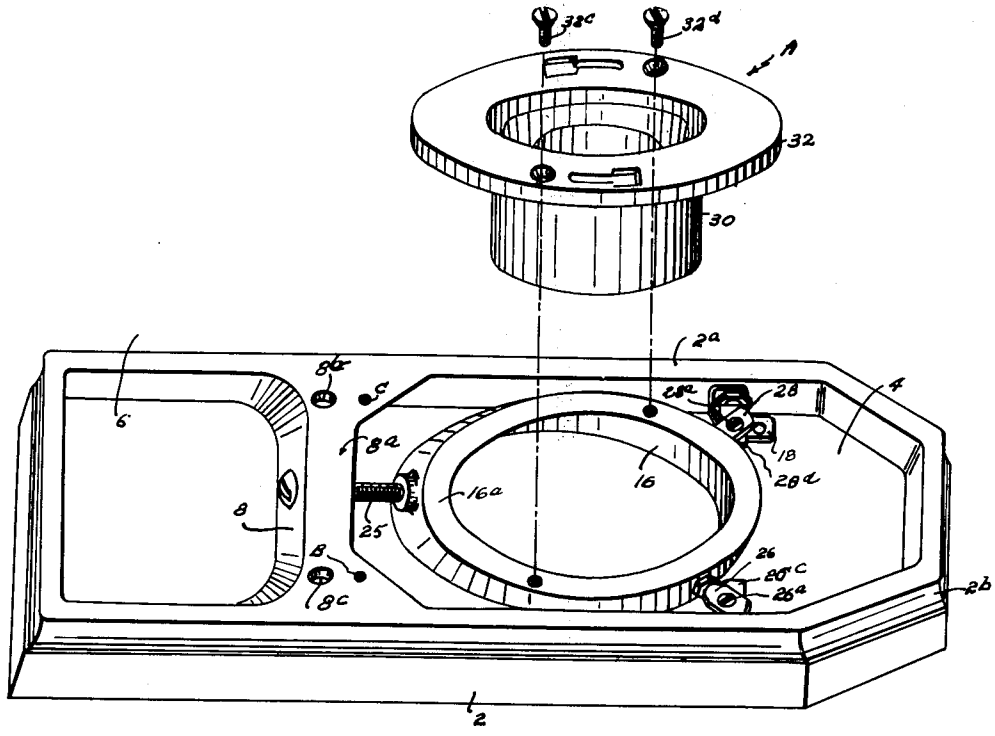
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Primary Examiner—John W. Huckert
Assistant Examiner—Stuart S. Levy
Attorney, Agent, or Firm—Munroe H. Hamilton

[57] **ABSTRACT**

A mounting base assembly provides for locating a water closet bowl in a raised position relative to a rough flooring through which is located a waste pipe aperture and a waste pipe. The mounting base assembly includes a rigid enclosure body defined by an outer continuous side wall portion having an upper bearing edge of a shape coinciding with the shape of the water closet bowl at its bottom section. Bracket fastening means provide for locating the outer side wall portion in a solidly secure and leveled relationship with an uneven surface of flooring. A closet flange is supported within the outer side wall portion of the base in a position to be concentrically oriented with the waste pipe when the base is secured in place. The closet flange is sealably mounted around the upper end of the waste pipe and receives a waste end or horn of the water closet bowl in a sealed and solidly fixed position which resists rocking movement or other displacement. A reinforcing rib integral with the base, and transversely disposed therein, imparts increased strength and rigidity to the base and also provides an upper bearing surface for additional bearing stability of the bowl.

