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**Sanitary ware and method of installation**

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(56) Related Art  
**AU 41622/93**  
**AU 70830/91**  
**AU 76421/91**

### Abstract

The present invention provides sanitary fittings (11) with an outlet spigot (14) the fittings (11) being adapted for a method of installing the fittings (11) onto a drain orifice (17) in a floor (16) or like surface (13) where the outlet spigot (14) of the fitting  
5 (11) is axially misaligned with the drain orifice (17). The fittings (11) have an extensive body portion that conceals the floor (13) in the vicinity of the drain orifice (17).



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**COMPLETE SPECIFICATION**

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Invention Title: Sanitary Ware and Method of Installation

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

## SANITARY WARE AND METHOD OF INSTALLATION

The present invention relates to sanitary ware, and in particular, to a shower tray and bath and a method of installing same.

Sanitary ware articles such as shower trays and baths are installed on a floor or  
5 similar base and the floor is provided with a drain orifice. Generally the floor is cast from concrete and the drain orifice takes the form of a plastic pipe which is positioned prior to the pouring of the concrete. As a consequence, once the floor is cast, the position of the drain orifice is fixed. Often the accuracy of the positioning of the drain orifice leaves much to be desired and there is a mis-alignment between the drain orifice  
10 and the drain outlet of the sanitary ware fitting when the sanitary ware fitting is positioned in its final place.

In respect of baths this mis-alignment is not so serious since the drain outlet of the bath is accessible to the installer when the bath is in its final position. This is because the bath is mounted on legs or blocks which support the bath above the floor.  
15 Generally, the bath is located in a corner of the bathroom and the free end and adjacent free side of the bath are enclosed after the drain outlet of the bath has been connected to the drain orifice and the floor.

It is known from Australian Patent No. 655120 (previously Application No. 41622/93) in the name of Key Plastics Limited to provide a rotary adaptor which  
20 overcomes any mis-alignment between the drain orifice in the floor and the drain outlet of the bath. This connector consists of two generally cylindrical cups which face each other and which are sealingly rotatable about the longitudinal axis of the connector. The lower one of the cups has an outlet spigot which is able to be pushed into the drain orifice in the floor and is sealed in relation thereto by means of an O-ring. The other  
25 (upper) cup has an inlet opening with a spigot which carries an internally threaded collar. The inlet and outlet spigots are each spaced from the longitudinal axis of the connector and are located immediately adjacent the periphery of the corresponding cup. Thus, by rotation of the cups, the inlet and outlet spigots can be either aligned with each other, or mis-aligned by a dimension which approaches the diameter of the cups.

By use of this known connector, the outlet spigot can be placed in the drain outlet in the floor, the bath placed in its final position, and the arm of the plumber inserted underneath the bath to rotate the upper cup into a position which aligns the internally threaded collar with the threaded spigot which forms the drain outlet of the bath. Once this alignment has taken place, the internally threaded collar can be rotated to connect the outlet spigot of the bath with the inlet spigot of the connector. It will be appreciated in this connection that the inlet to the connector is a male portion in the form of a spigot, even though it is provided with an internally threaded collar which forms a screw-on connecting sleeve. It will also be appreciated that the plumber is able to insert a tightening tool such as multigrips or a monkey wrench, and thereby tighten the internally threaded collar to ensure a watertight seal between the drain outlet of the bath and the connector.

In relation to the installation of shower trays, the position is much more complicated because access cannot be obtained to the underside of the shower tray since when it is in position, the shower tray itself covers the floor surrounding the drain orifice. The particular difficulties in relation to the prior art installation of shower trays will be described in more detail hereafter in relation to the drawings. Suffice is to say for the moment that the installation procedure is cumbersome.

Similarly, in relation to baths, whilst acrylic baths are a relatively low cost, are easy to manufacture, and have achieved wide spread market acceptance, it would be desirable to manufacture a one piece acrylic bath including not only the bath but the side wall and adjacent end wall and thereby overcome the need for such walls to be fabricated in situ. However, while such a bath may be able to be fabricated, hitherto no one has known how to install such a bath.

Furthermore, manufacture of an acrylic bath including not only the bath but also the side wall or walls and the adjacent end wall or walls to overcome the need for such walls to be fabricated in situ could also be performed using pre-fabricated side-end wall sub- assemblies. The bath and the wall sub-assembly or sub-assemblies would be assembled prior to installation. This would however again be subject to the

aforementioned problems of installation due to lack of access to the underside of the bath when in position.

It is the object of the present invention to substantially overcome or at least ameliorate one or more of the foregoing problems.

5 There is herein disclosed a bath or shower tray having an integrally formed drain outlet on the underside thereof, said outlet being adapted for pushing into sealing engagement with a connector in fluid communication with a drain orifice.

Preferably, the drain outlet includes a collar having a drain spigot attached thereon.

10 Embodiments of the present invention will now be described with reference to the drawings in which:

Fig. 1 is an exploded perspective view illustrating a prior art method of shower tray installation:

15 Fig. 2 is a similar view but showing the method of installation of the shower tray of the preferred embodiment;

Fig. 3 is a perspective view of the rotary connector utilised in Fig. 2;

Fig. 4 is a vertical cross-sectional view through the installed shower tray showing the drain orifice in the floor and the drain outlet in the tray;

20 Fig. 5 is an exploded perspective view illustrating the components to be assembled in order to arrive at the position illustrated in Fig. 4; and

Fig. 6 is an exploded perspective view showing the installation of an integrally formed bath with side and end walls.

Fig. 7 depicts a preferred embodiment of a bath with prefabricated side walls.

25 Fig. 8 presents an exploded perspective view showing the bath and pre-fabricated wall sub-assemblies.

Fig. 9 depicts a slot-flange embodiment whereby pre-fabricated wall sub-assemblies and the bath can be assembled.

30 As seen in Fig. 1, a conventional shower tray 1 having a drain pipe 2 is to be installed in a formed concrete base 3 with the drain pipe 2 interconnecting the drain outlet 4 and a floor waste 5. Preferably at the time the base 3 and floor 6 are cast in concrete, a channel 7 is left "roughed out". The channel 7 leads from the centre of the



base 3 to the floor waste 5 and is intended to accommodate the drain pipe 2. In the event that the channel 7 is for some reason omitted at the time the base 3 and floor 6 are cast, then it is necessary for the concrete to be manually removed which is an expensive and time consuming procedure.

