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(71) Applicant: **AB SJÖBO BRUK**
S-275 21 Sjöbo (SE)

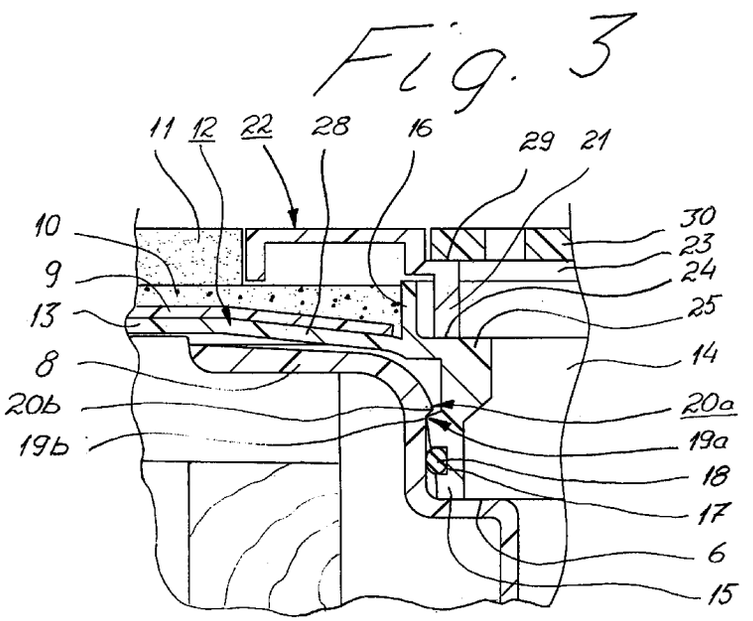
(72) Inventor: **Andersson, Leif Eskil**
275 35 Sjöbo (SE)

(74) Representative: **Wagner, Karl Heinz**
H. Wagner & Co. AB
Norra Vallgatan 72
211 22 Malmö (SE)

(54) Transition device at floor drains

(57) The present invention relates to a transition device at floor drains, whereby the floor drain (1) is located in a floor (3), preferably a floor of slabs or clinkers (11), including a sealing layer (9), and whereby a transition means (12) is provided to define a fluid tight transition between the sealing layer (9) and the floor drain (1). In order to be able to deliver the transition means (12) and the floor drain (1) as separate members and attach the transition means (12) to the floor drain (1) after mounting of the latter in the floor so that said transition means (12) is fixedly and completely sealingly secured, said transition means (12) comprises a downwardly directed collar (15) with anchor members (19) which can be brought to cooperate with anchor members (20) on the floor drain (1).

Fig. 3



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Description

The present invention relates to a transition device at floor drains, whereby the floor drain is provided in a floor, preferably a floor of slabs or clinkers, including a sealing layer, and whereby a transition means is provided to form a tight transition between the sealing layer and the floor drain.

In order to ensure that transition devices at floor drains are correctly mounted, assembly is carried through at the factory. Thereby, three holes are made in upper parts of the floor drain and three corresponding holes in an outwardly directed flange portion of the transition means. When mounted, a sealing agent is located between the upper parts of the floor drain and the outwardly directed flange portion of the transition means, whereafter screw joints are inserted into the holes and tightened until the transition means is fixedly and sealingly attached to the floor drain.

A problem with these factory-mounted transition devices is that the assembly work is extensive and expensive and that there is a risk for leakage through the holes made in the outwardly directed flange portion and the floor drain. Another problem is that the unit consisting of transition device and floor drain is very bulky, since the outwardly directed flange portion of the transition means has a very large diameter. This has a negative influence on the handling, transport and storage of the unit.

The object of the present invention is to eliminate these problems, which according to the invention is achieved by providing the initially defined transition device with the characterizing features of claim 1.

The transition device with said characterizing features permits separate handling and delivery of the transition means and the floor drain and easy mounting of the transition means on the floor drain at the site of mounting, so that secure connection and complete sealing is obtained between said members.