4 Claims, 12 Drawing Figures



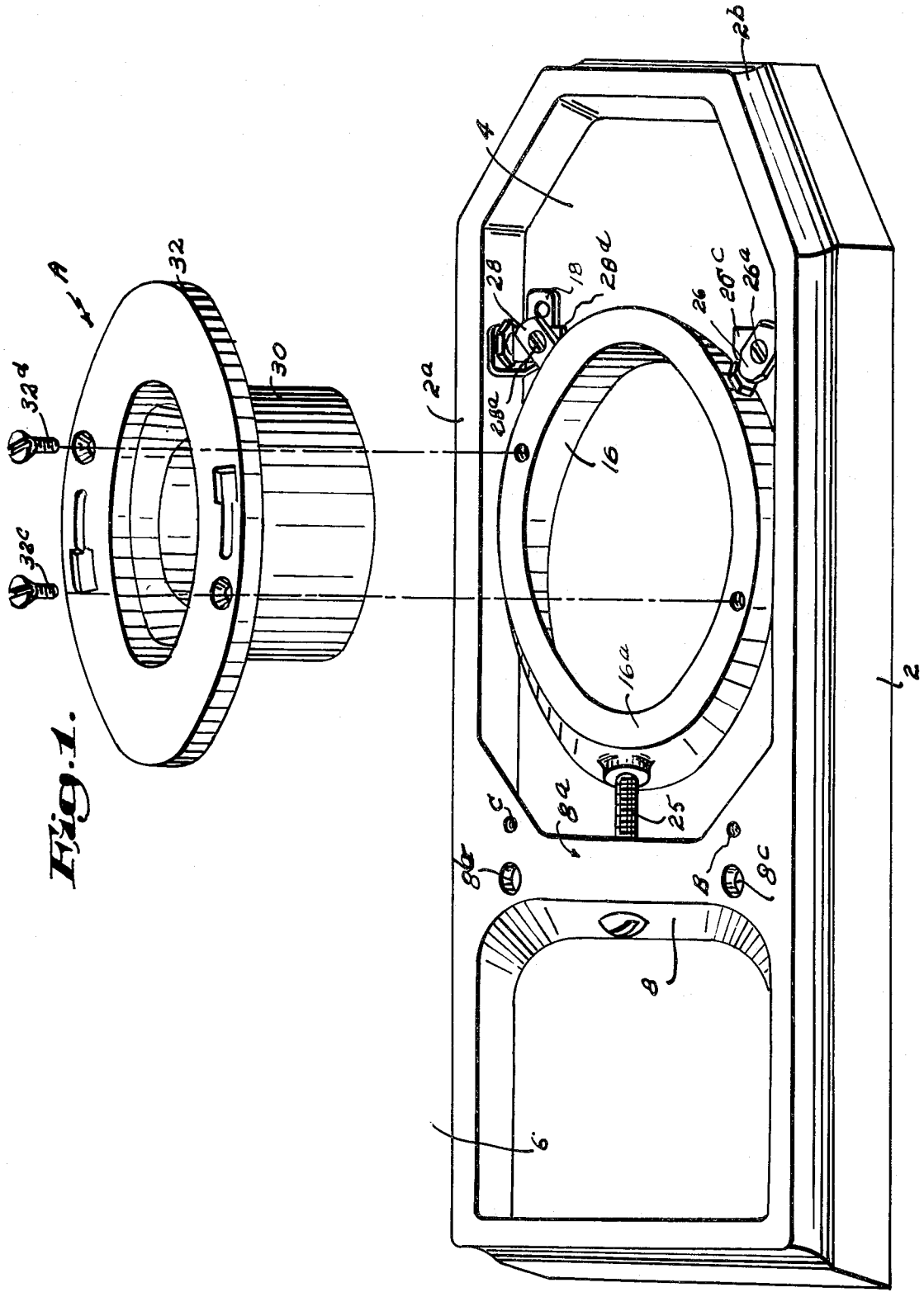


Fig. 1.

Fig. 2.

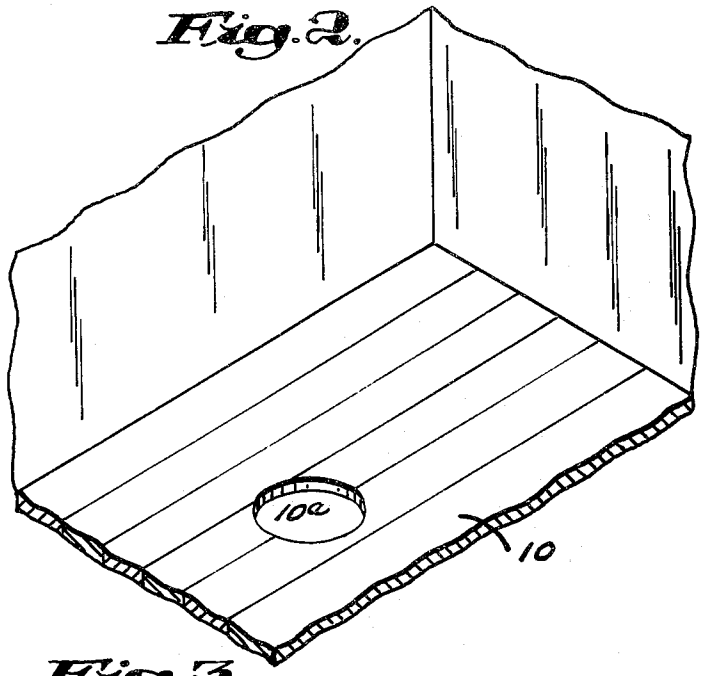


Fig. 3.

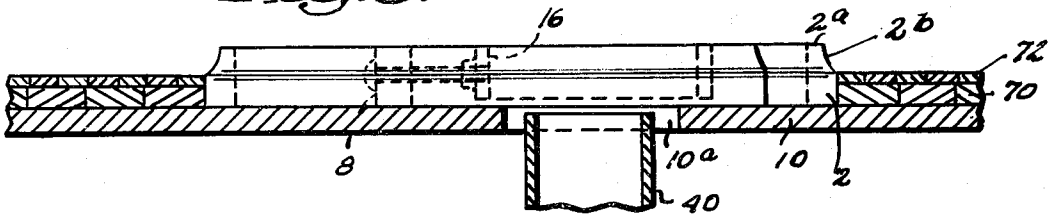


Fig. 4.

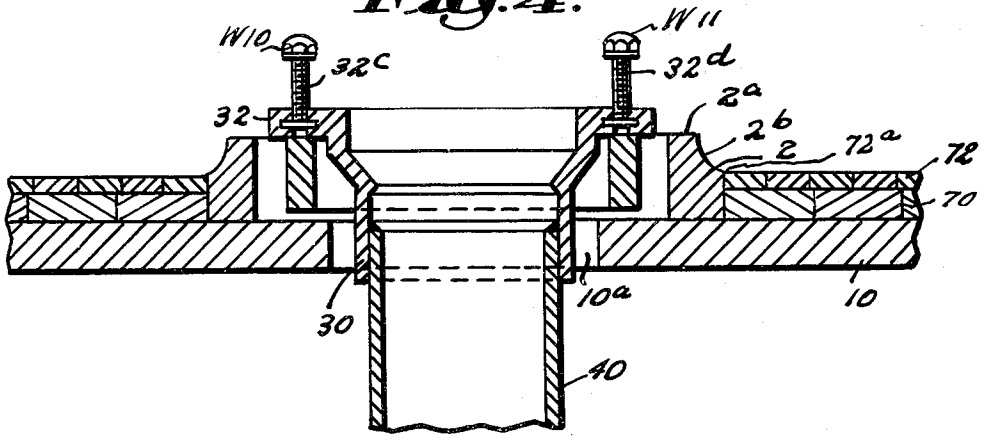


Fig. 5.