5 The drain pipe 2 is connected to the drain outlet 4 by means of any conventional method such as a threaded collar or by means of gluing. In any event, this connection must be made before the shower tray is lowered into its position in order that access can be gained to the drain outlet 4 in order to make the connection. In addition, the drain pipe 2 must be cut to length and the 45° connection to the floor waste 5 made with dry joints before final assembly with glue. The final assembly is required to take place with wet concrete in the channel 7 so that in its final position the drain pipe 2 is surrounded by concrete and the floor surface in the vicinity of the channel 7 is smoothed flush with the remainder of the floor 6.

10 It is then necessary to wait a period of four or five days before tiles 8 are subsequently laid on the concrete floor 6. If this time period is shortened, then it is likely that the tiles 8 on the concrete floor will leak and/or lift off due to poor adhesion between the newly laid concrete and the tiles. This is a common source of leakage in domestic bathrooms where there is insufficient coordination between the plumber laying the shower tray and the different tradesman in the form of a tiler who lays the tiles 8.

15 All in all the procedure is relatively slow, cumbersome and fraught with various difficulties.

20 In Figs. 2-5, the first embodiment of the present invention will be described which substantially overcomes or at least ameliorates the above mentioned difficulties. With particular reference to Fig. 2, the shower tray 11 and base 13 are substantially as before as is the floor 16 and its floor waste 15. The floor 16 is provided with tiles 18 which can be laid either before or after the installation of the shower tray. Substantially centrally positioned within the base 13 is a drain orifice 17 which takes the form of a plastics pipe installed prior to the pouring of the base 13 and floor 16. the orifice 17 is connected either within the floor 16 or underneath it, to the floor waste

15 and hence to the sewer (not illustrated). Positioned in between the shower tray 11 and the base 13 is a rotary connector 12 of the general type described in the above mentioned Australian patent.

As seen in Fig. 3, the connector 12 is provided with an upper cup 21, a lower cup 22, an outlet spigot 23 and a push seal inlet opening 24.

As best seen in Fig. 4, the outlet spigot 23 is provided with an O-ring 26 which enables a seal to be formed between the drain orifice 17 and the outlet spigot 23 when the spigot is pushed therein and the lower cup 22 brought to rest against the base 13. The lower cup 22 also has a rim 28 which supports the upper cup 21 and bears against an O-ring 29 carried by the upper cup 21. The O-ring 29 provides a seal between the upper cup 21 and lower cup 22 but permits the two to be rotated relative to each other.

The inlet opening 24 in the upper cup 21 is provided with a flexible rubber annulus 31 which is maintained in position by means of a plastic locking cap 32.

As also seen in Figs. 4 and 5, the drain outlet 14 in the shower tray 11 takes the form of a central depression 34 having a collar 35 onto which is glued a drain spigot 36 having a tapered lead in portion. The spigot 36 is provided with a removable cap 37 (Fig. 5 only) which prevent damage to the spigot 36 during transport. A push-on drain cover 38 is also provided to prevent unintended entry of small articles into the drain outlet 14.

The above described arrangement enables the drain orifice 17 to be mis-aligned with the drain outlet 14 without any serious consequences arising. This is because with the spigot 23 pushed into the drain orifice 17, the lower cup 22 of the connector 12 can be rotated about the drain orifice 17 as indicated by arrow A in Fig. 5. In addition, the upper cup 21 can be rotated relative to the lower cup 22 as indicated by arrow B in Fig. 5. In this way the push seal inlet opening 24 can be located underneath the final position of the drain outlet 14. This is easily determined by means of a paper template, for example, (not illustrated) which can be provided in the box in which the shower tray is transported to the site. Alternatively, the side of the box itself can be cut down



by the installer in order to make a suitable template. As an alternative to a template, by means of simple trial and error the final position for the connector 12 can be determined so that the spigot 36 can be pushed into the inlet opening 24 thereby deforming the rubber annulus 31 and providing a seal therebetween.

5 The remainder of the installation of the shower tray 11 is essentially conventional with appropriate adhesives and/or a bed of mortar surrounding the connector 12, being provided as required. In particular, it will be apparent to those skilled in the art that the above described arrangement avoids the need for a delay in laying in tiles 18 and thus reduces the degree of coordination required by various  
10 tradesmen on site.

A similar situation arises in relation to the installation of a bath 40 as illustrated in Fig. 6. The bath is preferably made from acrylic or similar plastics material and is provided with the bath tub 41 itself, a surrounding rim 42, an end wall 43 and side wall 44. The end wall 43 and side wall 44 are adjacent and the bath 40 is  
15 intended to be installed in a corner 45 of a bathroom as illustrated in Fig. 6. The bath tub 41 is provided with a drain spigot 46 illustrated by broken lines in Fig. 6. The spigot 46 is substantially the same as the spigot 36. The connector 12 and drain orifice 17 are as in Figs. 2-5.

The bath 40 is able to be installed by inserting the connector 12 in the drain  
20 orifice 17 as before, rotating the upper cup of the connector 12 so as to align the inlet opening 24 with the drain spigot 46 (if necessary using a template) and then finally lowering the bath 40 into position so as to insert the drain spigot 46 in sealing arrangement with inlet opening 24.

It will be apparent that since the end wall 43 and adjacent side wall 44 are  
25 provided in integral fashion with the bath 40, no access is able to be achieved to the connection between the drain orifice 17 and the drain spigot 46 once the bath 40 is in position. Furthermore, tiles 18 can be laid on both the floor 16 and walls 48 as desired, either before or after installation of the bath 40.

Finally, it will be apparent to those skilled in the art that if the bath is not to be installed in a corner, then the bath 40 can be provided with two end walls 43 and two side walls 44 and thereby be free standing, or be provided with two side walls 44 and one end wall 43 and thereby be mounted against a wall but not in a corner.

5 It will also be apparent to those skilled in the art that since it is not necessary to glue or tighten any joint between the drain spigot 46, connector 12 and drain orifice 17, the above described arrangement provides a substantial advantage over the installation method and apparatus disclosed in the above mentioned Australian patent. This advantage is to be contrasted with a conventional bath in which the drain spigot is  
10 externally threaded and access to tighten the necessary threaded connector is required.