The invention will be further described below with reference to the accompanying drawings, wherein

figure 1 is a perspective view of the transition device together with a floor drain on which it shall be mounted and together with an inlet member for location on said transition device;

figure 2 is a section through a portion of the transition device of fig. 1 mounted on a floor drain;

figure 3 is another section through the transition device of fig. 1 mounted on a floor drain; and

figure 4 is a plan view of a portion of the transition device of fig. 1.

In the drawings, a floor drain 1 is illustrated which is mounted on a framing of joists 2 in a floor 3. The floor drain 1 can be of any suitable type and can e.g. have a side outlet or be of the bottom-dump type.

Furthermore, the floor drain 1 may have or may not have a water trap. The floor drain 1 has a through-flow hole 4 and the upper parts 5 thereof include a step 6 which is outwardly directed relative to said through-flow hole 4. The step 6 transcends into an upwardly directed part 7 which in turn, at the top, transcends into an outwardly directed flange 8.

The floor 3 comprises a sealing layer 9 of such a material that liquid is prevented from flowing down into the framing of joists 2. On top of this sealing layer 9 there is provided a layer 10 of set mortar and on top at that slabs or clinkers 11.

A transition means 12 is mounted to provide a waterproof transition between the sealing layer 9 and the floor drain 1. This transition means 12 includes an outwardly directed flange portion 13 with a central through-flow opening 14 and a downwardly directed collar 15 as well as an upwardly directed collar 16 which surround the through-flow opening 14. The downwardly directed collar 15 is designed to fit into the upper parts 5 of the floor drain 1 so that said collar 15 can be brought down into the upwardly directed part 7 of said floor drain until it engages the step 6.

The downwardly directed collar 15 has an outer groove 17 which is located therearound and into which a sealing ring 18 (so called O-ring) is inserted so that it protrudes a small distance therefrom. When the downwardly directed collar 15 is brought down into the upwardly directed part 7 of the floor drain 1, the sealing ring 18 will engage said upwardly directed part 7 so that said sealing ring provides for a liquid sealing between said downwardly directed collar 15 and said upwardly directed part 7. The sealing ring 18 may also be designed and located to that it contributes to the retention of the downwardly directed collar 15 at the upwardly directed part 7.

In order to permit stable anchoring of the transition means 12 to the floor drain 1 simply by pressing down the downwardly directed collar 15 into the upwardly directed part 7 of the floor drain 1, said downwardly directed collar 15 and/or said upwardly directed part 7 include(s) anchor members 19, 20.

An anchor member 19 on the downwardly directed collar 15 may be designed as a snap-in portion 19a and an anchor member 20 on the upwardly directed part 7 as a snap-in portion 20a. While one or both snap-in portions 19a, 20a is/are resilient or located on resilient portions of the downwardly directed collar 15 and/or of the upwardly directed part 7, one or both snap-in portions 19a, 20a can spring aside when the downwardly directed collar 15 is pressed down into said upwardly directed part 7. Hereby, the snap-in portion 19a of the downwardly directed collar 15 can be moved down past the snap-in portion 20a on the upwardly directed part 7 and thereafter, the snap-in portion or portions 19a, 20a spring back to its or their original shapes or positions, whereby the snap-in portion 19a on the downwardly directed collar 15 snaps in under the snap-in portion

20a of the upwardly directed part 7. While the downwardly directed collar 15 thereby engages the step 6 of the floor drain 1, the transition portion 12, after provision of said snap-in connection, will be fixedly secured to the floor drain 1.

The snap-in portion 19a on the downwardly directed collar 15 may comprise an outwardly directed point 19b and the snap-in portion 20a on the upwardly directed part 7 an inwardly directed tongue 20b, beneath which said point 19b can engage and cooperate with said upwardly directed part 7.

Mounting of the transition means 12 at the floor drain 1 can be done, after application of the floor drain 1 on the framing of joists 2, by pressing down the downwardly directed collar 15 into the floor drain 1 until said collar is snapped in position and thereby engaging the step 6. This mounting or assembly is easy to carry through and the anchor members 19, 20, eventually with support from the sealing ring 18, thereafter retain the transition means 12 in a firm grip at the floor drain 1, whereby an adequate and permanent or durable connection and liquid sealing has been obtained between the transition means 12 and the floor drain 1.

