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(54) **Floor drain**

(57) A floor drain (2) with a drain bowl (4) with a preferably cylindric outer side (6) and a lower central drain connection which is adapted for connecting to either a straight drain pipe or to an angular drain pipe (10), the floor drain (2) including a mounting flange (12) with a central connecting opening (16) which by means of packing means (18) is adapted to be mounted tightly externally

of the cylindric outer side (6) of the drain bowl (4). In a simple way is hereby achieved a floor drain with a drain bowl with associated mounting flange which may easily be adapted to the height of an existing as well as a newly established building membrane, as the flange for mounting to the membrane may be displaced vertically and externally of the drain bowl.

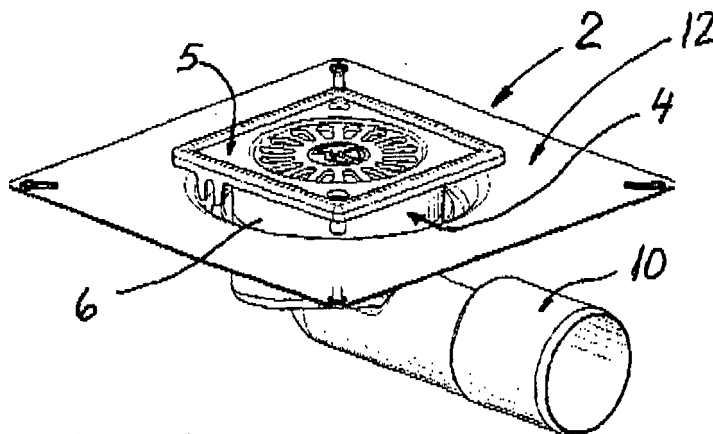


Fig. 1

Description

Field of the Invention

[0001] The present invention concerns a floor drain with a drain bowl with a preferably cylindric outer side and of the kind specified in the preamble of claim 1.

Background of the Invention

[0002] It is prior art to provide the drain bowl of a floor drain with a mounting flange intended for connecting to the building membrane with the purpose of establishing a waterproof connection between the floor drain in e.g. a bathroom or other wet room and a building membrane.

[0003] In connection with modernising or rebuilding of e.g. multi-storey buildings, it may be difficult to use common floor drains with mounting flanges, since it may be very tedious or impossible to achieve the required tight connection between the mounting flange of the floor drain and the building membrane.

Object of the Invention

[0004] On this background, it is the purpose of the present invention to indicate an improved floor drain of the kind mentioned in the introduction, including a mounting flange which in a simple way may be adapted and connected to either an existing or a newly established building membrane.

Description of the Invention

[0005] The floor drain according to the invention is characterised in that it includes a mounting flange with a central connecting opening which by means of packing means is adapted to be mounted tightly fitting to the exterior of the cylindric outer side of the drain bowl. In a simple way is hereby achieved a floor drain with a drain bowl with associated mounting flange which may easily be adapted to the height of an existing as well as a newly established building membrane, as the flange for mounting to the membrane may be displaced vertically and externally of the drain bowl.

[0006] The floor drain according to the invention is suitably designed so that the mounting flange is preferably made of stainless steel sheet, and so that the central connecting opening of the mounting is made in a central sheet portion of the mounting flange, the central sheet portion being bent in relation to the mounting flange itself, so that the central sheet portion and the mounting flange are mutually offset and mutually parallel. In a simple way is hereby achieved the option of further adjusting the final vertical position of the mounting flange externally of the drain bowl, as the mounting flange, according to need, may be disposed so that the bent sheet portion either faces upwards or faces downwards.

[0007] The floor drain according to the invention is pref-

erably designed so that the mounting flange is mainly square, and that the central connecting opening has preferably circular cross-section.

[0008] Alternatively, the floor drain according to the invention may be designed so that the mounting flange is mainly circular, and that the central connecting opening has preferably circular cross-section. In principle, there is nothing to prevent the mounting flange and the central connecting opening, respectively, from having any other desirable cross-sectional shape. I.e. the drain bowl may have an edged outer side, the shape of which in that case is to reappear in the connecting opening.

[0009] With the purpose of establishing good tightness between the mounting flange and the outer side of the drain bowl, the drain bowl according to the invention is designed so that an internal peripheral edge of the connecting opening is provided with a packing which is adapted to tightly fit with the cylindric outer side of the drain bowl.

[0010] The floor drain according to the invention is suitably designed with four-sided or square mounting flange and preferably so that the mounting flange is designed with rounded outer corners.

[0011] With the purpose of providing good connection with a usual cast floor, e.g. a cast storey partitioning, the floor drain according to the invention is further designed so that the mounting flange is designed at the outer corners with integrated anchoring means which are adapted to be bent out for fixation in a cast floor, as an overlying building membrane is fastened subsequently to the top side of the mounting flange.

