(19) Europäisches Patentamt
European Patent Office
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(11) **EP 2 390 431 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.11.2011 Bulletin 2011/48

(51) Int Cl.:
E03F 5/04 *(2006.01)*

(21) Application number: **11167407.3**

(22) Date of filing: **25.05.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **26.05.2010 NL 2004772**

(71) Applicant: **Easy Sanitairy Solutions B.V.**
7581 EZ Losser (NL)

(72) Inventor: **Keizers, Jurgen Hendrik Peter Jozeph**
7582 GH, Losser (NL)

(74) Representative: **'t Jong, Bastiaan Jacob**
Inaday B.V.
Hengelosestraat 141
7521 AA Enschede (NL)

(54) **Gutter drain**

(57) The invention relates to a drain, comprising:
- a bottom surface;
- a standing wall along the periphery of the bottom surface such that a tray is formed by the standing wall and the bottom surface; and
- a horizontal flange extending from the upper edge of the standing wall; wherein
a strip is arranged running peripherally along the standing wall in the formed tray, wherein the upper edge of the peripheral strip protrudes above the horizontal flange.

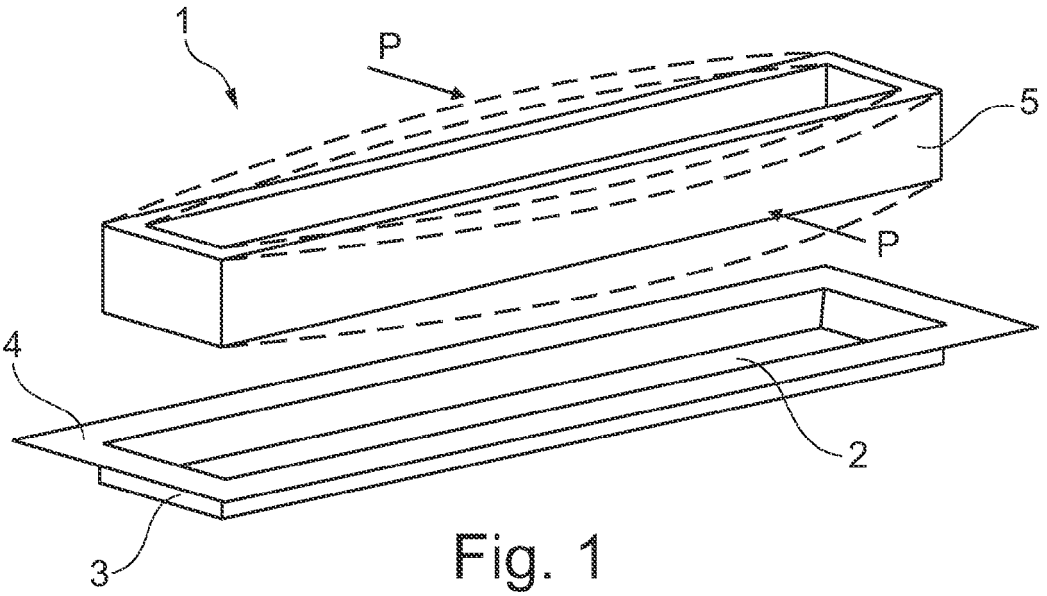

Fig. 1

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Description

[0001] The invention relates to a drain, particularly an elongate or other shower drain, comprising:

- a bottom surface;
- a standing wall along the periphery of the bottom surface such that a tray is formed by the standing wall and the bottom surface; and
- a horizontal flange extending from the upper edge of the standing wall.

[0002] In known drains a sealing membrane is arranged on the horizontal flange which ensures that the drain is properly sealed relative to the surrounding floor. It is further usual to arrange a finishing layer over the membrane. This finishing layer is often a layer of tiles.

[0003] The side of the finishing layer is visible around the opening of the drain. This is often undesirable. It is therefore usual to conceal this side part of the finishing layer from view.

[0004] It is known from for instance NL 1034911 of applicant to place in the tray an adjusting frame with which inter alia the height of a grating can be adjusted but with which the side part of the finishing layer is also hidden from view. Such an adjusting frame does however entail additional costs.

[0005] Another solution for concealing the side part from view is to allow the standing wall to protrude above the horizontal flange. Tiles or a finishing layer can then be arranged on the horizontal flange and against the protruding part of the standing wall.

[0006] A drawback of having the standing wall protrude is that the height of the protruding part is not usually adapted to the thickness of the finishing layer. The protruding part may hereby be too high in the case of for instance glass mosaic, while in the case of marble tiles it is too low.

[0007] Another drawback of a protruding part is that moisture which gets under the finishing layer, for instance as a result of a crack, can no longer flow into the drain tray.

[0008] In addition, the protruding part is often formed as a folded part with a U-shaped cross-section. During the production process the drain must undergo an acid treatment following welding. The folded part forms a narrow cavity which the acid can easily enter and from which it is difficult to remove as a result of capillary action. These remaining acids can cause discolourations and even an adverse effect on the drain.

[0009] It is now an object of the invention to reduce or even obviate the above stated drawbacks.

[0010] This object is achieved with a drain according to the preamble, which is characterized in that a strip is arranged running peripherally along the standing wall in the formed tray, wherein the upper edge of the peripheral strip protrudes above the horizontal flange.

[0011] The peripheral strip is a separate part and the height thereof can thereby be adjusted to the thickness of the finishing layer. The drain tray can first be arranged in the floor. Then determined is which finishing layer will be applied and what its thickness will be. A suitable height of the peripheral strip is chosen subject thereto and this strip is placed in the formed tray. It is also possible to place the peripheral strip only after the finishing layer has been arranged.