In Fig. 7, a second embodiment of a bath 40 is described. The bath 40 is fabricated from a number of sub-assemblies. The bath 40 and wall sub-assemblies are assembled prior to installation. The bath 40 is preferably made from acrylic or similar plastic material and is provided with the bath tub 41 itself, a surrounding rim 42 and a  
15 downward projecting edge 80 which is formed in the surrounding rim 42. An end wall 70 and adjacent side wall 72 can be formed in a single piece, preferably from the same acrylic or similar plastic material as the bath. The bath 40 is intended to be installed in a corner 45 of a bathroom as illustrated in Fig. 6 and a single wall sub-assembly say 70, 72 is assembled with the bath prior to installation.

20 In this embodiment, the bath tub 41 is provided with a drain spigot 46 illustrated by broken lines in Fig. 7. The spigot 46 is substantially the same as the spigot 36 shown in Figs. 4 and 5. The connector 12 and drain orifice 17 are as shown in Figs. 2-5.

The bath 40 of this embodiment is able to be installed by inserting the  
25 connector 12 in the drain orifice 17 as before, rotating the upper cup of the connector 12 so as to align the inlet opening 24 with the drain spigot 46 (if necessary using a template) and then finally lowering the bath 40 into position so as to insert the drain spigot 46 in sealing arrangement with inlet opening 24.

It will be apparent that since the end wall 70 and adjacent side wall 72 are assembled in integral fashion with the bath 40 of this embodiment prior to installation, no access is able to be achieved to the connection between the drain orifice 17 and the drain spigot 46 once the bath 40 is in position. Furthermore, tiles 18 can be laid on both the floor 16 and walls 48 as desired, either before or after installation of the bath 40.

It will again be apparent to those skilled in the art that if the bath 40 considered in this embodiment is not to be installed in a corner, then the bath 40 can be provided with two end walls 70,74 and two side walls 72,76 (see Fig. 7) and thereby be free standing, or be provided with two side walls 72,76 and one end wall 70 and thereby be mounted against a wall but not in a corner.

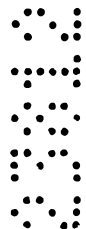
It will also be apparent to those skilled in the art that since it is not necessary to glue or tighten any joint between the drain spigot 46, connector 12 and drain orifice 17, the above described arrangement provides a substantial advantage over the installation method and apparatus previously discussed with reference to Australian patent No. 655120. This advantage is to be contrasted with a conventional bath in which the drain spigot is externally threaded and access to tighten the necessary threaded connector is required.

Turning to Fig. 8, an exploded view of the bath 40 considered in this embodiment along with wall sub-assemblies 70,72 and 74,76 are shown. Wall sub-assembly 70,72 is depicted as an integral sub-assembly with side wall 72 and end wall 70 formed by a single piece of material. The same comments apply to wall sub-assembly 74,76. It is noted however that the wall sub-assemblies could just as easily be formed of individual end walls 70 and 74 and of individual side walls 72 and 76. An appropriate set of wall sub-assemblies is selected for assembly with the bath 40 depending on whether the bath is to be mounted in a corner, against a wall or is to be free standing.

Fig. 9 depicts a cross sectional view of the bath rim 42 and side wall 72 when viewed at sectional plane 78 (see Fig. 7). The bath rim 42 is provided with a downward

projecting edge 80, behind which a second projection 94 is formed in the material of the bath rim 42. Together, projections 80 and 94 form a slot 90 into which an upper flange 92 of side wall 72 can be fitted. The width 96 of the side wall 72 is such that after flange 92 is fitted into slot 90, the wall 72 and outer face of projecting edge 80  
5 form a substantially flat surface without sharp projections which are undesirable in a bathroom environment.

The foregoing describes only a number of embodiments of the present invention and modifications, obvious to those skilled in the art, can be made thereto without departing from the scope of the present invention.



**The claims defining the invention are as follows:**

1. A bath or shower tray having an integrally formed drain outlet on the underside thereof, said outlet being adapted for pushing into sealing engagement with a connector in fluid communication with a drain orifice.
- 5 2. A bath or shower tray according to claim 1, wherein said drain outlet includes a collar having a drain spigot attached thereon.
3. A bath or shower tray according to claim 1 or claim 2, wherein the bath has an integrally formed side wall on at least one side and an adjacent end.
4. A bath or shower tray according to claim 1 or claim 2, wherein the bath  
10 has pre-fabricated side wall sub-assemblies on at least one side and an adjacent end, said sub-assemblies being assembled together with the bath before the bath is installed.
5. A bath or shower tray having an integrally formed drain outlet on the underside thereof, said outlet being adapted for pushing into sealing engagement with a connector in fluid communication with a drain orifice, said bath being substantially as  
15 herein described with reference to Fig. 6 or Figs. 7 to 9, said shower tray being substantially as herein described with reference to Figs. 2 to 5.