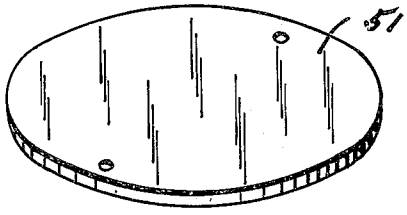


Fig. 6.

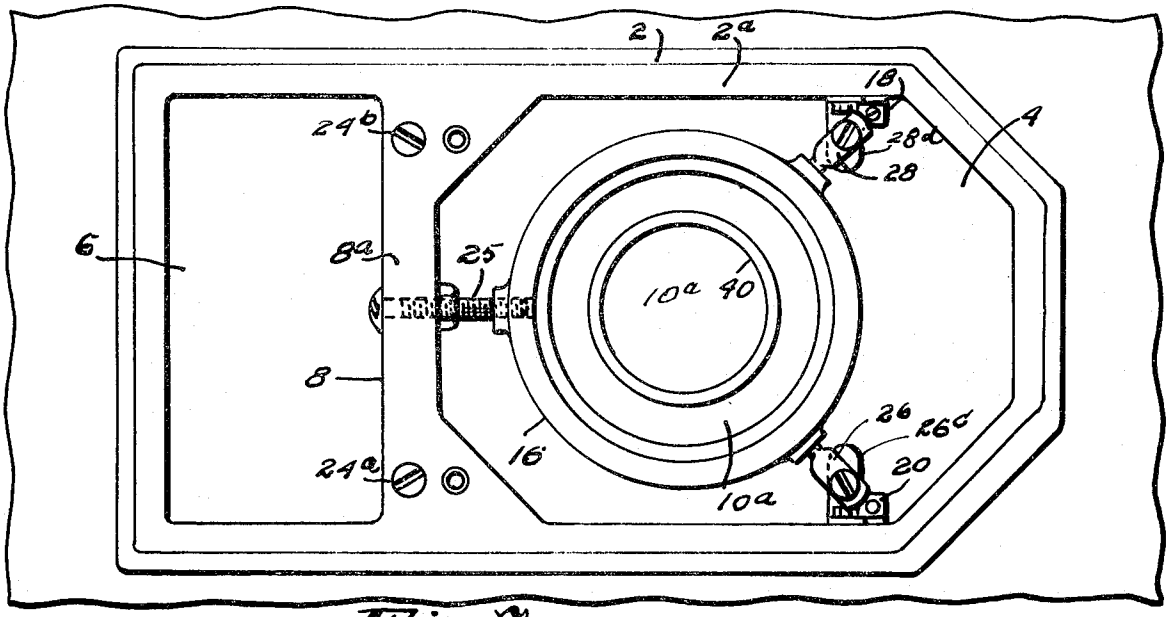


Fig. 7.

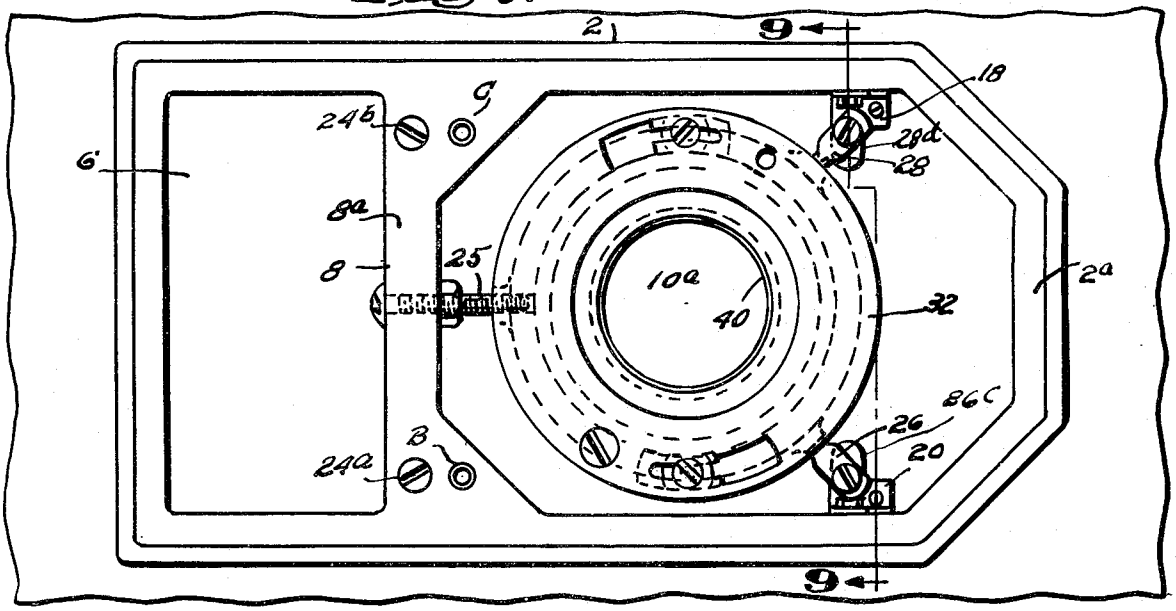


Fig. 8.