[0012] Because the strip is placed separately in the formed tray, moisture below the finishing layer, for instance tiles, can flow into the tray.

[0013] The peripheral strip preferably rests on the bottom surface. In addition, the peripheral strip can lie against the standing wall.

[0014] In an embodiment of the drain according to the invention at least a part of the peripheral strip is arranged resiliently and under bias in the formed tray such that the peripheral strip is pressed against the standing wall. In preference the peripheral strip at least partially comprises spring steel.

[0015] Placing the peripheral strip under bias in the formed tray ensures that the strip lies firmly against the side wall. The bias also reduces the possible chance of the strip being pressed off the side wall of the tray as a result of load.

[0016] In order to place the strip under bias in the formed tray it is for instance possible to make a frame of strip material, wherein the sides are slightly convex. The sides can be pressed toward each other due to the resilience of the strip, whereby the frame can be pressed into the formed tray. Owing to the resilience and the bias the strip will press itself against the side walls of the lower tray.

[0017] In the case of an elongate tray it is also possible to provide only the short sides of the strip with spring steel, whereby the long sides of the frame can be pressed toward each other and subsequently pressed into the formed tray.

[0018] Even if the opening of the tray is smaller than for instance the bottom surface, a strip can be easily arranged in the lower tray using the spring steel.

[0019] In a further preferred embodiment of the drain according to the invention the cross-section in longitudinal direction of the peripheral strip is stepped, with a lower vertical part, a horizontal central part and an upper vertical part.

[0020] The upper part of the peripheral strip protrudes inward due to this stepped part of the strip. The tiles or finishing layer can hereby protrude to some extent over the opening of the formed tray. In addition, a seal can be arranged under the finishing layer in order to seal the peripheral strip relative to the formed tray.

[0021] The horizontal central part is preferably arranged at the same height as or under the horizontal flange.

[0022] In addition, drainage openings can be arranged in the upper vertical part. In addition to arranging a seal between the peripheral strip and the formed tray, a drainage for moisture which gets under the finishing layer can

hereby still be obtained.

[0023] In another embodiment of the drain according to the invention a sealing means is arranged between the peripheral strip and the standing wall. This sealing means can be a mastic bead, for instance a silicone mastic bead.

[0024] At least a part of the standing wall can further slope inward. The bottom surface can hereby be wider than the inflow opening and the visible part of the drain. Owing to the wider bottom surface the drain can be connected to a larger outlet pipe.

[0025] In addition, the inward sloping part ensures that the drain obtains a form-fitting connection to the floor in which the drain is arranged. Due to this form-fitting connection the drain cannot become detached from the floor, even if the adhesion between the floor and the drain were to be broken.

[0026] Because of the inward sloping part the opening is also smaller than the bottom surface, whereby the visible part of the drain is smaller.

[0027] A corresponding part of the peripheral strip is preferably bent outward in order to lie against the upward sloping wall part.

[0028] The invention further comprises a combination of a drain according to the invention and a number of peripheral strips, wherein the peripheral strips have different heights. Such a combination provides a set with which it is possible to determine at the last moment what the height of the peripheral strip should be.

[0029] These and other features of the invention are further elucidated with reference to the accompanying figures.

Figure 1 shows a perspective view of a first embodiment of the drain according to the invention with exploded parts.

Figure 2 shows a cross-sectional view of the drain according to figure 1.

Figure 3 shows a cross-sectional view of a second embodiment of the drain according to the invention.

Figure 4 shows a cross-sectional view of a third embodiment of the drain according to the invention.

Figure 5 shows a cross-sectional view of a fourth embodiment of the drain according to the invention.

Figure 6 shows a cross-sectional view of a fifth embodiment according to the invention.

Figure 7 shows a cross-sectional view of a sixth embodiment according to the invention.

Figure 8 shows a cross-sectional view of a seventh embodiment according to the invention.

Figure 9 shows a partially perspective view of an eighth embodiment of the invention.

Figure 10 shows a partially perspective view of a ninth embodiment.

Figure 11 shows a cross-sectional view of a tenth embodiment.

Figure 12 shows a cross-sectional view of an eleventh embodiment.

Figure 13 shows a cross-sectional view of a twelfth embodiment.

Figure 14 shows a cross-sectional view of a thirteenth embodiment.

Figure 15 shows a perspective view of a fourteenth embodiment.

Figure 16 shows a cross-sectional view of a fifteenth embodiment.

Figure 17 shows a perspective view of a sixteenth embodiment.

[0030] Figure 1 shows a first embodiment of a drain 1 according to the invention. Drain 1 has a bottom surface 2 with a standing peripheral wall 3 along the periphery. A horizontal flange 4 is provided on the upper side of wall 3. A peripherally running strip 5 is placed in the formed tray 2, 3, 4.

[0031] In unloaded situation the peripheral strip 5 has a slightly convex form, as indicated with broken lines. By exerting pressure P thereon the peripheral strip 5 can be brought into a rectangular form, after which the peripheral strip 5 can be placed in formed tray 2, 3, 4.

[0032] As shown in figure 2, a sealing membrane 6 is arranged on horizontal flange 4 and provides for a sealing of tray 2, 3, 4 relative to the surrounding floor.

[0033] A layer of floor tiles 7 is arranged on sealing membrane 6. The upper surface of floor tiles 7 lies flush with upper edge 8 of the peripheral strip 5 so that the side part of tiles 7 is not visible.

[0034] Figure 3 shows a second embodiment 10 according to the invention. Drain 10 has a bottom 11 with a standing wall 12 along the periphery of bottom 11. Provided on the top side of standing wall 12 is a horizontal flange 13 to which a sealing membrane can be attached.