As mentioned previously, the transition means 12 may also comprise an upwardly directed collar 16. This collar 16 extends upwardly from the outwardly directed flange portion 13 and is adapted to position a downwardly directed pipe member 21 on an inlet member 22 with an inlet hole 23. The pipe member 21 can be located on a step 24 in the transition means 12 and its outer diameter may be substantially less than the inner diameter of the upwardly directed collar 16, whereby said pipe member 21 and thereby, the inlet member 22, can be located in different laterally displaced positions relative to the transition means 12.

The step 24 can be formed where the inner side of the downwardly directed collar 15 transcends into the inner side of the upwardly directed collar 16, which has a larger inner diameter than said downwardly directed collar.

At the step 24 and on the inner side of the downwardly directed collar 15, there may be located a suitable number and in a suitable manner around the inlet hole 23 distributed support means 25, which are provided to prevent the downwardly directed pipe member 21 and thereby, the inlet member 22, from being set obliquely relative to the transition means 12.

In order to render it possible for liquid to flow from the sealing layer down into the floor drain 1 without obstruction from the upwardly directed collar 16, said upwardly directed collar 16 is provided with through-flow openings 26 which preferably are uniformly distributed around the inlet hole 23. In order not to obstruct the flow of liquid with the downwardly directed pipe member 21 standing on the step 24, said step 24 has grooves 27 which preferably are connected directly with the through-flow openings 26.

The outwardly directed flange portion 13 may consist of or include plastic material, e.g. ABS, which can be glued to permit gluing or sizing of the sealing layer 9 onto the upper side thereof. To facilitate said sizing, said upper side may be blasted.

It should also be mentioned that the outwardly directed flange portion 13, closest to the upwardly directed collar 16, may include an inwardly/downwardly inclined member 28 for facilitating flow of liquid from the sealing layer 9 down into the floor drain 1.

The inlet member 22 may comprise a step 29 for an apertured plate 30 and said member may be rectangular to fit in with rectangular slabs or clinkers 11.

The invention is not limited to the embodiment described above, but may vary within the scope of the following claims. As examples of not described alternatives can be mentioned that the anchor members 19, 20 may be of other types than snap-in portions, the sealing device 18 may be another device than a sealing ring and if it is a sealing ring it can be lubricated so that it slides more easily against the floor drain 1 when the downwardly directed collar 15 is brought or moved down into said floor drain 1. The through-flow opening 26 may be at least one upwards open slit in the upwardly directed collar 16, but it may also have another shape and location.

Claims

1. Transition device at floor drains, whereby the floor drain (1) is located in a floor (3), preferably a floor of slabs or clinkers (11), including a sealing layer (9),
whereby a transition means (12) is provided to form a fluid tight transition between the sealing layer (9) and the floor drain (1),
whereby the transition means (12) comprises a downwardly directed collar (15) which can be inserted or moved down into the floor drain (1) and which is adapted to permit mounting of the transition means (12) thereto,
whereby the downwardly directed collar (15) and/or the floor drain (1) include(s) anchor members (19, 20) which permit anchoring or attachment of the downwardly directed collar (15) to the floor drain (1) by inserting said downwardly directed collar (15) thereinto, and
whereby at least one sealing means (18), preferably a sealing ring located on the downwardly directed collar (15), is mounted to provide a liquid sealing between the downwardly directed collar (15) and the floor drain (1) when said downwardly directed collar (15) is anchored or attached thereto,
characterized in
that the transition means (12) further comprises an upwardly directed collar (16) which extends upwards relative to an outwardly directed flange portion (13) onto which the sealing layer (9) is applicable, said upwardly directed collar (16) being adapted to position or locate a downwardly directed pipe member (21) of an inlet member (22), and
that the upwardly directed collar (16) on the transi-

tion means (12) has at least one through-flow opening (26) which is adapted to permit liquid to flow from the sealing layer (9) down into the floor drain (1).