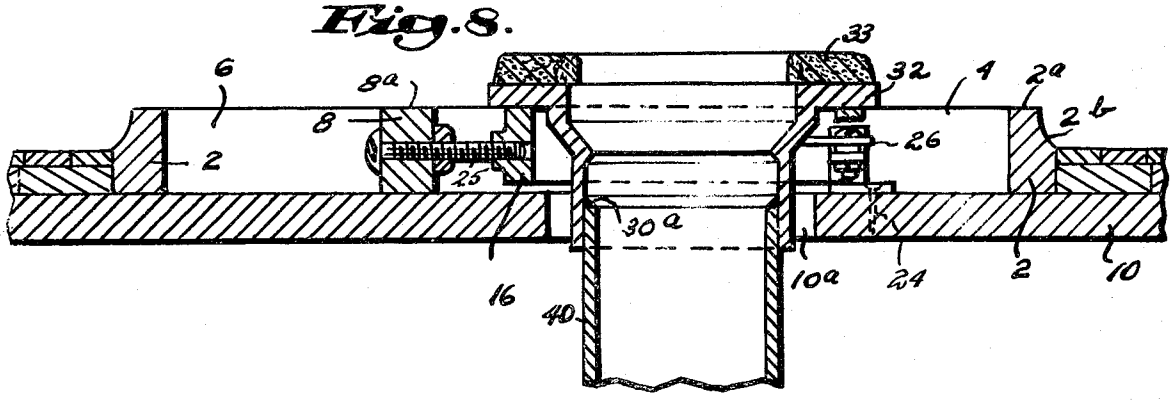


Fig. 9.

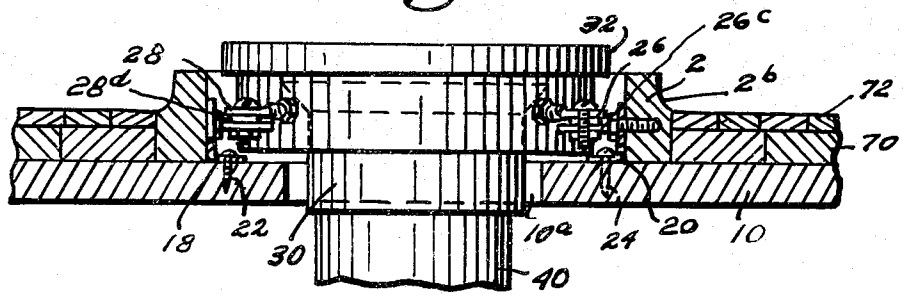


Fig. 10.

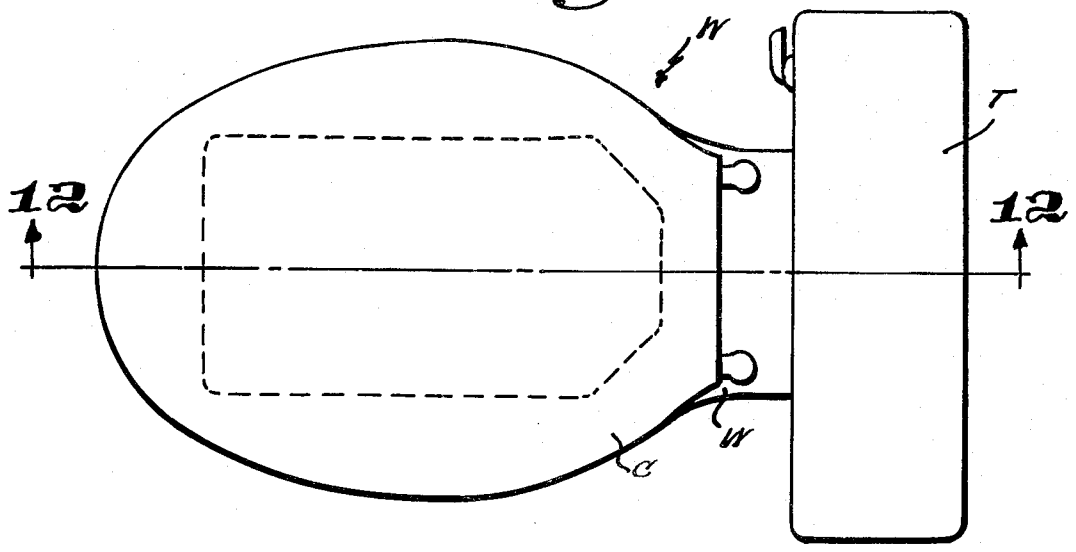
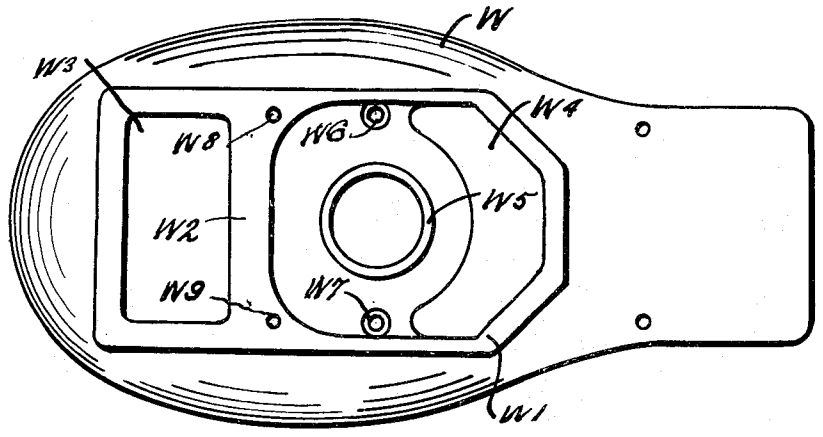


Fig. 11.