[0035] A peripheral strip 14 is placed in the formed tray 11, 12, 13. The peripheral strip 14 is stepped with a lower vertical part 15, a horizontal central part 16 and an upper vertical part 17.

[0036] The horizontal central part 16 is placed under horizontal flange 13 so that there is space for a mastic bead 18 which seals the peripheral strip 14 against standing wall 12.

[0037] A drainage opening 19 is provided in the upper vertical part 17 of the peripheral strip 14 to discharge possible moisture from under tiles 20 to tray 11, 12, 13.

[0038] Strip is stronger, silicone under tile thereby invisible, visible part smaller

[0039] Figure 4 shows a third embodiment 30 of a drain according to the invention. This drain 30 has a tray formed from a bottom surface 31 and a standing wall 32. A horizontal flange 33 is arranged on the upper edge of standing wall 32.

[0040] A peripheral strip is arranged on tray 31, 32. This strip has a substantially U-shaped cross-section, wherein a free end of first leg 34 lies against the inner side of standing wall 32 with and wherein free end 36 of second leg 35 is bent into a horizontal flange which lies on horizontal flange 33. The peripheral strip 34, 35, 36

hereby has a good strength at a relatively thin wall thickness of the strip. Flange 36 can be arranged over the whole periphery or at a number of discrete locations. In such a case the pieces of flange can protrude further so as to thus have a good anchoring.

[0041] Figure 5 shows a fourth embodiment 40 of the drain according to the invention. Drain 40 has a bottom surface 41 with a standing wall 42 and an upward sloping wall 43. A horizontal flange 44, 45 is further provided on top of walls 42, 43.

[0042] Due to the upward sloping wall 43 the bottom surface 41 can be larger than the opening on the top side of tray 41-45. It is hereby possible to connect a larger outlet pipe 46 onto tray 41-45.

[0043] Further arranged in tray 41-45 is a peripheral strip 47 which is provided on the underside with a flange 48 adjacently of the upward sloping wall 43 and provided on the upper side with a horizontal flange 49 on the opposite part of strip 47. A wall tile 50 can for instance be placed on this horizontal flange 49.

[0044] Figure 6 shows a cross-sectional view of a drain 60 according to the invention. This drain 60 also has a tray with a bottom surface 61, side walls 62 sloping inward and upward and horizontal flanges 63 arranged thereon. Arranged in tray 61, 62, 63 is a peripheral strip 64 which is provided on the underside with an outward protruding flange 65. With this embodiment it is possible to connect drain 60 to for instance a round outlet pipe with a diameter of 50 mm, while the width b of the visible opening of the drain is smaller than this 50 mm.

[0045] In addition, the dovetail-like form of the cross-section of drain 60 has the advantage that the drain is arranged in form-fitting manner in the floor and cannot be detached as a result of for instance differences in contraction.

[0046] Figure 7 shows a sixth embodiment 70 of a drain according to the invention. In this drain 70 the lower tray 71 has standing walls 72 and horizontal flanges 73.

[0047] Strips 74 are arranged along standing walls 72 in lower tray 71. These strips 74 are pressed against side walls 72 by spacers 75. In addition, spacer 75 also forms a support for grating 76. An appropriate spacer can be chosen subject to the chosen strip height of strips 74, so that a standardized grating 76 will at all times lie flush with the upper edge of strips 74.

[0048] A seventh embodiment 80 of a drain is shown in figure 8. Lower tray 81 has standing side walls 82 and a flange 83 arranged thereon. In lower tray 81 strips 84 are arranged against side walls 82.

[0049] Strips 84 are provided with tongues 85 which are bent out of the surface of strip 84 and into which the lower edge 86 of grating 87 is placed. Strips 84 are hereby held at a distance from each other and against side walls 82.

[0050] Figure 9 shows an eighth embodiment of drain 90 according to the invention. Drain 90 has a lower tray with a bottom surface 91, standing side walls 92 and horizontal flanges 93 arranged thereon.

[0051] Protrusions 94 are arranged on bottom surface 91 at a distance from side walls 92. A strip 95 is then placed between protrusions 94 and side wall 92.

[0052] This embodiment 90 is particularly advantageous when lower tray 91, 92, 93 is of plastic, and particularly manufactured by injection moulding.

[0053] Figure 10 shows a perspective view of a drain 100 according to the invention. Drain 100 has a lower tray with a bottom surface 101, upward sloping side walls 102. A horizontal flange 103 is further provided on these upward sloping side walls 102.

[0054] Strips 104, 105 are further placed in lower tray 101, 102, 103. These strips 104, 105 are bent outward on the underside so that strips 104, 105 lie against the upward sloping side walls 102.

[0055] Strips 104, 105 are held at a distance from each other by a plastic spacer 106. Provided on this spacer 106 are protrusions 107 which ensure that a grating 108 is properly positioned in drain 100.

[0056] Strips 104, 105 are further provided with support tongues 109 which are cut from the bottom part of strip 104, 105 that is bent outward.

[0057] Instead of using plastic spacer 106 the strips 104, 105 can also be mutually connected by means of spring steel so that strips 104, 105 can be pressed toward each other in order to be placed in lower tray 101.

[0058] Figure 11 shows a tenth embodiment 110 of a drain according to the invention. This drain 110 has a lower tray 111 in which are placed two strips 112 with inward directed horizontal flanges 113. Tiles 114 are arranged on lower tray 111, wherein a seal 115 of for instance silicones is arranged between tiles 114 and horizontal flanges 113.

[0059] Because seal 115 is arranged between strips 112 and tiles 114, water possibly leaking from under tiles 114 can flow into lower tray 111.