Description of the drawing

[0012] The invention is now explained more closely in connection with the drawing, in which:

- Fig. 1 shows a perspective view of an embodiment of compact floor drain according to the invention, provided with a loose mounting flange;
- Fig. 2 shows a perspective exploded view of the floor drain in Fig. 1 with associated mounting flange and angular drain pipe;
- Fig. 3A shows a plane view of an embodiment of a mounting flange for a floor drain according to the invention;
- Fig. 3B shows a side view, partly sectional, of the mounting flange shown in Fig. 3A,
- Fig. 3C shows a perspective view of the mounting flange shown in Fig. 3A;
- Fig. 4A shows a plane view of a mounting flange, cf. Figs. 1 and 2, for a floor drain according to the invention;
- Fig. 4B shows a side view, partly sectional, of the mounting flange shown in Fig. 4A; and
- Fig. 4C shows a perspective view of the mounting flange shown in Fig. 4A.

Detailed Description of the Invention

[0013] The floor drain 2 shown in Figs. 1-2 includes a drain bowl 4 with a cylindric outer side 6. The drain bowl 4 may include a not shown water trap with a central lower drain opening, in which a vertical connection 8 of an angular connecting pipe 10 may be mounted by means of a suitable packing. The floor drain 2 is provided at the top with a square outlet grate 5.

[0014] Besides, the floor drain 2 includes a mounting flange 12 which in a central bent sheet portion 14 has a connecting opening 16 with an annular packing 18, so that the loose mounting flange 12 may be mounted waterproof at a desired level externally of the cylindric outer side 6 of the drain bowl 4. Alternatively, there may be used an annular packing which by vulcanisation is secured in the connecting opening 16.

[0015] As it clearly appears from Fig. 2, the mounting flange 12 is mounted on the cylindric outer side 6 of the drain bowl 4, before the connecting stub 8 of the connecting pipe 10 is mounted in the not shown lower central drain opening. It will be appreciated that the mounting flange 12 may be disposed at a desired height externally of the drain bowl, so that the mounting flange 12 may easily be adapted in height and connected to either an existing building membrane or with a newly established building membrane.

[0016] In other words, the floor drain 2 may be marketed with or without the mounting flange 12, as this loose building part may be ordered subsequently as a separate accessory.

[0017] The mounting flange 12, which is preferably made of stainless steel sheet, is mainly formed quadratic or square with rounded corner parts 20 in which anchoring means 22 are punched and adapted to be bent out, preferably downwards, for fixation by casting into a cast floor, e.g. a bathroom floor. Subsequently, the building membrane is connected in the usual way to the top side of the mounting flange of the drain.

[0018] In Figs. 3A-3C there is shown a second embodiment of a mounting flange 24 which is also adapted for externally mounting on a cylindric outer side of a drain bowl of a compact floor drain with greater dimensions. The mounting flange 24 has slightly larger central bent plate portion 26 in which is formed a connecting opening 28 with associated annular packing 30.

[0019] In Figs. 4A-4C there is shown a mounting flange 12, cf. Figs. 1 and 2, which is adapted for externally mounting on a cylindric outer side of a drain bowl 4 of a compact floor drain 2.

[0020] It should be noted that using a loose retrofitted mounting flange made of other materials, e.g. by injection moulding in a suitable plastic material, will be included in the scope of the invention. In that connection it may be possible that the annular packing, which in the situation of use is to seal between the mounting flange and the outer side of the drain bowl, consists of a soft plastic material which at the making has been integrated with

the mounting flange itself.

[0021] Finally, it is to be noted that it will be within the scope of the invention that a loose mounting flange under certain conditions may enable replacing a floor drain, as the floor drain can be released from the mounting flange, even if this is permanently fixed in a building structure, e.g. a storey partitioning of wood or the like. Of course this presupposes that the drain bowl itself is not permanently cast or in other ways permanently secured to the building structure. With care it will thus be possible to pull the drain bowl up from engagement with the annular packing if one simultaneously holds back the mounting flange itself, as the angular connecting pipe also remains connected to the building structure.

