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(54) **DRAIN OUTLET FOR MOUNTING TO A PLATE-LIKE ELEMENT**

(57) The invention relates to a drain (100) for mounting on a plate, such as a foam plate, which drain comprises:

- a collecting tray (101) with a bottom, an upright wall (104) along the periphery of the bottom and an outlet opening;
- a fastening ring (110) with a peripheral wall directed downward on the inner edge of the ring, which downward directed peripheral wall extends inside the upright wall of the collecting tray;
- a sealing ring (109) arranged between the downward directed peripheral wall and the upright wall; and
- coupling means for coupling the fastening ring to the collecting tray;

wherein the coupling means comprise at least one resilient finger arranged parallel to the upright wall and on the inner side of the upright wall, wherein the at least one resilient finger has a first edge arranged on the free end; and wherein the coupling means comprise a second edge oriented in radial direction and arranged on the downward directed peripheral wall, which second edge engages on the first edge of the finger during axial displacement of the upright wall relative to the downward directed wall.

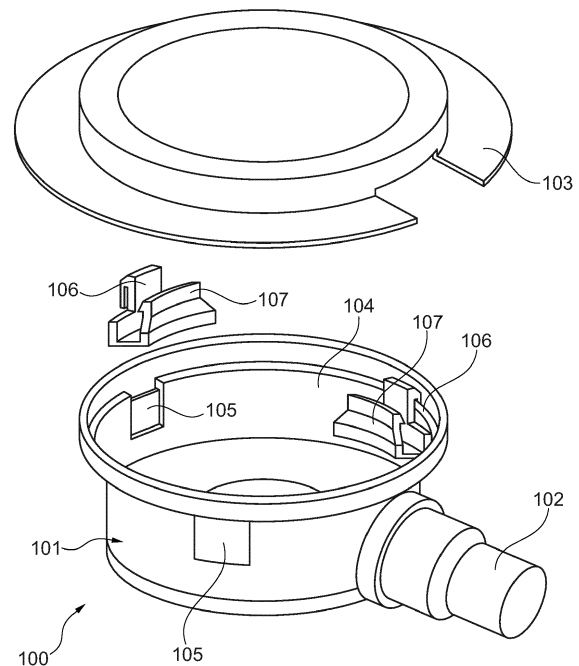


Fig. 1

Description

[0001] The invention relates to a drain for mounting on a plate, such as a foam plate, which drain comprises:

- a collecting tray with a bottom, an upright wall along the periphery of the bottom and an outlet opening;
- a fastening ring with a peripheral wall directed downward on the inner edge of the ring, which downward directed peripheral wall extends inside the upright wall of the collecting tray;
- a sealing ring arranged between the downward directed peripheral wall and the upright wall; and
- coupling means for coupling the fastening ring to the collecting tray.

[0002] During installing of a sanitary space use is made in specific applications of a plate-like element as substrate for a tile floor. A slope can be easily provided in such a plate-like element, whereby no further effort need be made to obtain the correct slope when casting a concrete floor or tiling a floor.

[0003] In addition, such plate-like elements are usually embodied as foam plate, whereby a sound insulation is obtained.

[0004] The foam plate, in which an opening has been arranged, must be positioned during mounting with the opening above a drain arranged in the floor. A watertight connection must then be provided. It is known for this purpose to screw a fastening ring into the collecting tray from above, whereby the plate-like element is clamped between the collecting tray and the fastening ring.

[0005] The drawback of such a connection is that it is not clear how tightly the fastening ring must be screwed for a correct connection. If the connection is not tightened sufficiently, leakage can occur. In addition, the length of the screw thread is usually limited, whereby differences in thickness are difficult to compensate. The collecting tray is furthermore tightened against the foam plate, whereby stress can occur in the outlet pipe or the foam plate can be deformed.

[0006] It is therefore an object of the invention to reduce or even obviate the above stated drawbacks.

[0007] This objective is achieved according to the invention with a drain according to the preamble which is characterized in that the coupling means comprise at least one resilient finger arranged parallel to the upright wall and on the inner side of the upright wall, wherein the at least one resilient finger has a first edge arranged on the free end;

and wherein the coupling means comprise a second edge oriented in radial direction and arranged on the downward directed peripheral wall, which second edge engages on the first edge of the finger during axial displacement of the upright wall relative to the downward directed wall.