[0060] Figure 12 shows a variant 120 of the embodiment according to figure 11. Drain 120 here also has a lower tray 121 in which a strip 122 with Z-shaped cross-section is arranged. Strip 122 is arranged against a tile 123 placed on lower tray 121 and sealed via a sealing mastic 124. Water leaking from under tile 123 can also flow in this variant 120 into lower tray 121.

[0061] Figure 13 shows a twelfth embodiment of a drain 130. A straight strip 132 is arranged in lower tray 131. A flexible sealing strip 134 is arranged on horizontal flange 133 of lower tray 131. This sealing strip 134 lies under bias against strip 132. Although water leaking from under tiles 135 can hereby flow into lower tray 131, water from lower tray 131 is held back.

[0062] Figure 14 shows a thirteenth embodiment 140 according to the invention. This drain 140 has a lower tray 141 with inward directed flanges 142 on either side. Arranged on these flanges 142 is a sealing profile 143 which provides for a good sealing relative to the strips 144 placed in lower tray 141. This sealing profile 143 prevents water already present in lower tray 141 from flowing away between strips 144 and flanges 142.

[0063] Figure 15 shows a perspective view of a fourteenth embodiment of a drain 150. Drain 150 has a lower tray with horizontal flanges 151 on which a sealing membrane can for instance be arranged.

[0064] A rectangular frame 152 of strip is arranged in lower tray 151. Recesses 153 are made in the corners of this frame 152, in which recesses a plate 154 can be placed. The height of frame 152 can thus be adjusted by placing plate 154 in the correct recess 153. Plate 154 rests here on horizontal flange 151.

[0065] Figure 16 shows a variant of the embodiment according to figure 15. Drain 160 here has a lower tray 161 with horizontal flanges 162. Placed in lower tray 161 is a strip 163 which is provided with a number of openings 164 arranged one above another. Arranged in one of the openings 164 is a pin 165 or plate with which the height of strip 163 can be adjusted relative to lower tray 161.

[0066] Figure 17 shows a sixteenth embodiment 170 of a drain according to the invention. Drain 170 has a lower tray 171 with a horizontal flange and a peripheral strip 172 placed in the lower tray.

[0067] The height of the peripheral strip 172 can be adjusted by placing a plate 174 in a number of holes 173 arranged one above another in the strip. Plate 174 has a protruding leg 175 which protrudes beyond holes 173, whereby plate 174 extends on either side of strip 172 and tilting as a result of strip 172 being loaded is impossible.

[0068] Plate 174 is further provided with a wave-shaped side edge 176 and two protrusions 177 so that once it has been embedded in glue plate 174 can no longer be displaced.

Claims

1. Drain, comprising:

- a bottom surface;
- a standing wall along the periphery of the bottom surface such that a tray is formed by the standing wall and the bottom surface; and
- a horizontal flange extending from the upper edge of the standing wall; **characterized in that** a strip is arranged running peripherally along the standing wall in the formed tray, wherein the upper edge of the peripheral strip protrudes above the horizontal flange.

2. Drain as claimed in claim 1, wherein the peripheral strip rests on the bottom surface.

3. Drain as claimed in claim 1 or 2, wherein the peripheral strip lies against the standing wall.

4. Drain as claimed in any of the foregoing claims, wherein at least a part of the peripheral strip is arranged resiliently and under bias in the formed tray such that the peripheral strip is pressed against the standing wall.

5. Drain as claimed in claim 4, wherein the peripheral strip at least partially comprises spring steel.

6. Drain as claimed in any of the foregoing claims, wherein the cross-section in longitudinal direction of the peripheral strip is stepped, with a lower vertical part, a horizontal central part and an upper vertical part.

7. Drain as claimed in claim 6, wherein the horizontal central part is arranged at the same height as or under the horizontal flange.

8. Drain as claimed in claim 6 or 7, wherein drainage openings are arranged in the upper vertical part.

9. Drain as claimed in any of the foregoing claims, wherein a sealing means is arranged between the peripheral strip and the standing wall.

10. Drain as claimed in claim 9, wherein the sealing means is a mastic bead, for instance a silicone mastic bead.

11. Drain as claimed in any of the foregoing claims, wherein at least a part of the standing wall slopes inward.

12. Drain as claimed in claim 11, wherein a corresponding part of the peripheral strip is bent outward in order to lie against the upward sloping wall part.

13. Combination of a drain as claimed in any of the foregoing claims and a number of peripheral strips, wherein the peripheral strips have different heights.