2. Transition device according to claim 1, **characterized in**
that anchor members (19) on the downwardly directed collar (15) has at least one outwardly directed snap-in portion (19a) and anchor members (20) on the floor drain at least one inwardly directed snap-in portion (20a),
that the snap-in portion (19a) on the downwardly directed collar (15), at inclined insertion of said collar (15) into the floor drain (1), can pass the snap-in portion (20a) on the floor drain (1) while both snap-in portions (19a, 20a) or one of the snap-in portions, preferably the snap-in portion (19a) on the downwardly directed collar (15), are/is resilient, and that both snap-in portions (19a, 20a) or one of the snap-in portions, preferably the snap-in portion (19a) on the downwardly directed collar (15), can spring back when the snap-in portion (19a) on the downwardly directed collar (15), at insertion of said collar (15) into the floor drain (1), has passed the snap-in portion (20a) on the floor drain (1) so that said snap-in portions (19a, 20a) secure or attach the downwardly directed collar (15) to the floor drain (1).

3. Transition device according to claim 2, **characterized in** that the snap-in portion (19a) on the downwardly directed collar (15) has an outwardly directed point (19b) and the snap-in portion (20a) on the floor drain (1) an inwardly directed tongue (20b) under which the outwardly directed point (19b) is engageable.

4. Transition device according to any preceding claim, **characterized in** that the downwardly directed collar (15) engages a step (6) in the floor drain (1) so that the transition means (12) can not move relative to said floor drain (1) when the downwardly directed collar (15) is secured or attached to said floor drain (1).

5. Transition device according to any preceding claim, **characterized in** that the sealing means is a sealing ring (18) which is provided to contribute to the anchoring or attachment of the transition means (12) to the floor drain (1).

6. Transition device according to claim 5, **characterized in** that the sealing ring (18) is located in an outer groove (17) in the downwardly directed collar (15), said outer groove (17) being provided beneath anchor members (19) on the downwardly directed collar (15).

7. Transition device according to any preceding claim, **characterized in** that the downwardly directed pipe member (21) is positionable on a step (24) on the transition means (12) within the upwardly directed collar (16).

8. Transition device according to any preceding claim, **characterized in** that the upwardly directed collar (16) on the transition means (12) is provided with a plurality of through-flow openings (26) which are uniformly distributed around an inlet hole (23) in said transition means (12).

9. Transition device according to any preceding claim, **characterized in** that a groove (27) in the step (24) connects with at least one through-flow opening (26) in the upwardly directed collar (16), said groove (27) being adapted to facilitate for liquid to flow into an inlet hole (23) in the transition means (12) without obstruction from a downwardly directed pipe member (21) which forms part of the inlet member (22) and which rests on the step (24).

10. Transition device according to any preceding claim, **characterized in** that an inner diameter of the upwardly directed collar (16) is substantially larger than an outer diameter of the downwardly directed pipe member (21) so that this pipe member (21) and thereby, the inlet member (22), can be located in different laterally displaced positions relative to the transition means (12).

11. Transition device according to any of claims 7-9, **characterized in**
that an inner diameter of the downwardly directed collar (15) is less than an inner diameter of the upwardly directed collar (16),
that the step (24) is located where the inner side of the downwardly directed collar (15) transcends into the inner side of the upwardly directed collar (16), and
that on the step (24) of the transition means (12) there are provided a number of support means (25) which extend into an inlet hole (23) in said transition means (12) and which are adapted to prevent that the downwardly directed pipe member (21) and thus, the inlet member (22), is set obliquely relative to the transition means (12).

12. Transition device according to any preceding claim, **characterized in** that an outwardly directed flange portion (13), forming part of the transition means (12), consists of plastic material which can be glued to permit sizing or gluing of the sealing layer (9) onto the upper side thereof.