[0008] A snap connection is formed with the coupling means according to the invention. When a click is heard

during mounting of the fastening ring on the collecting tray, it will be immediately apparent that both parts are correctly coupled. A plate-like element with fastening ring can therefore be placed in one movement on the lower tray and coupled thereto during mounting.

[0009] Because a sealing ring is further arranged between the downward directed peripheral wall and the upright wall, a watertight connection will be formed at all times between the collecting tray and the fastening ring. This seal is independent of the snap connection. A good seal is thus guaranteed independently of the snap connection. In addition, the fastening ring can continue to displace relative to the collecting tray, whereby differences in thickness can easily be compensated, as well as small differences in angle between the fastening ring and the collecting tray. Deformation of the foam plate or of the outlet pipe will therefore not occur.

[0010] Because the at least one resilient finger is further arranged on the inner side of the upright wall, it is moreover easily possible to check whether the snap connection has been properly effected, for instance by feeling or examining the finger.

[0011] In a preferred embodiment of the drain according to the invention the at least one resilient finger is arranged on an insert part, which insert part is arranged removably in the upright wall of the collecting tray.

[0012] By being arranged on insert parts the resilient fingers can be easily replaced when for instance a finger is damaged during assembly. In addition, the fingers can optionally be adapted to the type of fastening ring which will be coupled to the collecting tray. The collecting tray can thus also be further used for other embodiments without fingers, which reduces production costs.

[0013] In a further embodiment of the drain according to the invention the insert part comprises a hook part, which hook part protrudes into a recess in the upright wall of the collecting tray.

[0014] In a highly preferred embodiment according to the invention the upright wall comprises a peripheral groove for receiving the sealing ring and the recess is arranged in the groove and extends parallel to the peripheral wall.

[0015] By hooking the insert parts into a recess in the peripheral groove and subsequently placing a sealing ring in the peripheral groove, the inserts cannot come loose accidentally. The inserts can only be removed when the sealing ring is removed again.

[0016] In yet another embodiment of the drain according to the invention the second edge is directed inward in radial direction.

[0017] The resilient finger will hereby engage from inside to outside in radial direction on the second edge and the fingers can be easily uncoupled via the opening.

[0018] In yet another embodiment of the drain according to the invention the coupling means comprise at least three resilient fingers. These three fingers are preferably evenly distributed along the periphery, whereby a stable and firm coupling can be obtained.

[0019] The invention further comprises a combination of a drain according to the invention and a plate-like element, such as a sloping plate of foam, wherein an opening is provided in the plate-like element, wherein the fastening ring is arranged around the opening in the upper surface of the plate-like element, wherein the downward directed wall protrudes into the opening and wherein the collecting tray is arranged against the underside of the plate-like element, wherein the upright wall comes to lie inside the opening of the plate-like element and the fastening ring is coupled to the collecting tray.

Figure 1 is a perspective view of a first embodiment with exploded parts.

Figure 2 is a cross-sectional view of the embodiment according to figure 1.

Figure 3 is a cross-sectional view of a second embodiment.

Figure 4 is a cross-sectional view of a combination according to the invention.

[0020] Figure 1 is a perspective view of a first embodiment 100 with exploded parts. In this embodiment 100 the drain is provided with a collecting tray 101, which has a tubular outlet opening 102 for further connection to a further outlet pipe. Collecting tray 101 is provided on the upper side with a ring 103 which is welded to upright wall 104 of collecting tray 101 during assembly.

[0021] Provided in upright wall 104 of collecting tray 101 are recesses 105 in which insert parts 106 can be placed. Provided on each insert part 106 is a resilient finger with an edge 107 which extends outward in radial direction.

[0022] Figure 2 is a cross-sectional view of embodiment 100 according to figure 1. Here ring 103 is welded onto upright wall 104 so that above insert parts 106 a groove 108 is formed in which a sealing ring 109 is placed. This sealing ring 109 prevents the possibility of insert part 106 being removed from collecting tray 101.

[0023] A fastening ring 110 with an outflow 114 of a drain 115 therein is further arranged on collecting tray 101. Fastening ring 110 has a downward directed wall 111 which seals onto sealing ring 109. Provided further on the downward directed wall 111 is a wall with tongue 112 which co-acts with the edge of resilient finger 107 and prevents the possibility of downward directed wall 111 being removed from collecting tray 101.