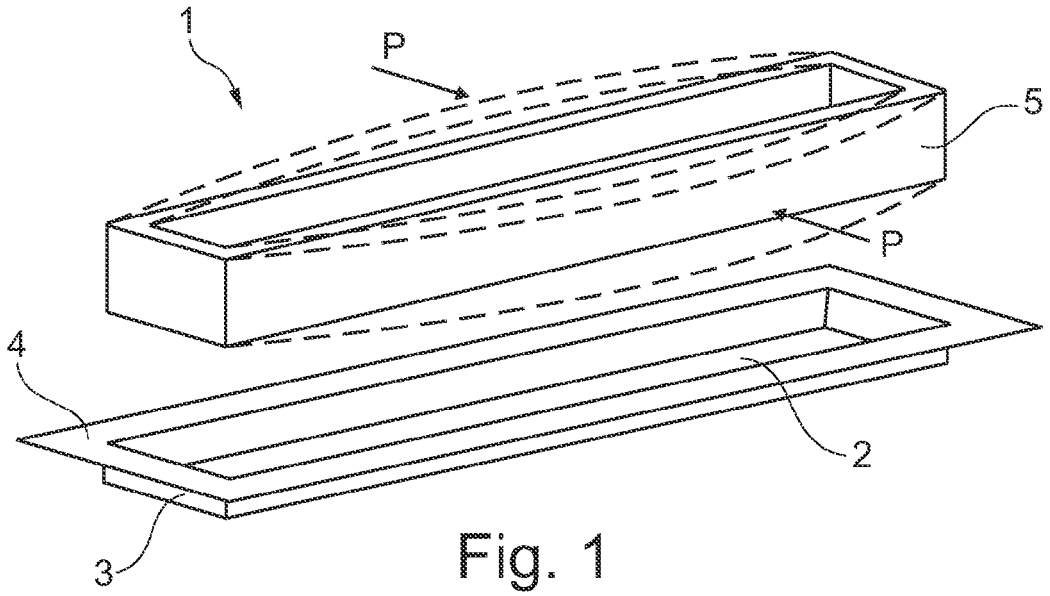

Fig. 1

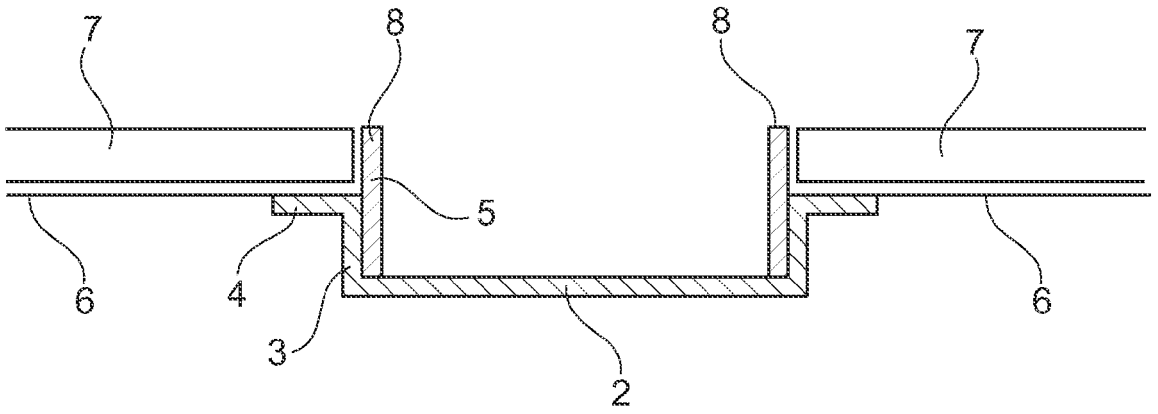

Fig. 2

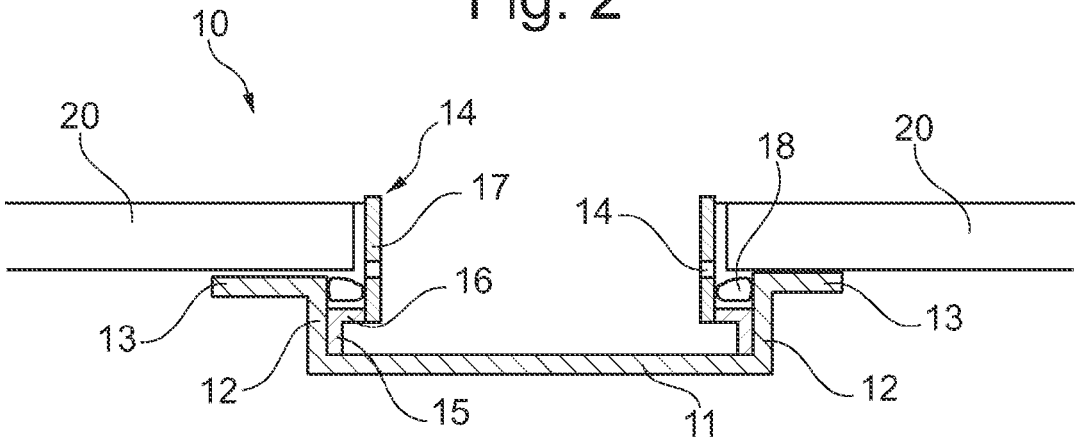

Fig. 3

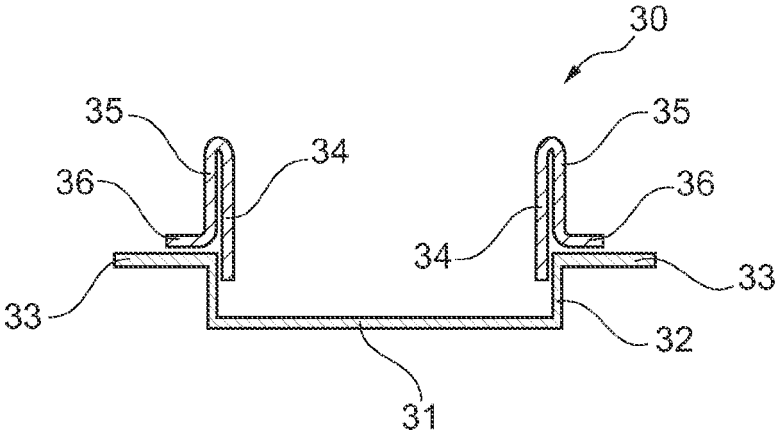

Fig. 4