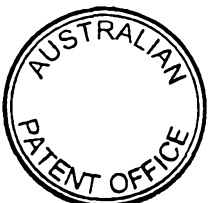
**Dated 29 September, 2000**

**Caroma Industries Limited**

**Patent Attorneys for the Applicant/Nominated Person**

**SPRUSON & FERGUSON**

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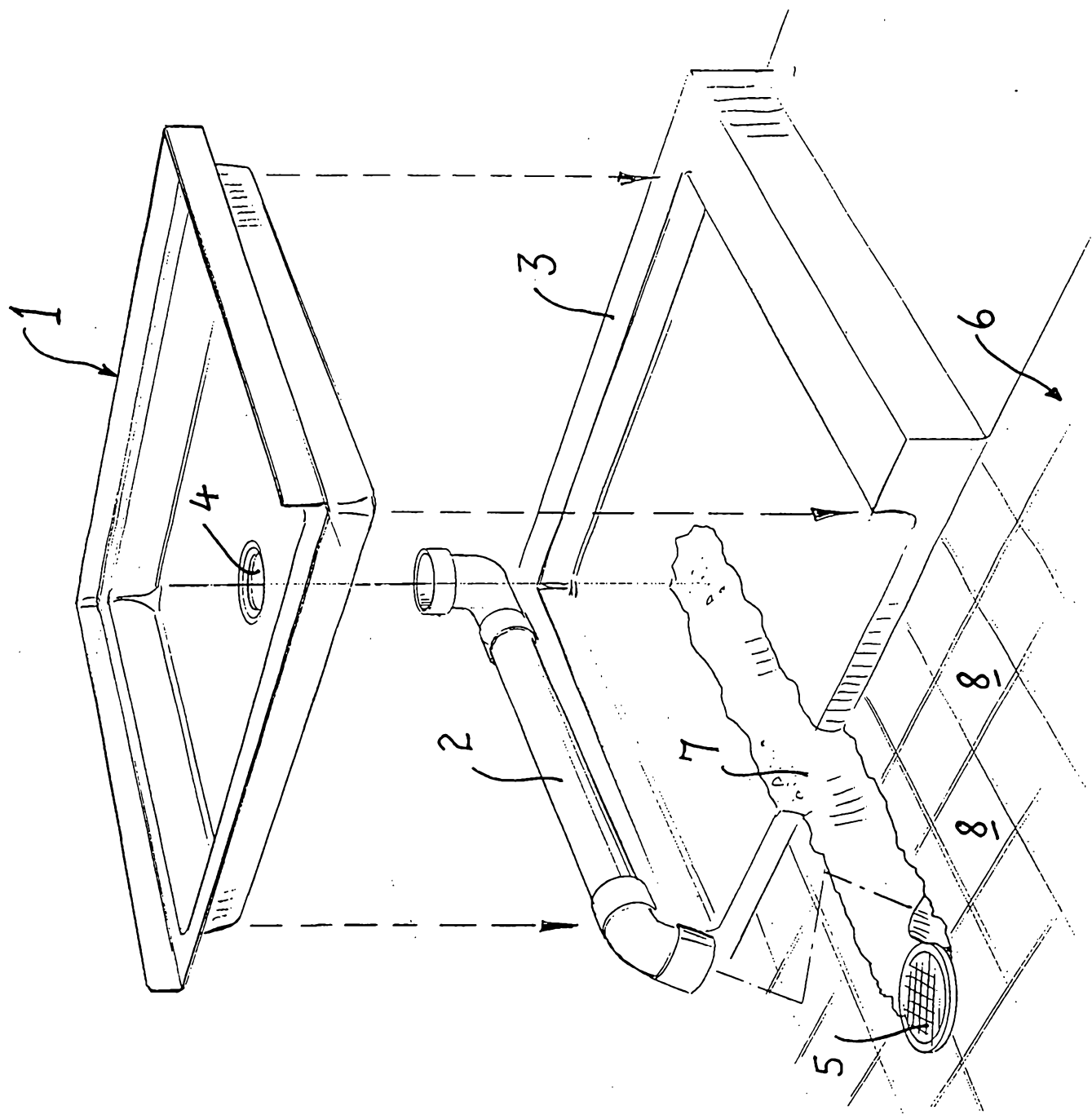


FIG. 1  
PRIOR ART

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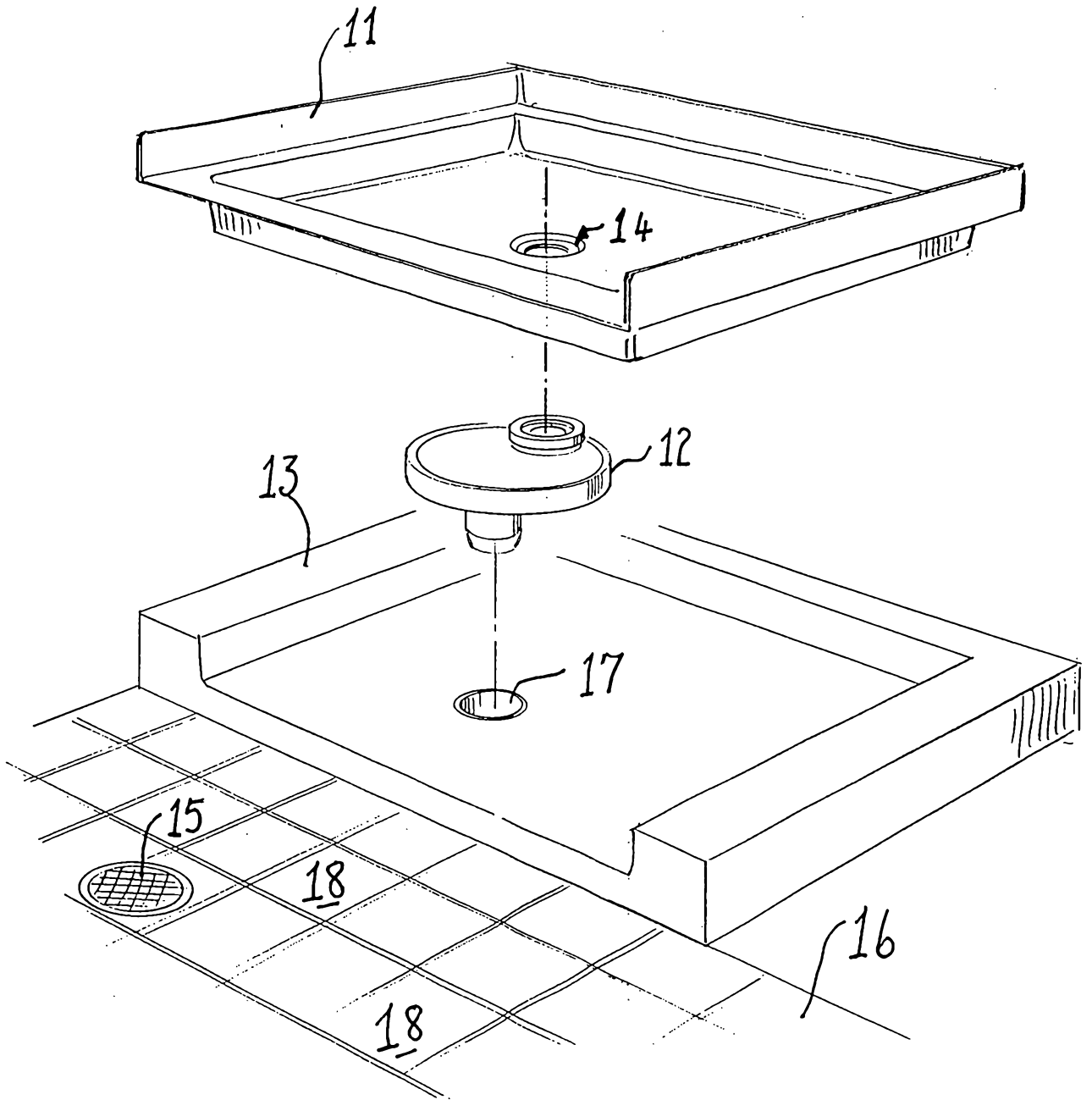