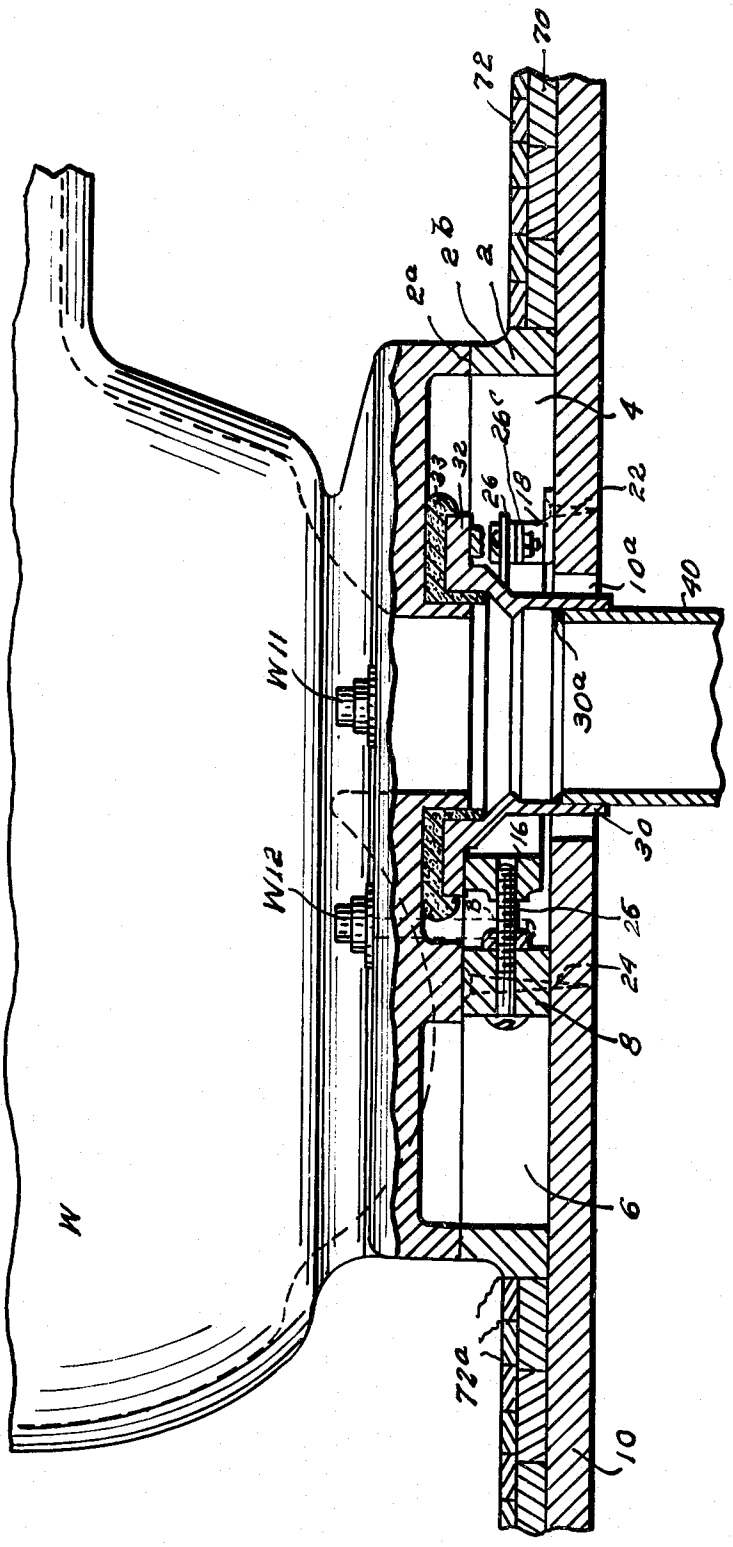

70
72
2a
2b
2
4
26c
33
32
26
18
22
10a
40
30a
W11
W12
30
16
25
24
8
6
72a
10
W

Fig. 12.

APPARATUS FOR INSTALLING A WATER CLOSET BOWL

This invention relates to the field of plumbing fixtures and more particularly to a mounting base assembly for use in installing a toilet bowl in a bathroom or other toilet facility. In a more specific aspect, the invention is concerned with a means for locating and supporting a toilet bowl in a raised position relative to a flooring through which a hole is cut and a waste pipe is located.

Conventional methods and equipment employed in installing a water closet about a waste pipe located through a floor opening are unsatisfactory in several respects. The present custom followed by many plumbers is to install the bottom edge of the toilet bowl directly in contact with a finished floor surface which has been covered with bathroom tile. With such an assembly, there may occur slight displacement and rocking of the bowl because of an uneven floor area on which the bottom of the bowl is supported. This may result in lifting of tile, leaky seals, rotting of the floor, the accumulation of bathroom odors, and other problems.

The chief object of the present invention is to provide a base structure for receiving a water closet bowl in a manner such that a more solidly supported mounting of the bowl is realized and the occurrence of rocking or other displacement of the bowl may be prevented regardless of the floor area of uneven character.