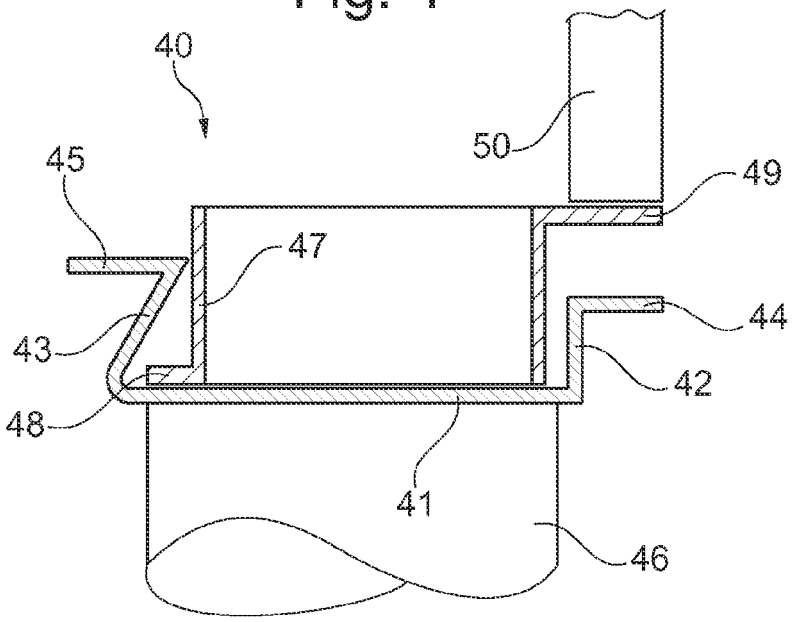

Fig. 5

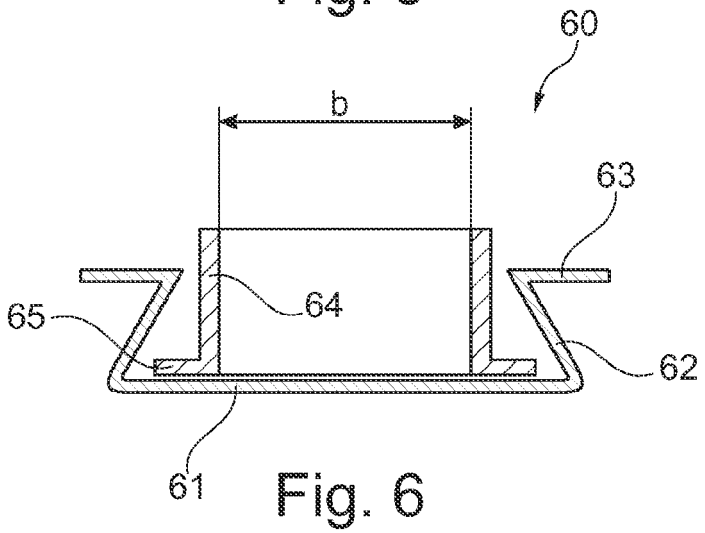

Fig. 6

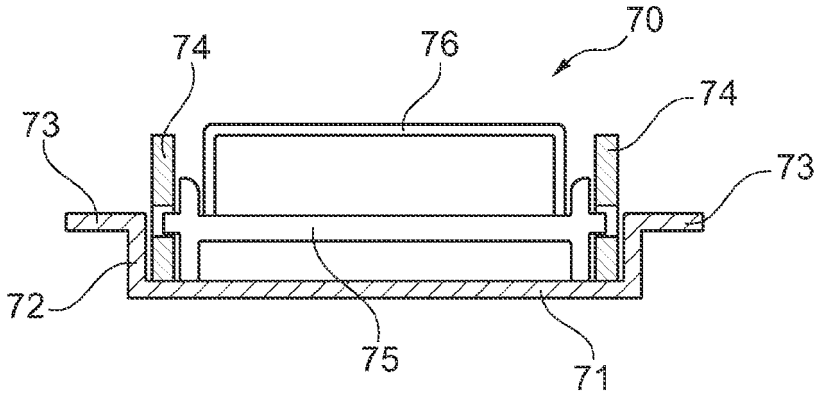

Fig. 7

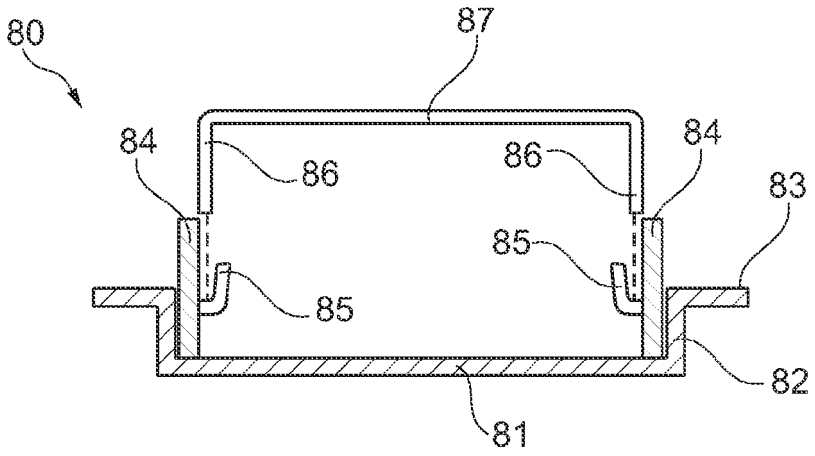

Fig. 8

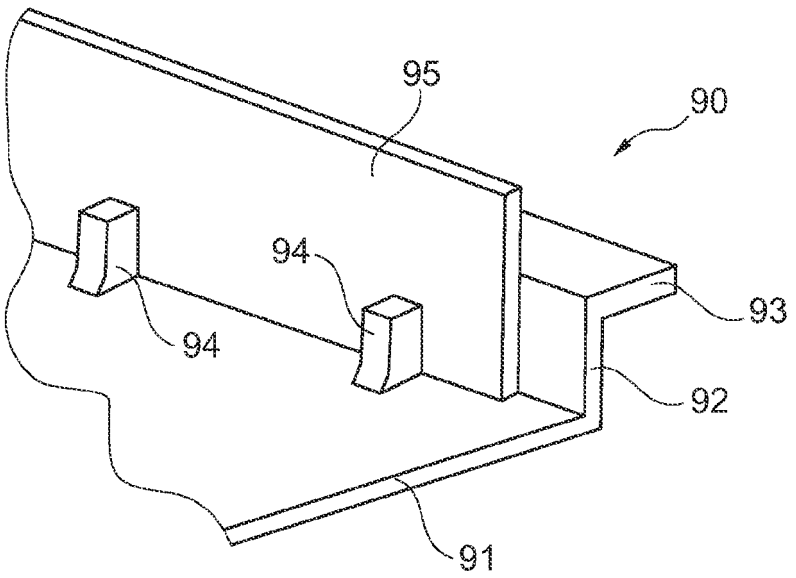