FIG. 2

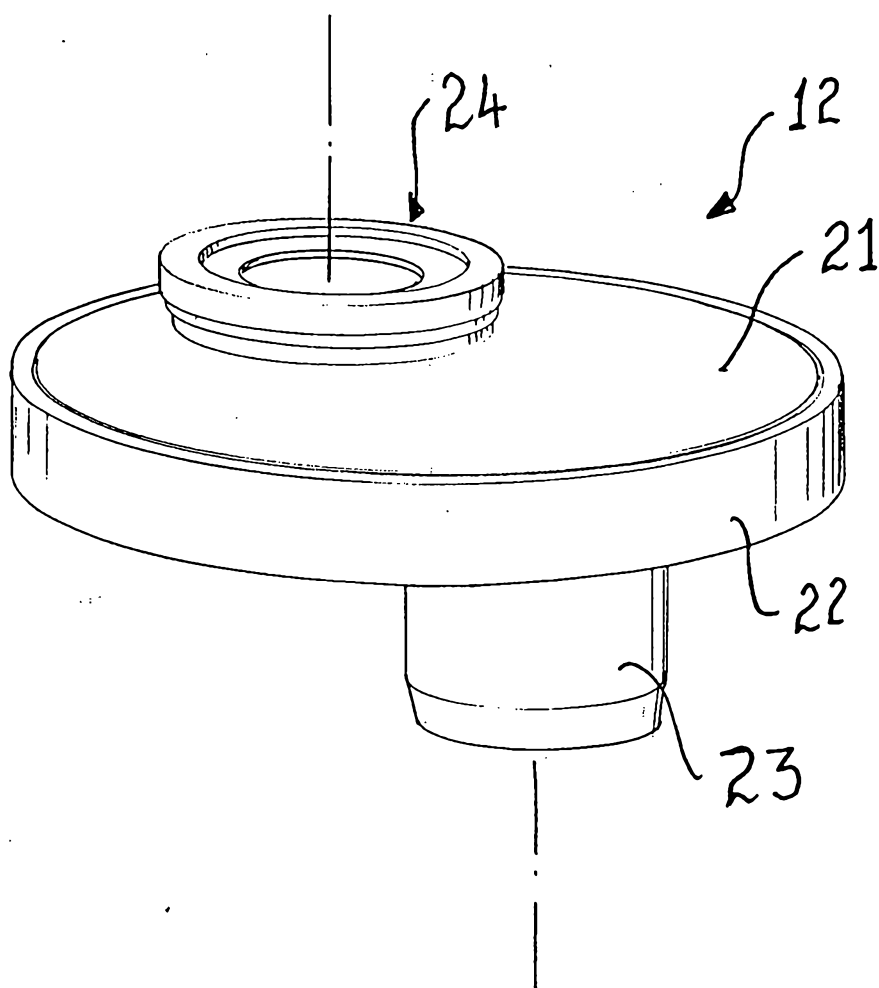
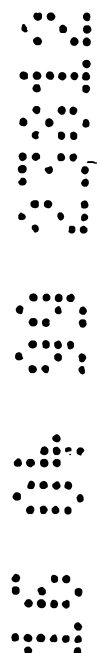


FIG. 3





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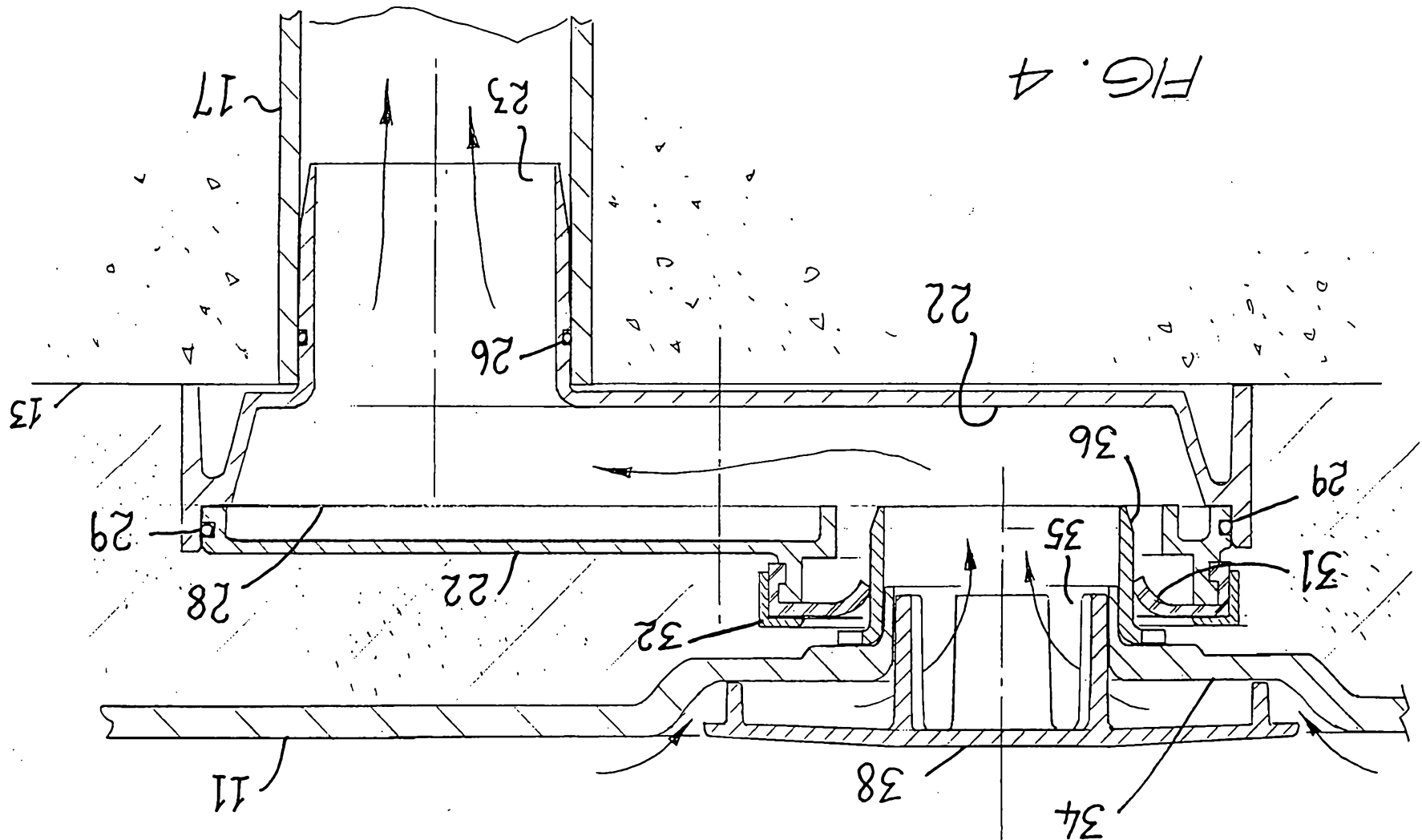