[0024] The wall with tongue 112 forms an outflow in which a second seal 113 is arranged and in which outflow 114 of drain 115 can then be placed. Drain 115 can hereby be adjusted in height to the thickness of the surrounding tiles or other floor.

[0025] Figure 3 is a cross-sectional view of a second embodiment 120 which is largely similar to embodiment 100 of figure 2. The same parts are therefore designated with the same reference numerals.

[0026] Fastening ring 110 of the drain has a downward directed wall 121 which seals onto sealing ring 109. A

ring with tongue 122 is adhered against the inner side of downward directed wall 121. Tongue 122 co-acts with resilient finger 107 to prevent unexpected removal of fastening ring 110.

[0027] Because ring with tongue 122 is adhered directly against the inner side of outflow 121 a more compact construction is obtained compared to embodiment 100 according to figures 1 and 2. The drawback is that a separate ring with tongue 122 must be produced, because otherwise fastening ring 110 of the drain is not releasable, which would require a costly split mould.

[0028] Figure 4 is a cross-sectional view of a combination 140 according to the invention. The combination 140 has a foam plate 141 in which a drain 100 as according to figure 1 is arranged.

[0029] Fastening ring 110 is arranged recessed into the upper side of foam plate 141, while collecting tray 104 is placed with ring 103 against the underside.

[0030] Because finger 107 can displace relative to tongue 112, while sealing ring 109 provides for the sealing, a difference in thickness of for instance foam plate 141 can thus be compensated.

[0031] A tile layer 142 is further arranged on foam plate 141 with tile adhesive 143. Outflow 114 of drain 115 protrudes into second seal 113 and can likewise be adjusted in height so that the upper side of drain 115 lies flush with the upper side of tiles 142. A mastic layer 144 further provides for a seal between drain 115 and tiles 142.

Claims

1. Drain for mounting on a plate, such as a foam plate, which drain comprises:

- a collecting tray with a bottom, an upright wall along the periphery of the bottom and an outlet opening;
- a fastening ring with a peripheral wall directed downward on the inner edge of the ring, which downward directed peripheral wall extends inside the upright wall of the collecting tray;
- a sealing ring arranged between the downward directed peripheral wall and the upright wall; and
- coupling means for coupling the fastening ring to the collecting tray;

characterized in that

the coupling means comprise at least one resilient finger arranged parallel to the upright wall and on the inner side of the upright wall, wherein the at least one resilient finger has a first edge arranged on the free end;

and wherein the coupling means comprise a second edge oriented in radial direction and arranged on the downward directed peripheral wall, which second edge engages on the first edge of the finger during axial displacement of the upright wall relative to the

downward directed wall.