Fig. 9

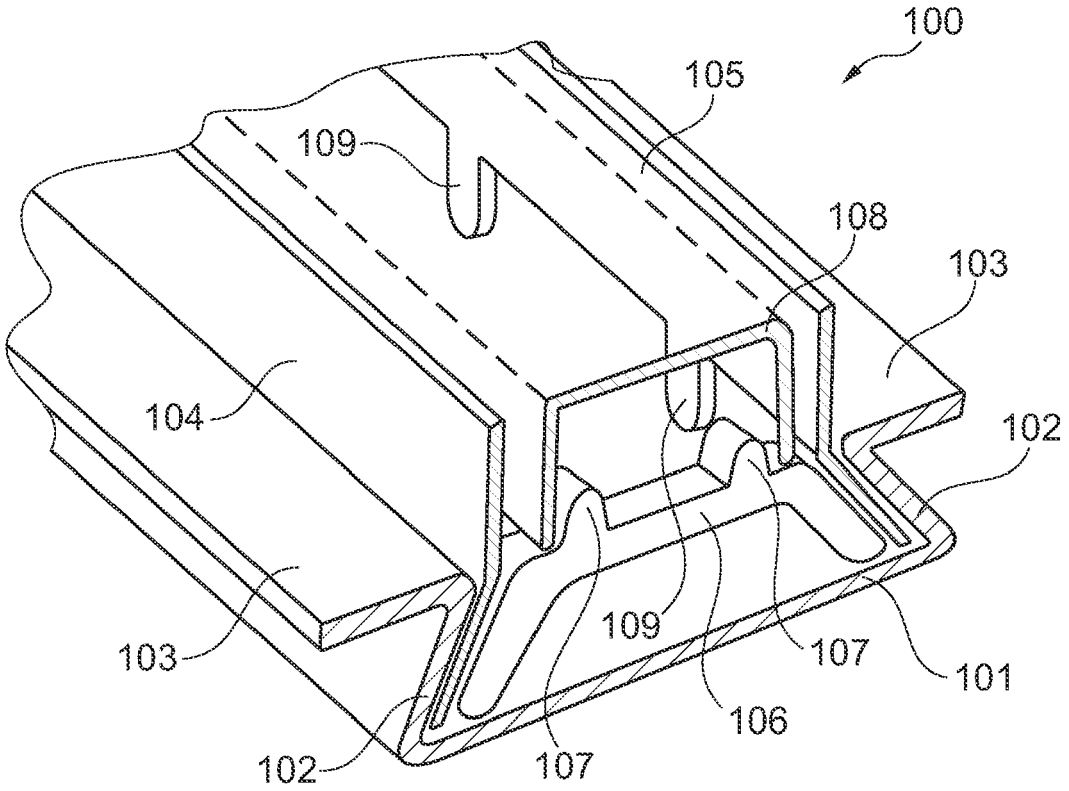
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Fig. 10

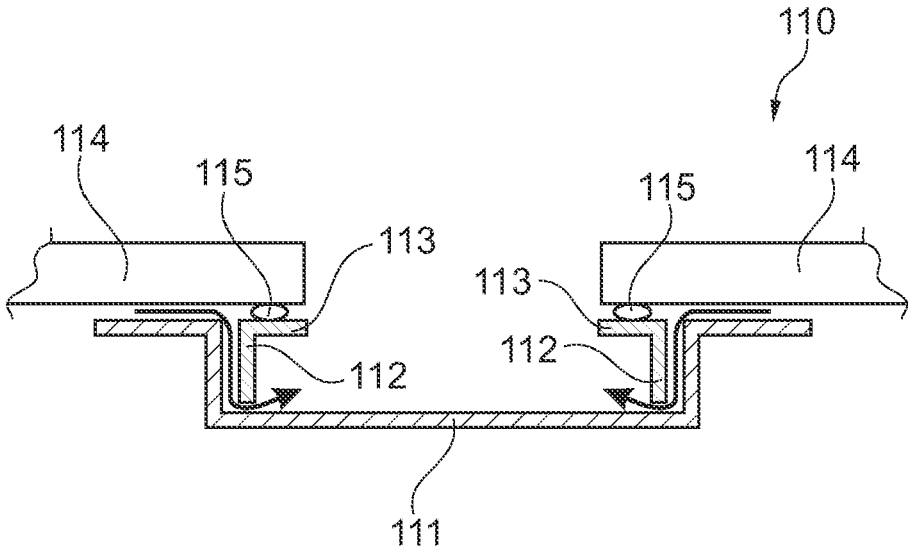
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Fig. 11