FIG. 4

11 22 23 26 28 29 31 32 34 35 36 38

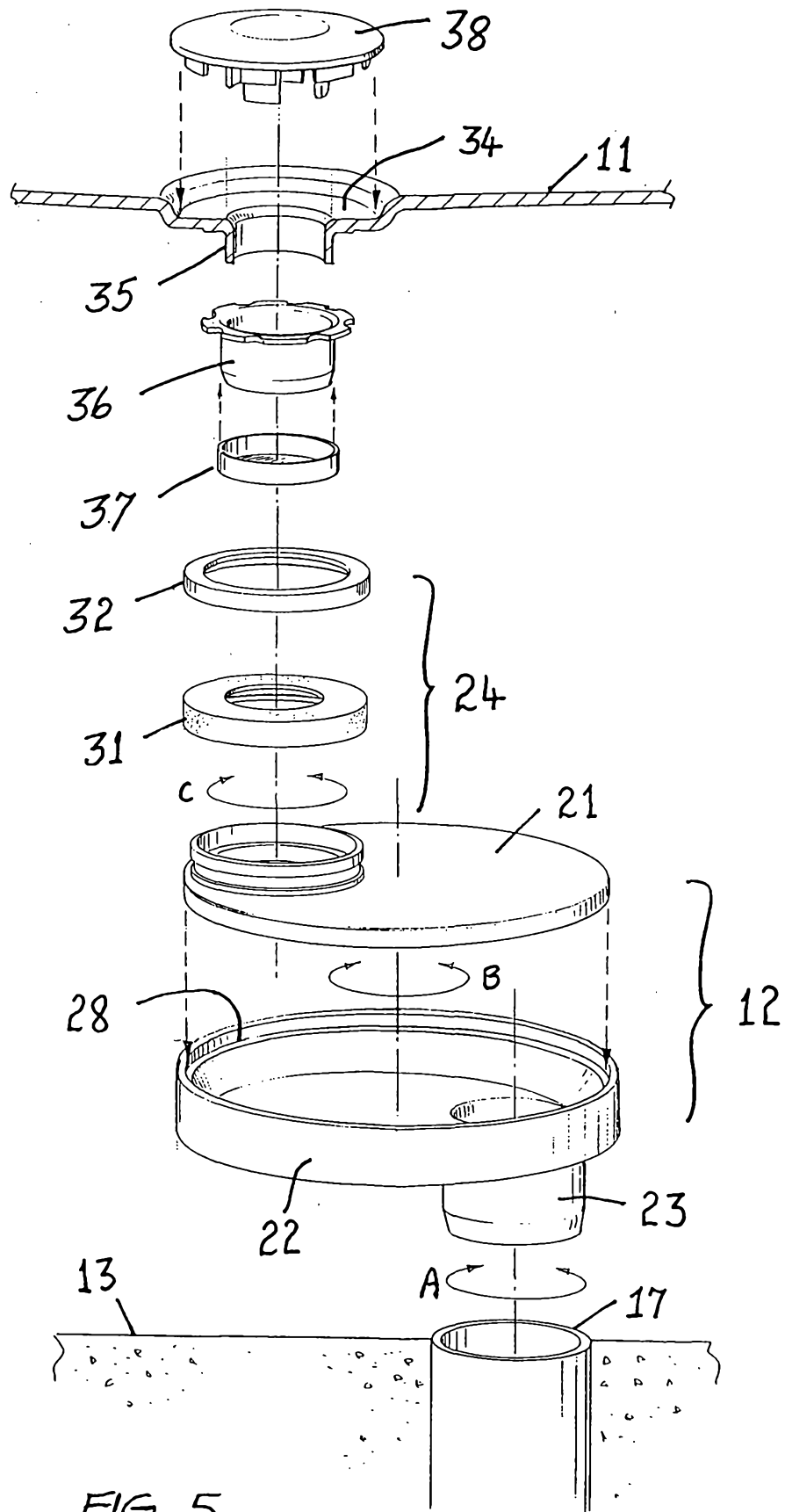


FIG. 5

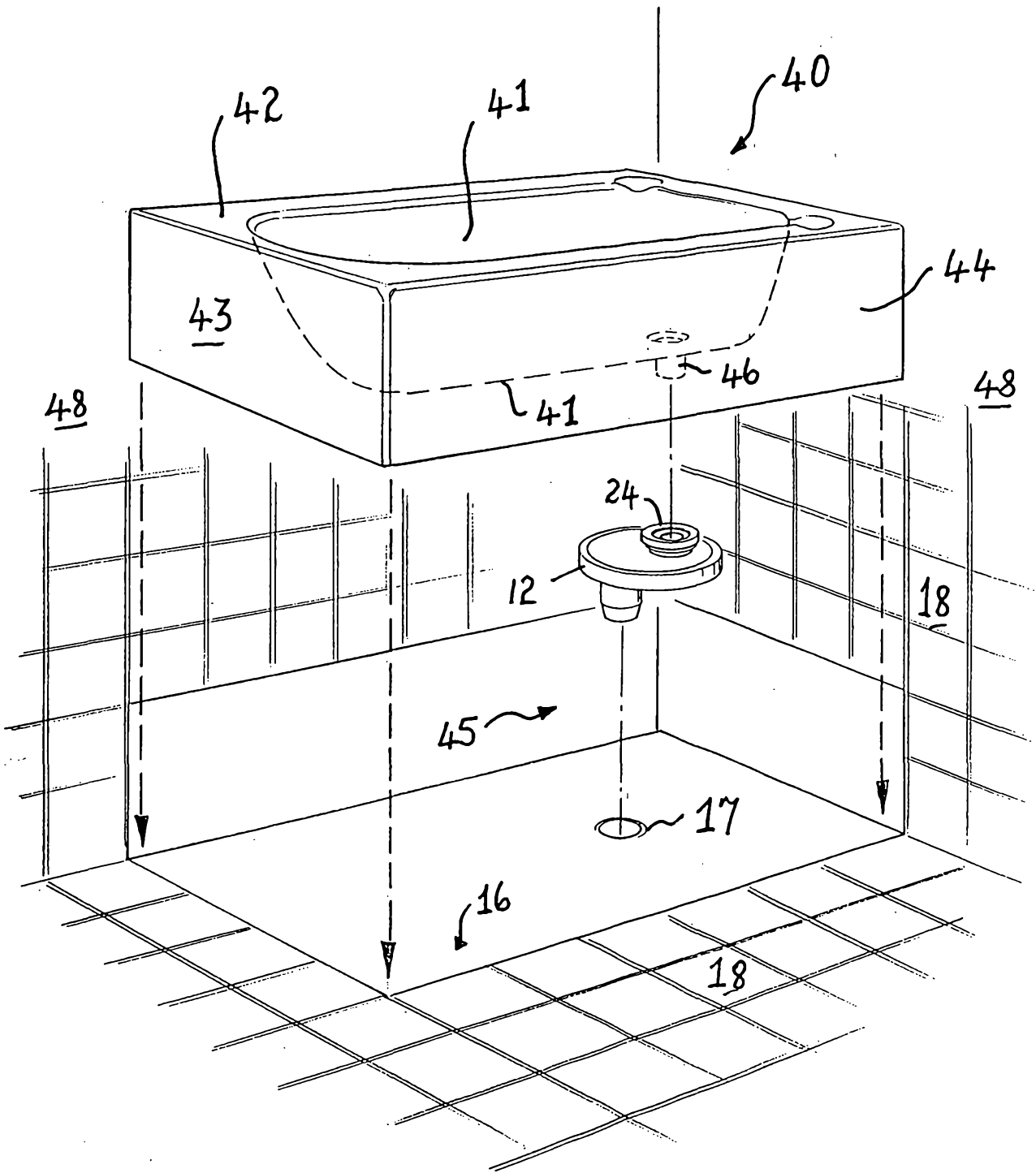