13. Transition device according to any preceding claim, **characterized in** that an outwardly directed flange portion (13), forming part of the transition means

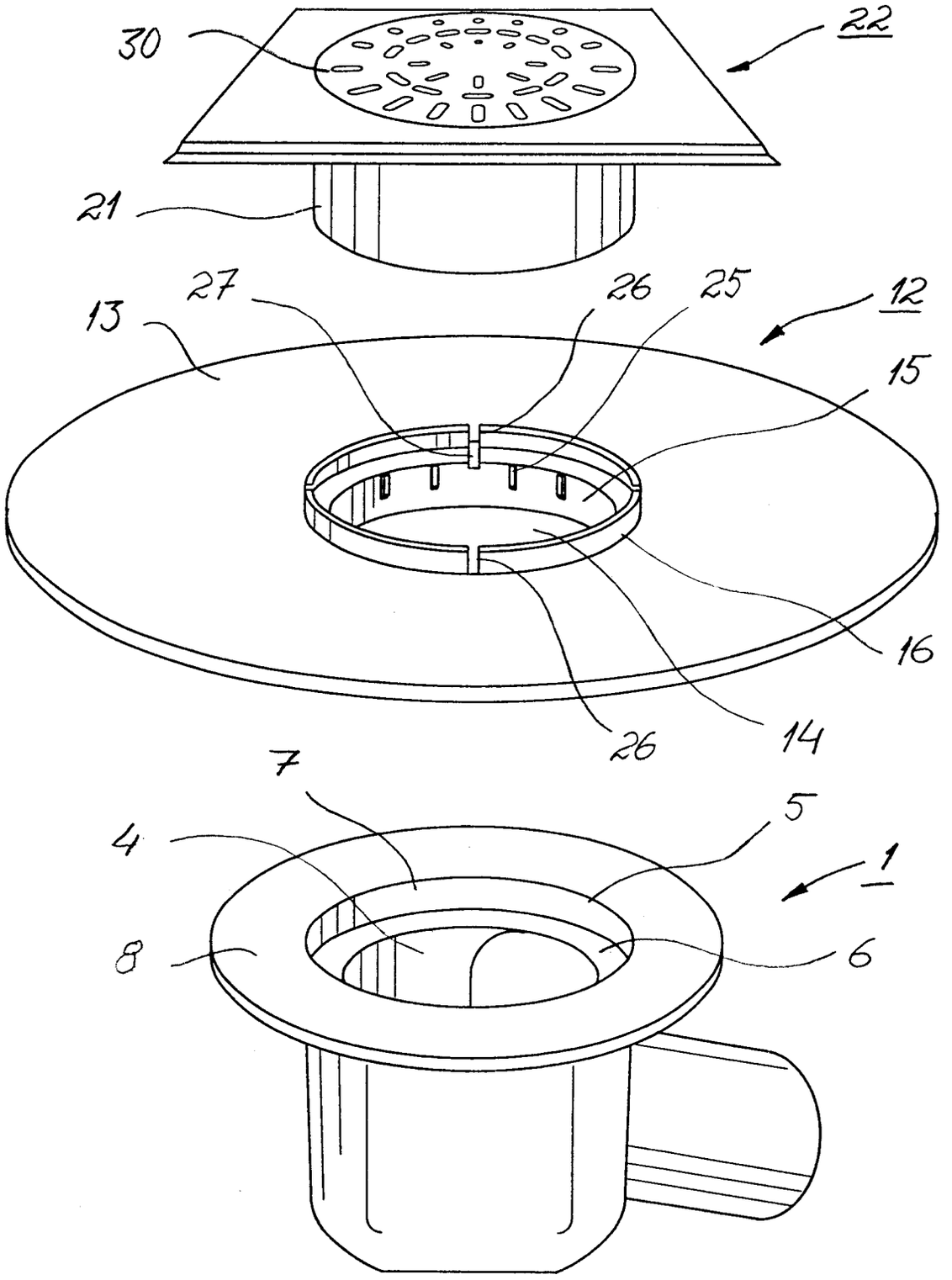
(12), has a blasted upper side to facilitate sizing or gluing of the sealing layer (9) thereonto.

14. Transition device according to any preceding claim, **characterized in** that an outwardly directed flange portion (13), forming part of the transition means (12), comprises, closest to the in relation to said outwardly directed flange portion (13) upwardly directed collar (16), an inwardly/downwardly inclined portion (28) for facilitating the flow of liquid from the sealing layer (9) down into the floor drain (1).