It is also an object of the invention to provide a water closet assembly over a floor surface mounted in a manner which prevents lifting of tile and rotting of said floor surfaces and as a result, eliminates bathroom odors and facilitates cleaning.

With these objectives in mind, I have devised a special mounting base which can be quickly located around a waste pipe aperture in a floor and solidly secured against a sub-floor surface in correctly located relationship and in a fixed and substantially level position. Less labor is required to set the base and secure it than is ordinarily required in conventional installation of a bowl, and by means of the base, a very solid mounting is realized, also allowing the interchange of closet flanges, for the type of waste material used.

The concept of providing a mounting base on which a water closet bowl may be located has been proposed in the art and described in U.S. Pat. No. **2,673,985** and U.S. Pat. No. **1,354,199.** However, the construction of these prior art devices has proven to be impractical in providing a complete supporting action for the bottom section of the toilet bowl. This is especially the case with a water closet bowl of the type which has a transversely disposed bridging section customarily employed to prevent cracking and breaking of lower bowl sections. Difficulty has also been found to be present with these prior art devices in obtaining a satisfactorily sealed relationship of the lower bowl section around the upper end of a waste pipe.

I find these difficulties may be avoided to a very large degree by providing a specially designed mounting base in which is included complementary reinforcing portions and mating surfaces for bearing the weight of the bowl in a uniformly supported manner at all points so that rocking and bending stresses can be eliminated.

An important feature of my improved base is provision of outer bearing edges and a reinforcing rib transversely disposed between the bearing edges. These parts are constructed and arranged to strengthen the base, and more importantly, to enable the base to mate with and act as a bearing surface for the entire underside of the conventional toilet bowl including a transversely disposed bridging section. There is thus accomplished an arrangement of parts which can be rapidly assembled by a workman so that the toilet bowl and base may be solidly locked together in a substantially levelled position.

The nature of the invention and its other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which:

FIG. **1** is an exploded view of a mounting base assembly of the invention illustrating in perspective the several components employed, and with one of the components, namely, a closet flange being shown in a raised position;

FIG. **2** is a fragmentary perspective view of a floor through which a waste opening has been cut to receive a water closet bowl therearound as a first step in installing a toilet bowl;

FIG. **3** is a fragmentary cross sectional view of a portion of the floor and waste opening of FIG. **2** and also illustrates a second step of installing the base and ring assembly of FIG. **1,** shown in elevation, around the waste opening and a waste pipe located through the opening.

FIG. **4** is another cross sectional view similar to FIG. **3,** but further illustrating a step of locating a closet flange in a fully assembled position about a waste pipe on the supporting ring;

FIG. **5** is a perspective view of a safety cover element which can be utilized with the mounting base assembly to overlie and protectively enclose the open top end of the closet flange during a period when installation of the water closet bowl may be delayed;

FIG. **6** is a fragmentary plan view of the base and ring assembly shown in FIG. **3**;

FIG. **7** is a fragmentary plan view of the base and ring assembly shown in FIG. **3**;

FIG. **8** is a fragmentary cross sectional view of the assembled base components and further illustrating the step of applying a sealing material;

FIG. **9** is a cross sectional view illustrating in more detail the fastening means for the ring component;

FIG. **10** is a plan view of a water closet assembly in a fully completed state on the mounting base of the invention;

FIG. **11** is a bottom plan view of the water closet bowl of FIG. **10**; and

FIG. **12** is a cross section taken on the line **12—12** of FIG. **10.**

In the plumbing trade at the present time, there is in general use a water closet apparatus of the type shown in FIGS. **10** and **11** consisting in a water tank T, a water closet bowl W, and a cover CB. The water closet bowl W is designed to be supported on a base usually of a sub-flooring material and at its bottom section, the bowl W is recessed to provide an outer bearing edge **W1,** a bridging section **W2,** recesses as **W3** and **W4,** and a waste section or horn **W5.** It is also customary in the trade to combine with the bottom section of the closet bowl W, an adapter element commonly referred to in the trade as a closet flange. The adapter element is designed to be attached to the bottom of the bowl W

by means of threaded fastenings known as closet bolts. These closet bolts consist in threaded members which can be engaged in the closet flange and are designed to be inserted through the bottom section of the bowl when it is installed. When thus secured in the bowl, projecting upper ends of the closet bolts are secured by screw caps furnished with the closet flange and closet flange bolts bolts by the supplier. Holes W6, W7, W8 and W9 in the bowl W provide for receiving closet retaining bolts as hereinafter noted. The method and apparatus of the invention are especially designed for use with a toilet bowl of this general construction.

Referring more in detail to the structure shown in the remaining figures of the drawings, and in particular to the mounting base assembly illustrated in FIG. 1, numeral 2 denotes a base element which comprises an enclosure body defined by an outer side wall portion having an upper bearing edge 2*a* of a shape coinciding with the bottom section W1 of the water closet bowl W. Formed within the bearing edge 2*a*, are openings as 4 and 6 and along outer portions thereof the bearing edge is relieved to form a substantially concaved surface 2b which extends continuously around the base.

Transversely disposed between two opposite sections of the bearing edge 2*a* is a reinforcing rib 8 whose upper surface 8*a* lies in the plane of the upper surface of edge 2*a*. Formed in the reinforcing rib 8 are beveled holes 8*b* and 8*c* which are designed to receive therethrough screws 24a and 24b (FIG. 6) or other desired fastenings for securing one end of the base on a sub-floor 10 indicated in FIG. 2. Also illustrated in FIG. 2 is a waste aperture 10A. In FIG. 12 one of the fastenings 24a is further indicated in dotted lines located through the hole 8*b* and driven into the sub-flooring 10.