FIG. 6

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

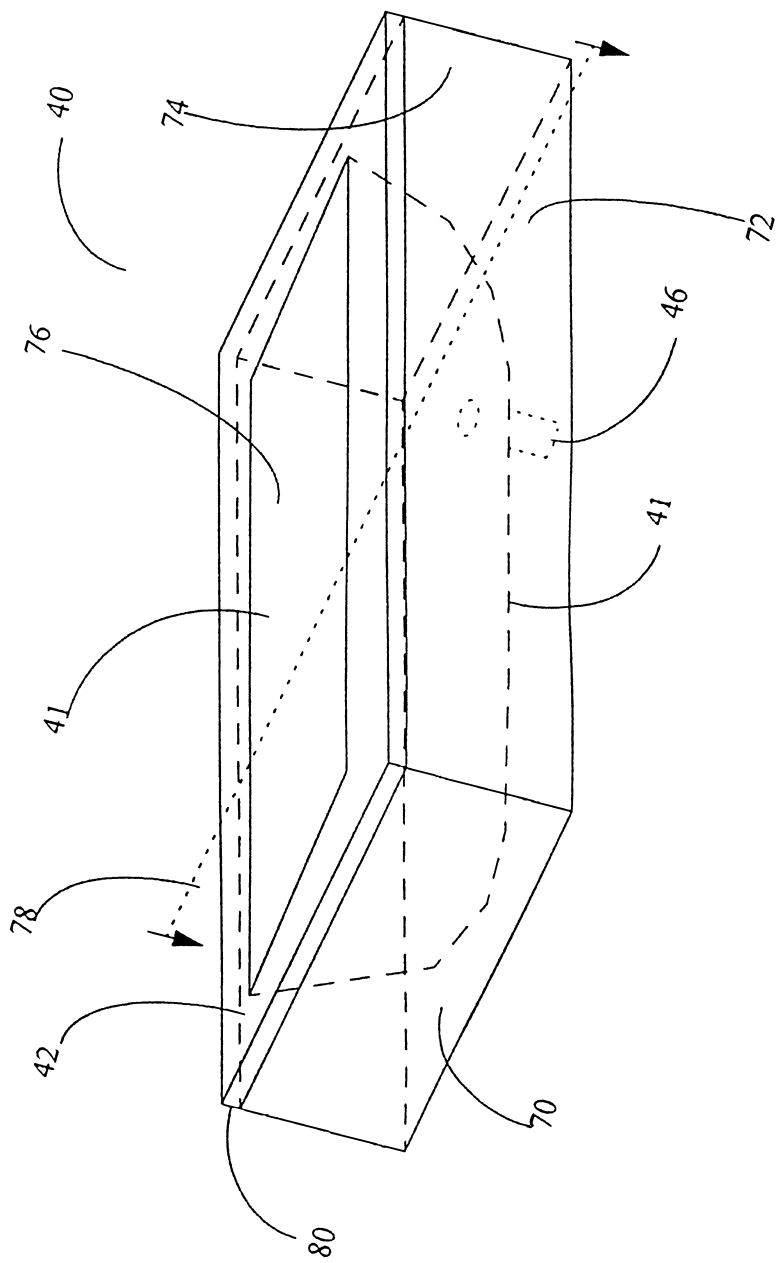


Fig. 7