15. Transition device according to any preceding claim, **characterized in** that the transition means (12) is a unit which can be supplied separately and which can be located manually with its downwardly directed collar (15) protruding down into the floor drain (1) when said floor drain is mounted in the floor (3), and attached or secured to said floor drain (1) by being pressed down into the floor drain (1) by hand.

16. Transition device according to any preceding claim, **characterized in** that the through-flow opening (26) is an upwardly open slot in the upwardly directed collar (16).

Fig. 1



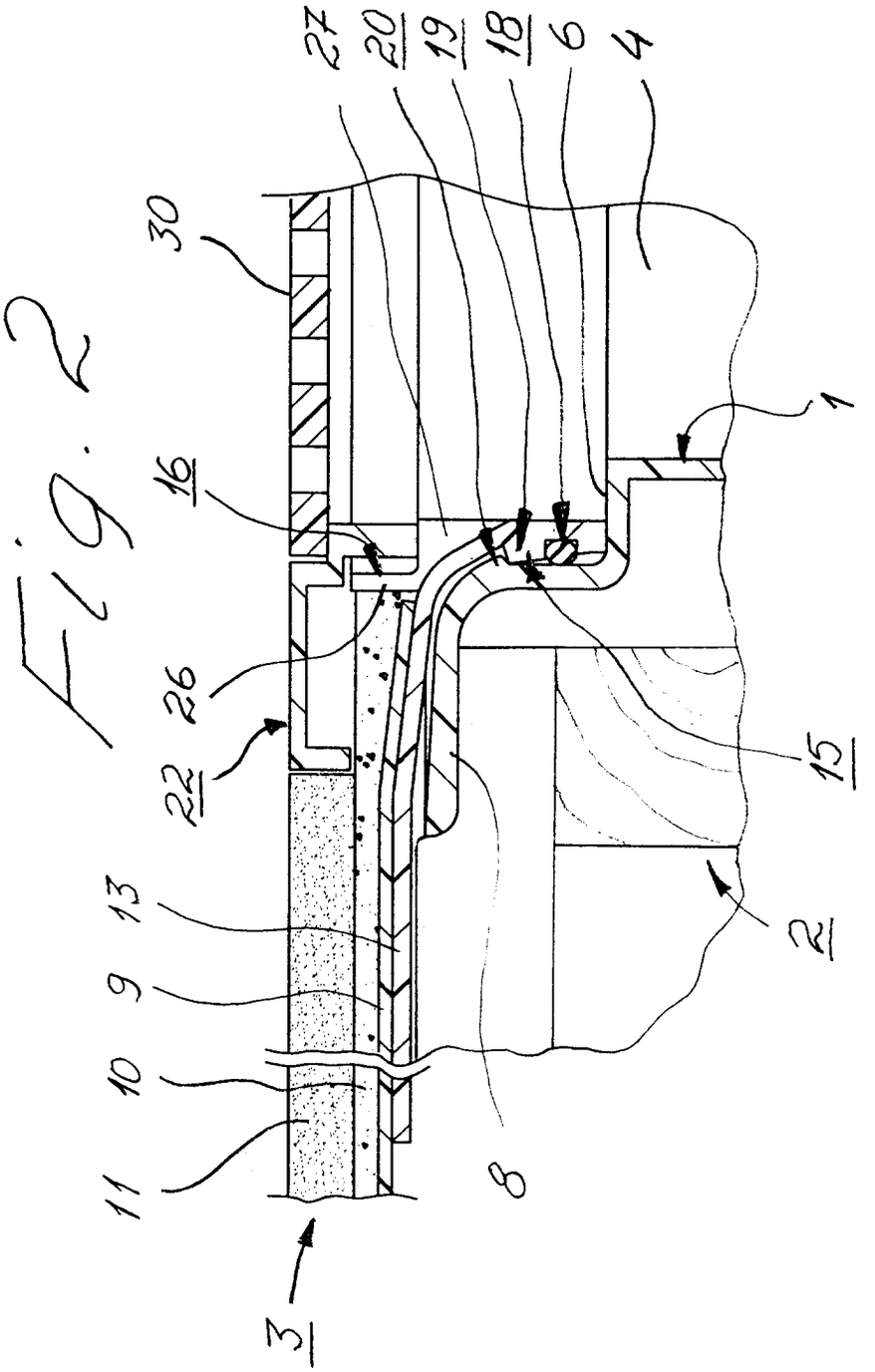


Fig. 2

Fig. 3

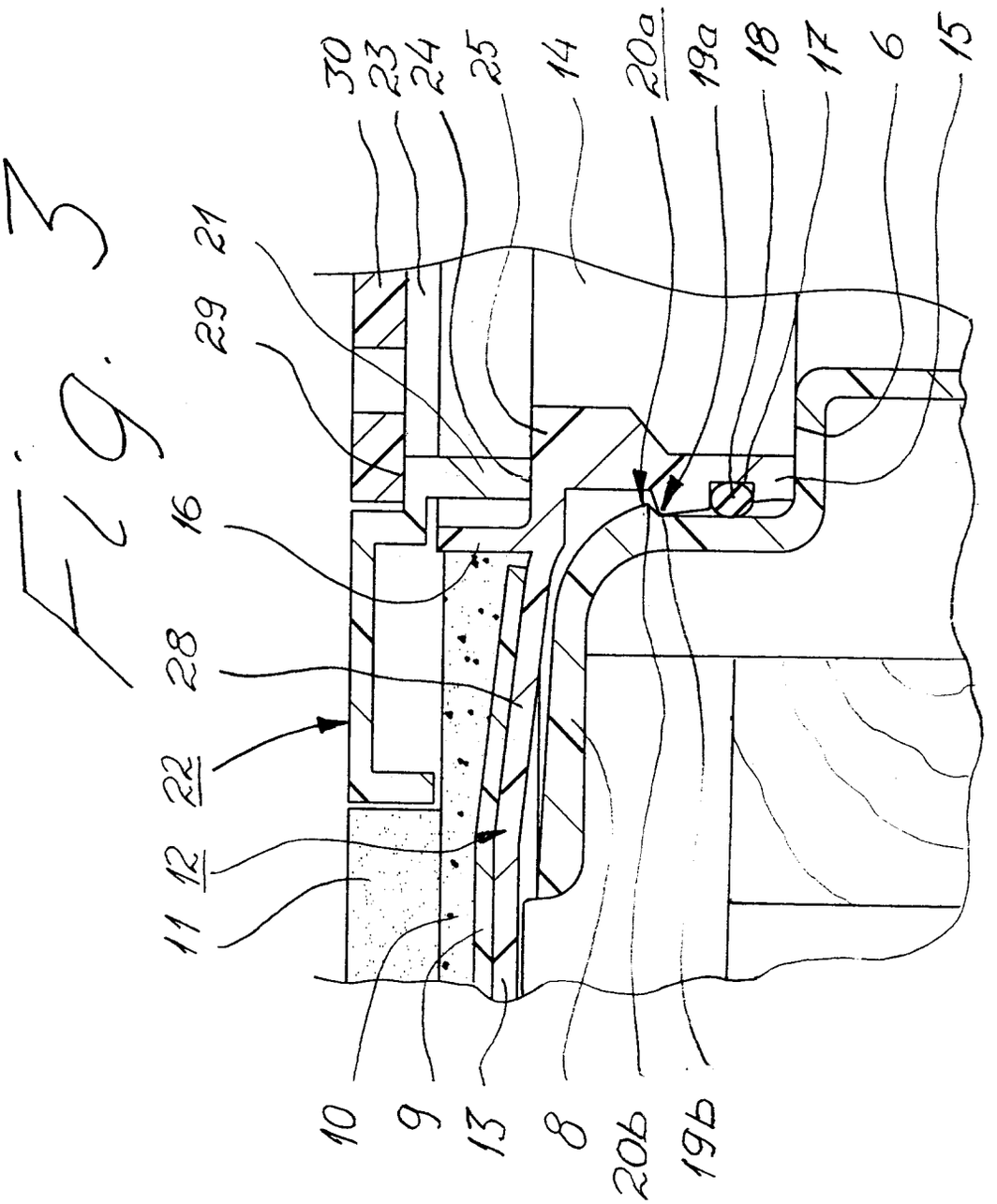
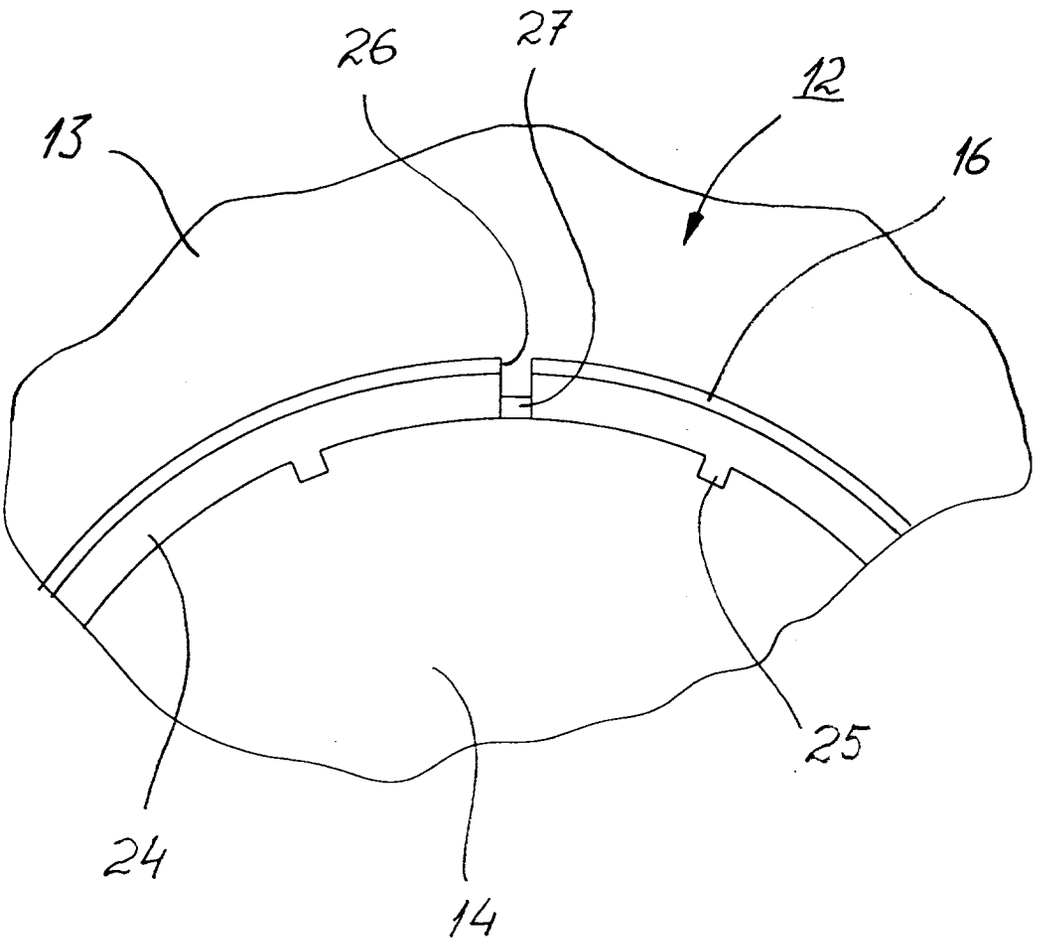


Fig. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 96 11 4532

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	LU-A-52 863 (PASSAVANT-WERKE) * page 13, line 12 - page 15, line 5; figure 2 *	1	E03F5/04 E04D13/04
Y		2-8	
Y	EP-A-0 502 493 (AB SJÖBO BRUK) * abstract; figure 2 *	2-8	
A	US-A-1 731 617 (FLEMING) * the whole document *	1	
A	US-A-3 420 552 (MORK) * the whole document *	1	
A	DE-A-34 25 654 (HEINZ ESSMANN GMBH & CO KG) * the whole document *	1-3	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E03F
E04D
E01C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 December 1996	De Coene, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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