2. Drain as claimed in claim 1, wherein the at least one resilient finger is arranged on an insert part, which insert part is arranged removably in the upright wall of the collecting tray. 5
3. Drain as claimed in claim 2, wherein the insert part comprises a hook part, which hook part protrudes into a recess in the upright wall of the collecting tray. 10
4. Drain as claimed in claim 3, wherein the upright wall comprises a peripheral groove for receiving the sealing ring and wherein the recess is arranged in the groove and extends parallel to the peripheral wall. 15
5. Drain as claimed in any of the foregoing claims, wherein the second edge is oriented inward in radial direction. 20
6. Drain as claimed in any of the foregoing claims, wherein the coupling means comprise at least three resilient fingers.
7. Combination of a drain as claimed in any of the foregoing claims and a plate-like element, such as a sloping plate of foam, wherein an opening is provided in the plate-like element, wherein the fastening ring is arranged around the opening in the upper surface of the plate-like element, wherein the downward directed wall protrudes into the opening and wherein the collecting tray is arranged against the underside of the plate-like element, wherein the upright wall comes to lie inside the opening of the plate-like element and the fastening ring is coupled to the collecting tray. 25
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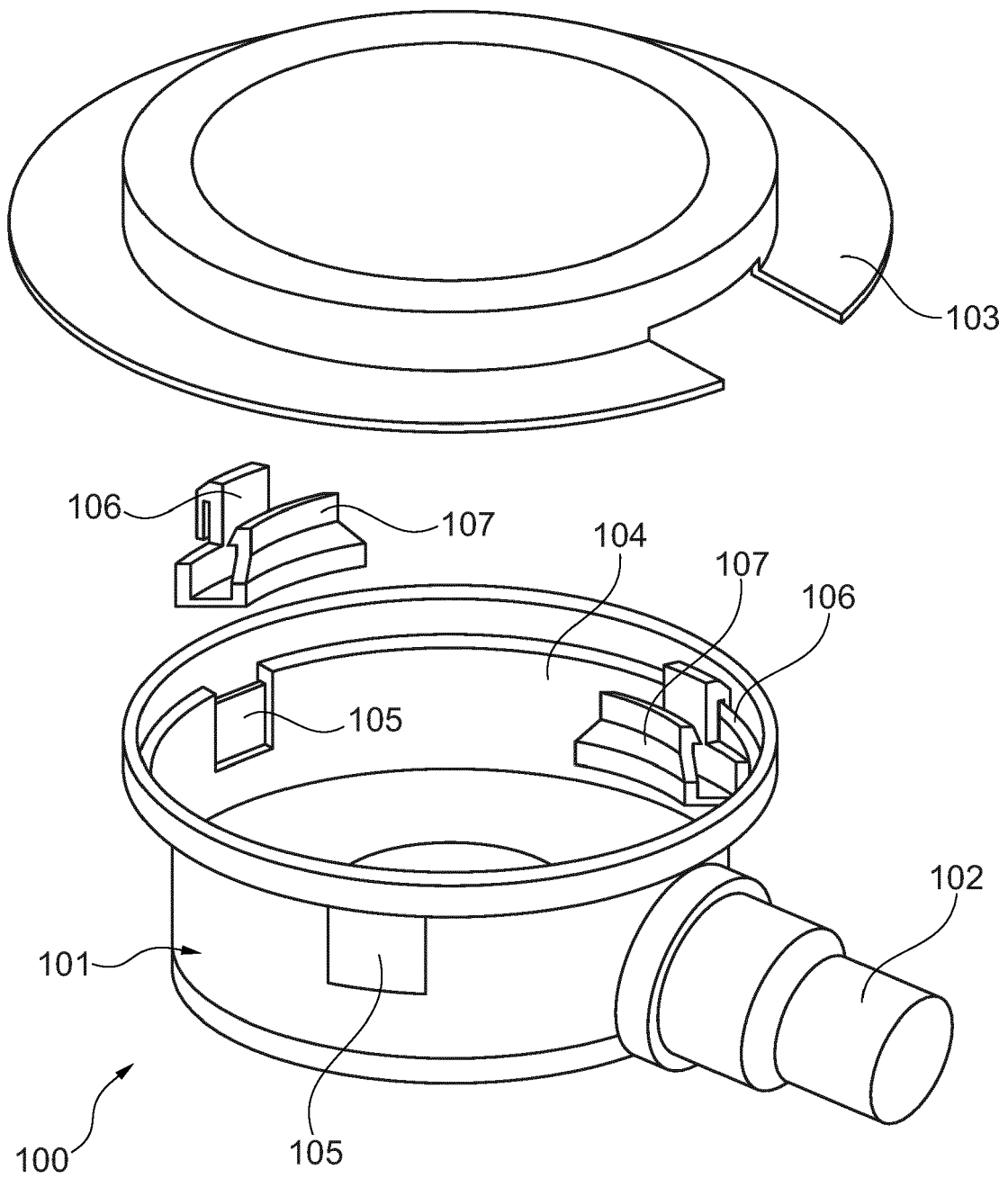