The base 2 has, in addition to the fastening means in holes 8*b* and 8*c*, a second set of fasteners consisting in L-shaped brackets 18 and 20 which, as indicated in FIG. 1, are located inside the side wall portion 2 at two opposite sides thereof and are secured by lugs 26*c* and 28*d* and fastening means 22 and 24.

In accordance with the invention, I provide in combination with the base element 2 and its reinforcing rib 8, a supporting ring structure 16 which is of a diameter greater than the diameter of the hole 10*a* above-noted. This ring structure 16 is supported in spaced relation to inner sides of the edge 2a at three spaced apart points. As illustrated in FIG. 1, the supporting ring structure is formed with lugs 26 and 28 which are detachably secured by screws 26*a* and 28*a* threaded into lugs 26*c* and 28*d* formed on the L-shaped brackets 18 and 20. Thus, the lug arrangement described provides for supporting two sides of the ring structure and a third side is supported by a threaded member 25 which is solidly supported in the reinforcing rib 8 as shown in FIG. 1. It will be noted that the ring structure 16, by reason of the stationary mounting means indicated, is located at a height such that the upper edge 16*a* lies in a common plane with the edge 2*a* and the upper edge 8*a* of the reinforcing rib 8.

In further combination with the base 2 and ring structure 16, I provide a third component of the mounting base assembly, namely and adapter element A which as earlier noted is commonly refered to in the trade as, a closet flange A which, as shown in FIG. 1, consists in a tubular part 30 and an upper flanged portion 32. The flanged portion 32 is of a size such that it may overlie and fit against the upper edge 16a of the ring structure 16 as is most clearly shown in FIGS. 8 and 12, and in this fitted position of the adapter element, tubular part 30 is arranged to extend downwardly through the hole 10a and to fit snugly around a waste pipe 40, as suggested in FIGS. 8, 9 and 12 with a suitable sealant or lead seal being provided, as indicated at 30a in FIG. 12.

The flanged portion 32 of the adapter element, at two opposite sides, is formed with T-shaped slots R1, R2, most clearly shown in FIGS. 1, 4 and 7 and referred to in the plumbing trade as "capture slots." The underside of the flange portion 32 is also relieved to provide recessed surfaces occurring around the capture slots. These capture slots R1 and R2 are designed to receive standard closet bolts 32c and 32d commonly employed in the trade and most clearly seen in FIG. 4. These closet bolts are also of conventional construction and in the form of the drawing shown in FIG. 4, each bolt includes a threaded post part and a flat bottom lug section made of a size to be received through respective capture slots in the adapter element and to be slid along the narrow portion of the capture slot into interlocking engagement with a recessed surface in the underside of the flange portion 32. Screw caps W10 and W11, indicated in FIG. 4 are commonly provided with these closet bolts 32*c* and 32*d* and remain in place while the base is being secured, as shown in FIG. 4. When the base assembly of the invention is ready for installation of the bowl W, the threaded caps W10 and W11 are removed to allow upper ends of the closet bolts 32*c* and 32*d* to be inserted through holes W6 and W7 of the water closet member W, shown in FIG. 11. After installation of the water closet bowl W, the screw caps W10 and W11 are screwed onto the projecting ends of the closet bolts 32*c* and 32*d*, and one of the threaded caps W11 is shown in FIG. 12 engaged over the closet bolt 32*d*at one side of the bowl W. It will be understood that the threaded cap W10 is similarly engaged over the closet bolt 32*c* at an opposite side of the bowl W. It is also customary to provide additional closet bolts which are located outside of the flange 32. Thus the conventional water closet bowl W, as shown in FIG. 11, is provided with closet bolt holes W8 and W9 and the base assembly of the invention is formed with threaded openings B and C into which may be threaded additional closet bolts as W14, shown in FIG. 12 and secured by a screw cap W12.

An important feature of this closet flange element of the invention is the construction of a flanged part which when fitted on ring section 16 lies in spaced relation to the base edge 2 and also in a raised position above the surface 2a of edge 2, as illustrated in FIG. 8. There is thus provided a surface over which may be superimposed a sealing body 33 as shown in FIG. 8. In addition, the adapter element is constructed with an inner opening through which may be sealably received the waste pipe or horn W5 of bowl W as is further suggested in FIG. 12, as well as a recessed area in capture slots for closet bolts 32c and 32d shown in FIG. 4.

In carrying out the method of installing a water closet bowl in accordance with the invention, a hole 10a is first cut in the floor 10 with the center of the hole being carefully located a required distance form adjacent wall surfaces as specified in customary plumbing practice. The waste pipe 40 is then mounted in the hole 10a as suggested in FIG. 3. Thereafter, the mounting base and ring structure are attached to one another and secured as above described. The base and ring structure

are then located in a position to orient the ring structure **16** in substantially centrally arranged relationship to the top of waste pipe **40,** as shown in FIG. **6.** Thereafter, the closet flange element **32** is secured to the top of the ring structure **16** by means of screws **32***e* and **32***f* which are designed to be threaded into holes **32**g and **32**h, shown in FIG. **1.** One of the screws **32***e* and **32***f* which are designed to be received through holes **32***j* and **32***k* in the adapter element **32** and then threaded into holes **32***g* and **32***h* in the ring **16.** In FIG. **7** one of the screws **32***e*is shown engaged through the adapter element **32** while the hole **32***k* at the opposite side of the adapter element **32** is indicated before the screw **32***f* has been applied.