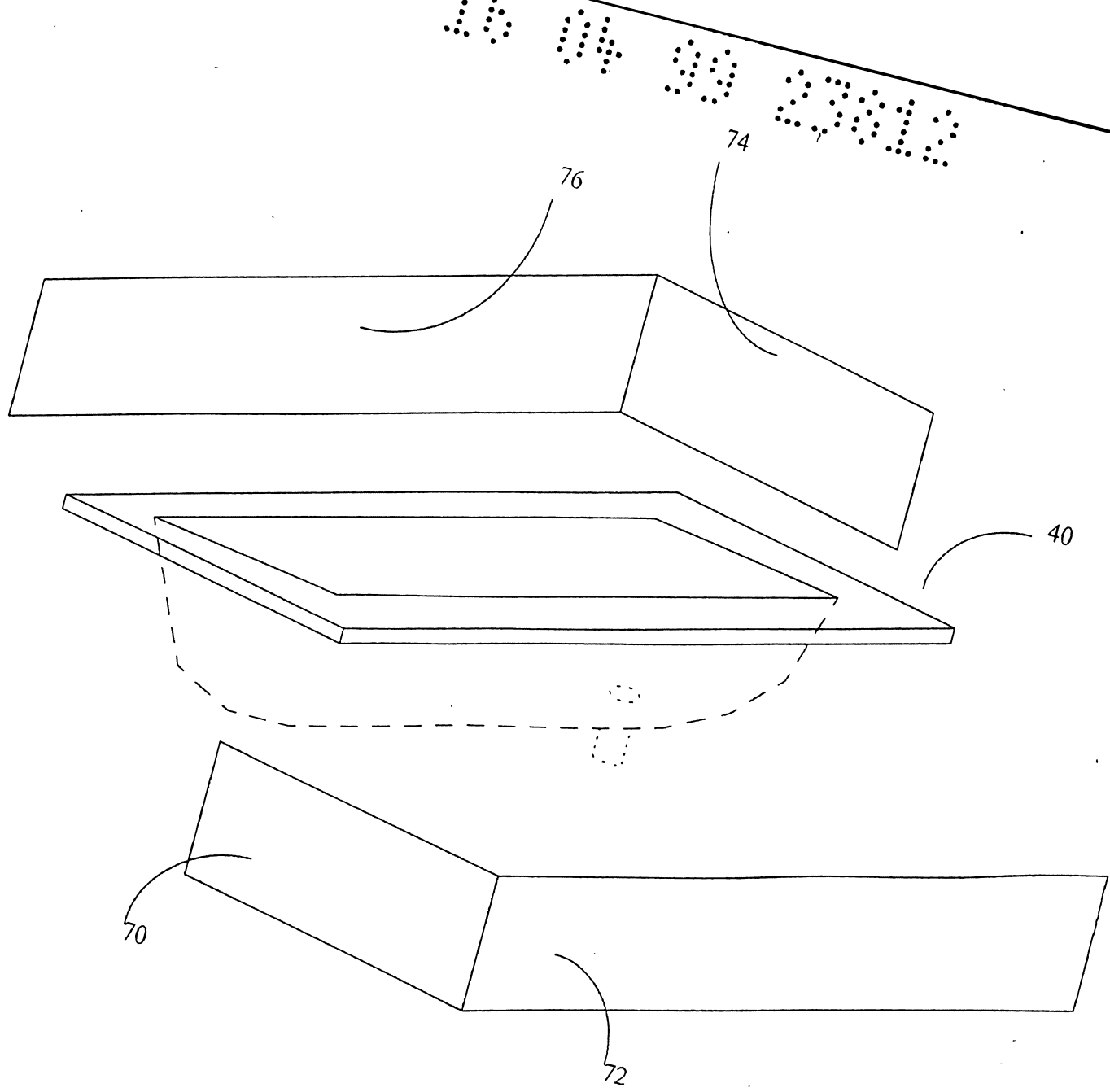


Fig. 8

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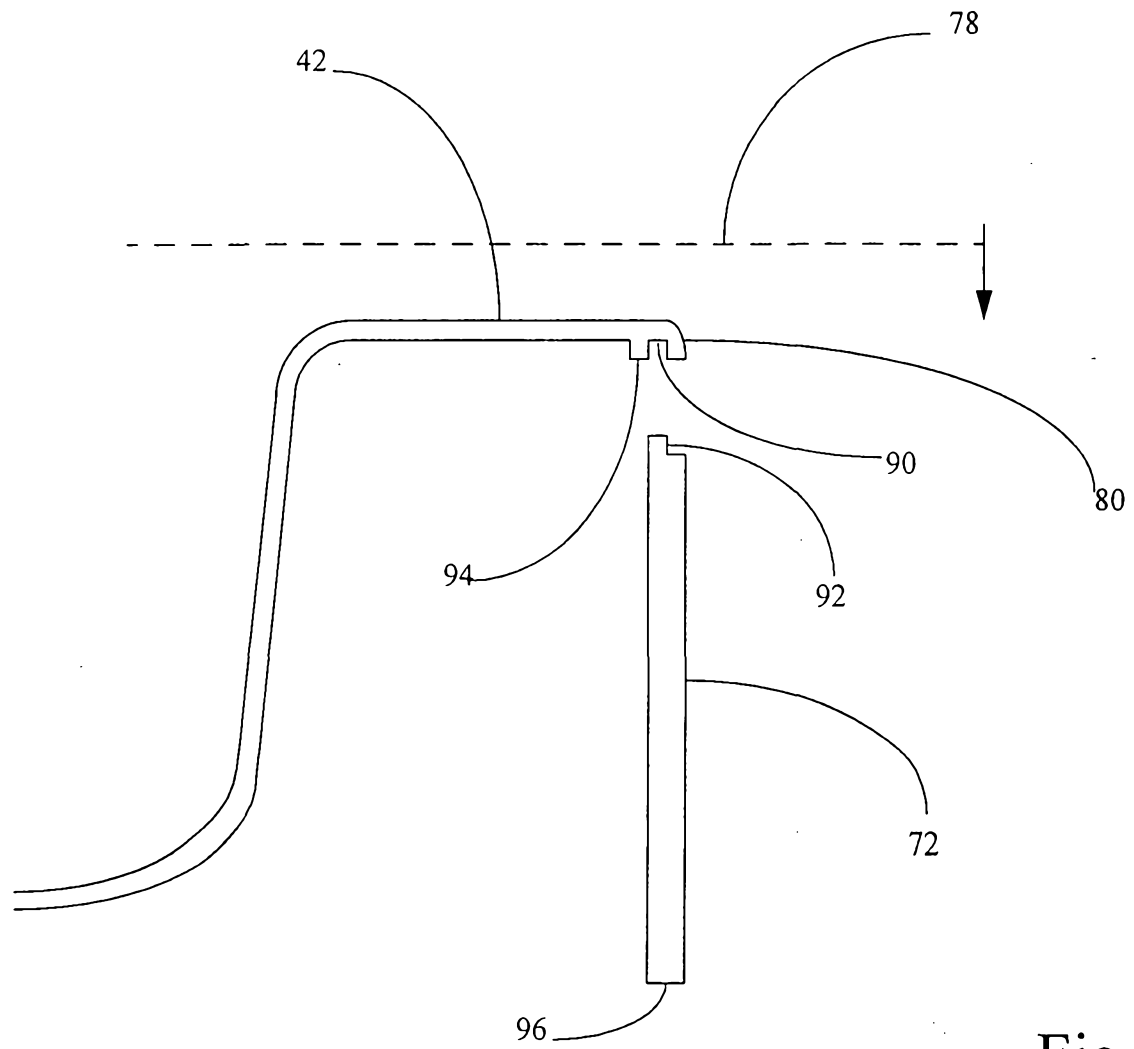


Fig. 9