Fig. 1

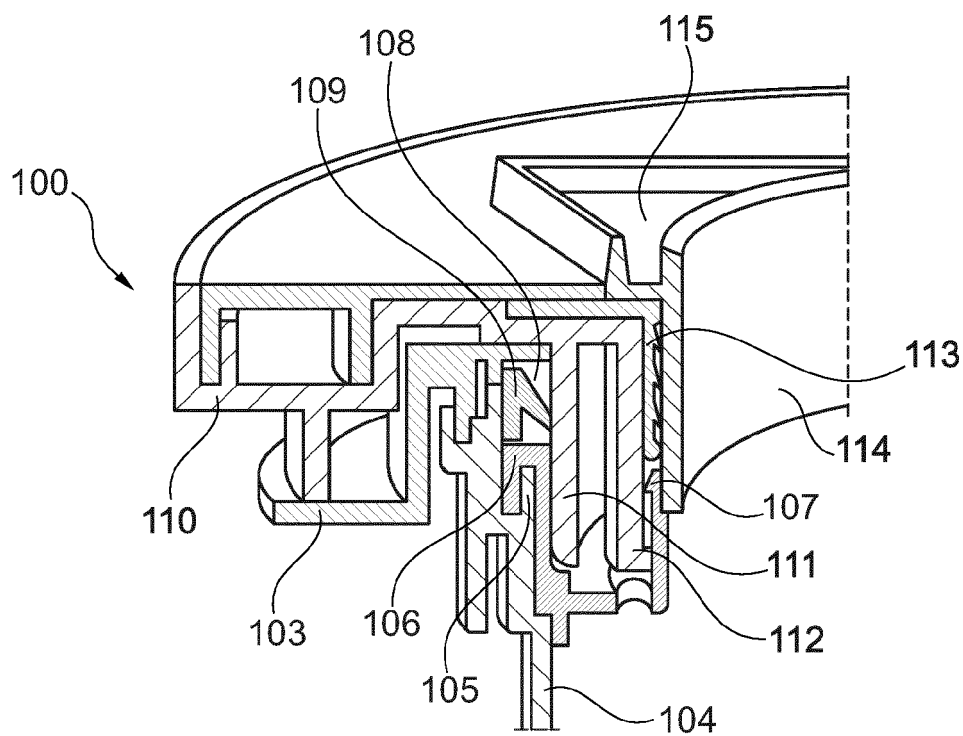


Fig. 2

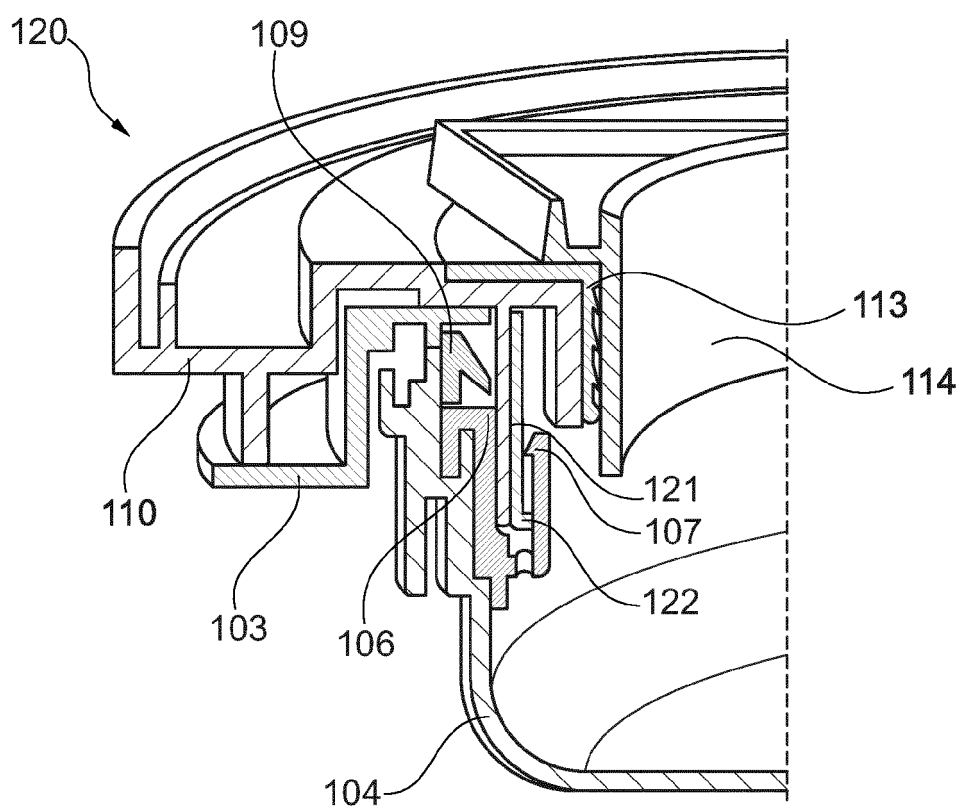


Fig. 3

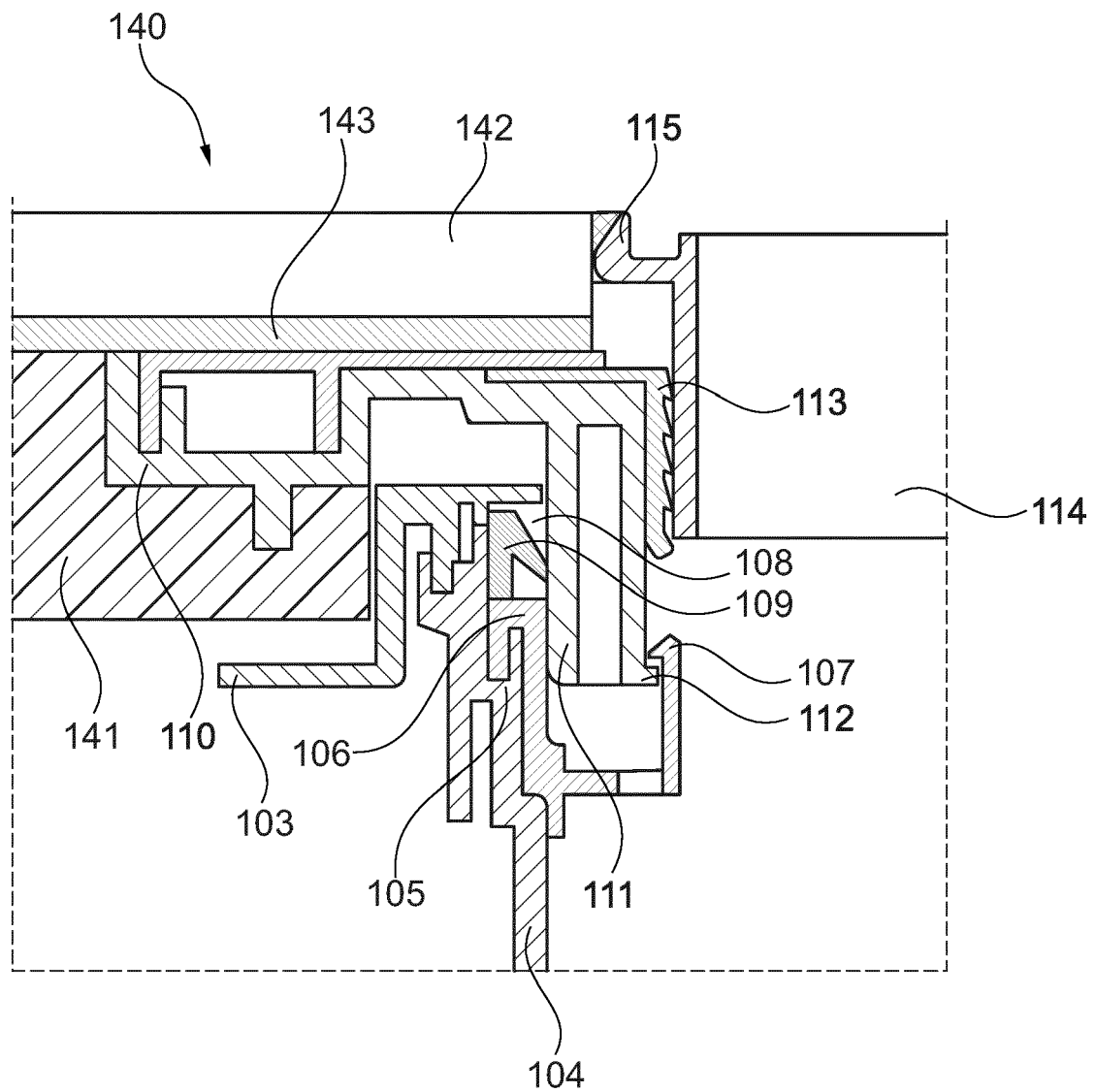


Fig. 4



EUROPEAN SEARCH REPORT

 Application Number
EP 18 16 7507

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A	EP 2 995 231 A1 (WEDI GMBH [DE]) 16 March 2016 (2016-03-16) * figures 1,8-10 *	1,7	
A	DE 20 2011 109947 U1 (KALDEWEI FRANZ GMBH & CO [DE]) 1 August 2012 (2012-08-01) * figure 2 *	1,7	
			TECHNICAL FIELDS SEARCHED (IPC)
			E03F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 September 2018	Examiner Flygare, Esa
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 16 7507

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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