Claims

1. A floor drain (2) With a drain bowl (4) with a preferably cylindric outer side (6) and a lower central drain connection which is adapted for connecting to either a straight drain pipe or to an angular drain pipe (10), **characterised by** including a mounting flange (12, 24, 32) with a central connecting opening (16, 28) which by means of packing means (18, 30) is adapted to be mounted tightly fitting to the cylindric outer side (6) of the drain bowl (4).
2. Floor drain according to claim 1, **characterised in that** the mounting flange (12, 24) is preferably made of stainless steel sheet, and that the central connecting opening (16, 28) of the mounting flange (12, 24) is made in a central sheet portion (14, 26) of the mounting flange (12, 24), the central sheet portion (14, 26) being bent in relation to the mounting flange (12, 24) itself, so that the central sheet portion (14, 26) and the mounting flange (12, 24) are mutually offset and mutually parallel.
3. Floor drain according to claim, **characterised in that** the mounting flange (12, 24) is designed mainly square, and that the central connecting opening (16, 28) preferably has circular cross-section.
4. Floor drain according to claim 1, **characterised in that** the mounting flange is designed mainly circular, and that the central connecting opening has preferably circular cross-section.
5. Floor drain according to claims 1 - 4, **characterised in that** an internal peripheral edge of the connecting opening (16, 28) is provided with a packing (18, 30) which is adapted to tightly fit with the cylindric outer side (6) of the drain bowl (4).
6. Floor drain according to claims 1-3 and 5, **characterised in that** the mounting flange (12, 24) is designed with rounded external corners (20).

7. Floor drain according to claims 1-3 and 5-6, **characterised in that** the mounting flange (12, 24) with the said external corners (20) has integrated anchoring means (22) which are adapted to be bent out for fixation when casting into a wet room floor.

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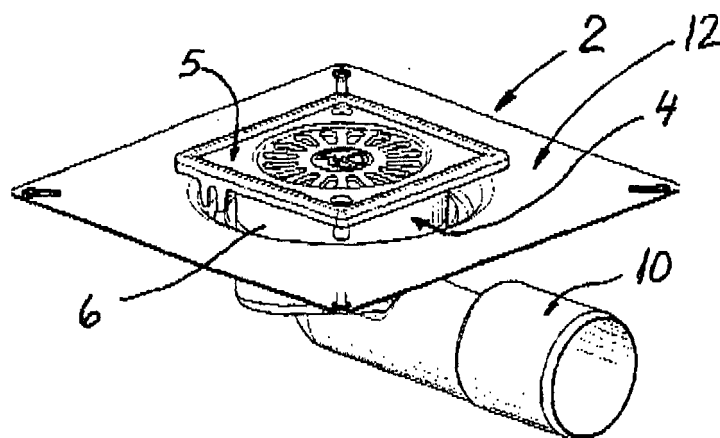


Fig. 1

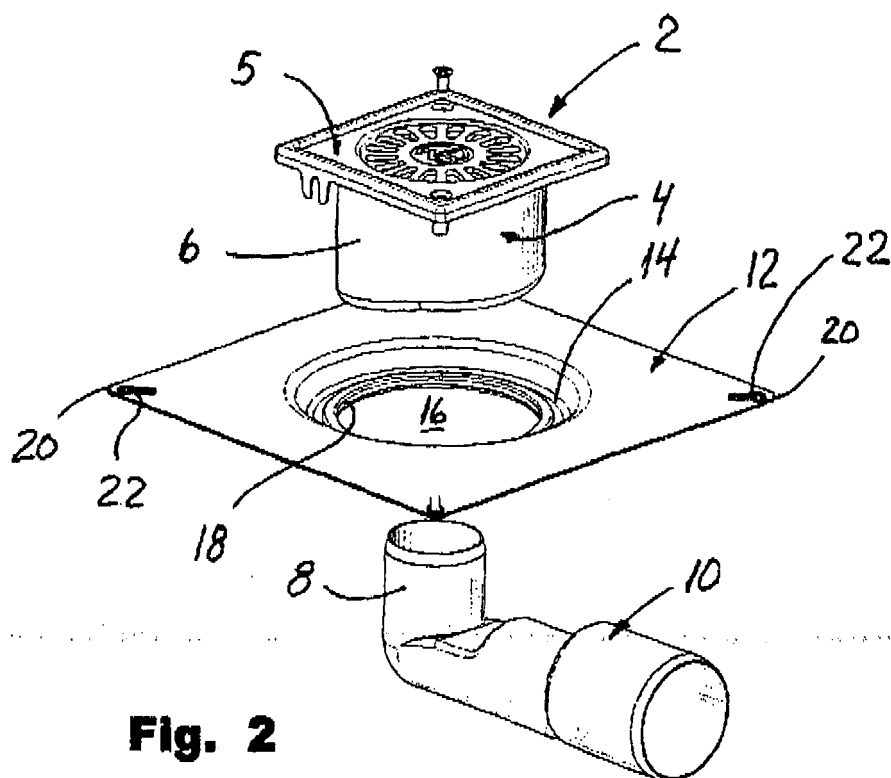


Fig. 2