FIG. **8** illustrated a further step of applying a sealing body **33** around the upper side of the flange **32** to be folllowed by the step of locating the bottom section of bowl W in a position to seat the edge **W1** on the bearing edge **2**a of base **2,** and simultaneously to seat the bridging section **W2** of the bowl on the bearing surface **8**a of the reinforcing rib **8.** When this seated relationship of parts has been completed, the waste end or horn **W5** of the bowl W becomes sealably contained inside of the flanged adapter **32,** as illustrated in FIG. **12.** In securing the bowl in the seated position described, it will be understood that conventional water closet bolts **32**c earlier described and **32**d will be inserted in the capture slots of the flanged adapter in a position to extend upwardly through bolt holes **W6** and **W7** of the bowl W; and holes **W8** and **W9** will receive front bolts as **W14,** earlier described and shown in FIG. **12,** extending through openings B and C of the mounting base. Upper ends of the bolts **32***c* and **32***d,* as well as front bolts as **W14** projecting through the bowl W are secured by screw caps **W10** and **W11,** one of which, **W11,** is shown in FIG. **12.** A screw cap **W12** for a front bolt **W14** is also shown in FIG. **12.** The bolts **32**c and **32**d rest on **16**a as shown in FIG. **4.**

It will be understood that the installation of the base itself may be carried out to be followed by a delay before the bowl is positioned in place, and during such periods of delay, it is possible for foreign material to fall into the waste pipe **40** and make trouble. To avoid this troublesome occurrence, I provide a temporary closure member **51** which may be conveniently combined with the closet flange **32,** and this closure member **51** is illustrated in FIG. **5,** and it will be understood may be secured by the screws **32***e* and **32***f,* earlier referred to for securing the flange **32** to the ring **16.**

It is pointed out that by using the base **2** of the invention, a solidly mounted and levelled pedestal structure is provided which can receive the outer edge of the bowl W in a solidly fixed position resistant to rocking or other displacement. It is also to be noted that this firmly based association of parts is quickly accomplished even though a floor surface of rough, uneven nature is encountered. This is found to accomplish substantial savings in workmen's time. It is particularly to be noted that by using a reinforcing rib **8,** there is prevented the possibility of subjecting the bowl to stresses as can occur with a conventional mounting with the result that cracking of the bowl may be caused.

A further desirable improvement is the raised position of the base allowing a finished floor section **70** and a tile layer **72** to be applied and grouted **72***a* against the base which is under the concaved surface **2***b.* As a result, fluids are prevented from reaching the flooring **70** and rotting of wood sections and objectionable odors are eliminated.

It will be apparent that the base and bowl assembly described is convenient to clean and maintain free from dirt at all times. While I have described the invention in connection with installing a water closet bowl on a wood flooring surface, I may employ a similar arrangement with a concrete floor construction by first installing a metal sleeve or other form at a predetermined distance from wall surfaces, and thereafter the cement floor is poured and the metal sleeve removed to receive a waste pipe. The base is then installed in a similar workmanship manner.

I claim:

1. Apparatus for use with a water closet bowl of the class which is recessed at its underside to provide a tubular waste discharge portion, an outer flat bottom edge extending around the waste discharge portion in spaced relationship thereto, and a bridging section transversely disposed between the tubular waste portion and the front end of the water closet and having a lower bearing surface lying in a plane passing through the bottom surface of the said bearing rim, said apparatus comprising a mounting base for receiving and supporting said outer bearing rim portion of the water closet immediately above the surface of a floor which is formed with an opening for a section of soil pipe projecting upwardly therethrough, said mounting base including an enclosure body having a flat bottom surface constructed and arranged to surround the said soil pipe opening and soil pipe, the upper side of said enclosure body presenting a continuous flat rim portion which is formed of a shape complementary to the bearing rim of the water closet, a reinforcing rib rigidly connected between two opposite sides of the continuous rim portion and being formed with a flat retaining surface arranged to fit against the underside of the said bridging section of the water closet, fastening means located through the said reinforcing rib for solidly anchoring the rib to the said floor, a supporting ring member located inside of the enclosure body, fastening means for holding the ring member in spaced relation to two opposite sides of the enclosure body, screw means located transversely through the reinforcing rib and engaged in the supporting ring for detachably retaining another side thereof and a closet flange element contained within the ring.

2. A structure according to claim **1** in which the closet flange member includes a cover member detachably secured at the upper side thereof for excluding foreign material from entering the flange opening prior to installation of the water closet bowl.

3. A structure according to claim **1** in which the reinforcing rib is formed with fastening apertures through which are received closet bolts are securing the water closet bowl is tightly engaged relationship with the upper side of the reinforcing rib.

4. A structure according to claim **3** in which the fastening means for holding the said supporting ring member in spaced relation to two opposite sides of the enclosure body consists in vertically disposed brackets having lower fastening elements for attaching the brackets to the said floor and upper fastening elements for connecting the brackets with respective ring portions. said brackets and their respective fastenings cooperating with the said screw means in the reinforcing rib to secure the supporting ring member in spaced relationship inside the enclosure body with the upper side of the ring lying in the plane of the upper side of the enclosure body and the reinforcing rib.

* * * * *