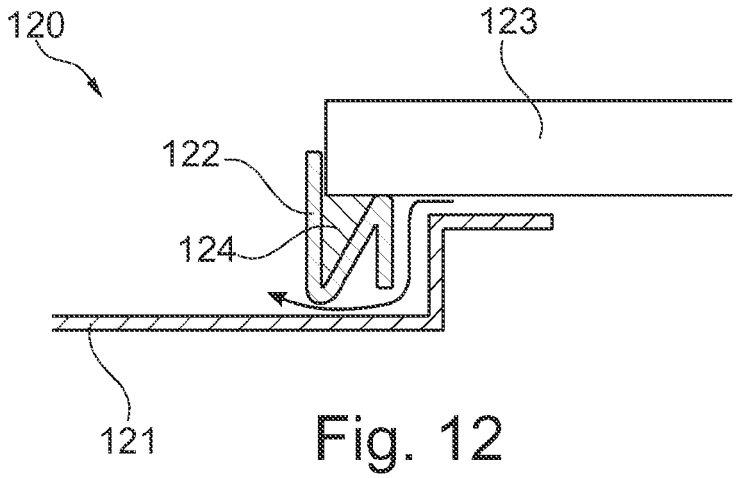

Fig. 12

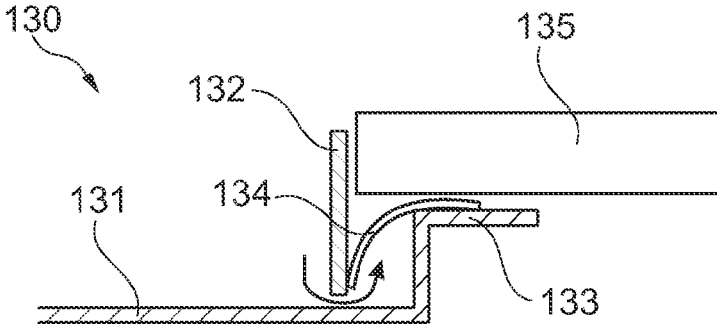

Fig. 13

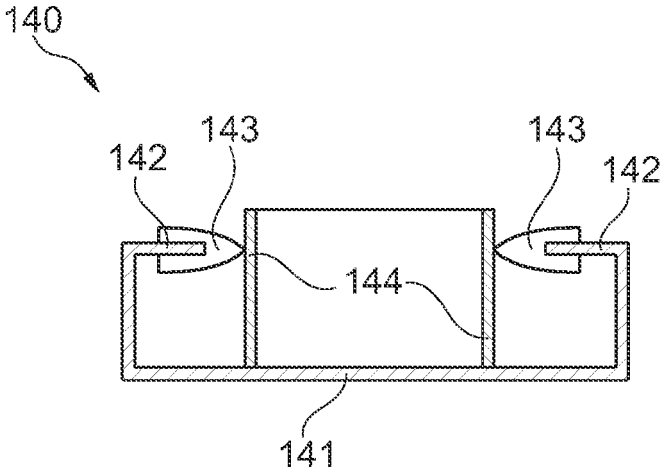

Fig. 14

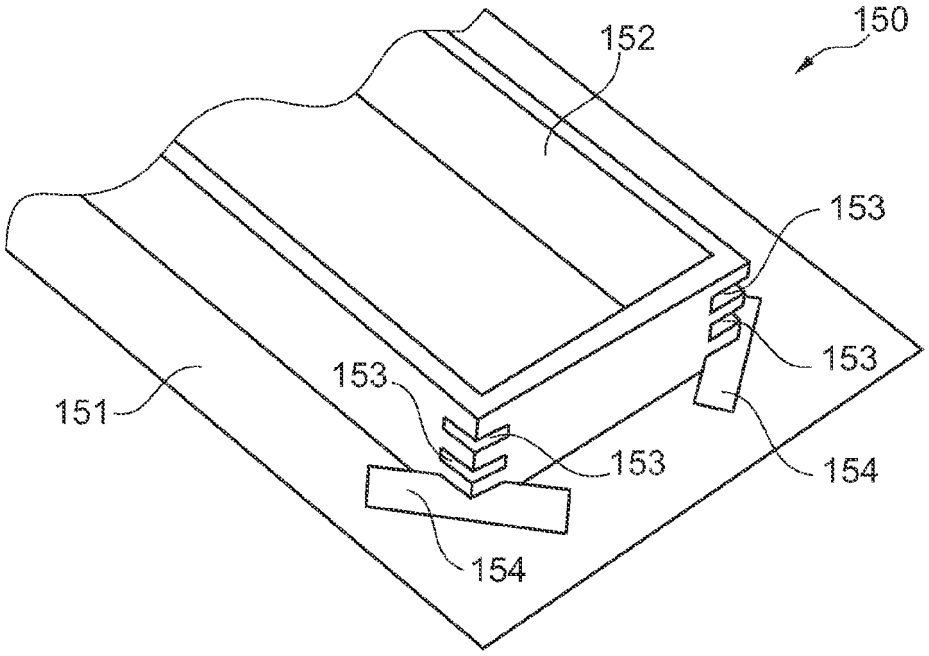

Fig. 15

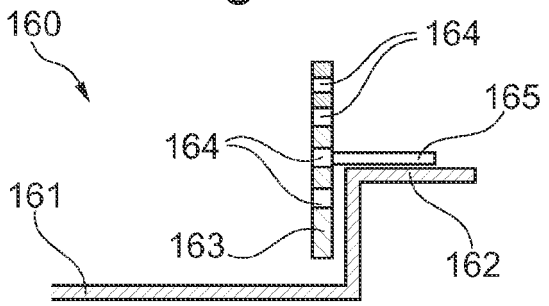

Fig. 16

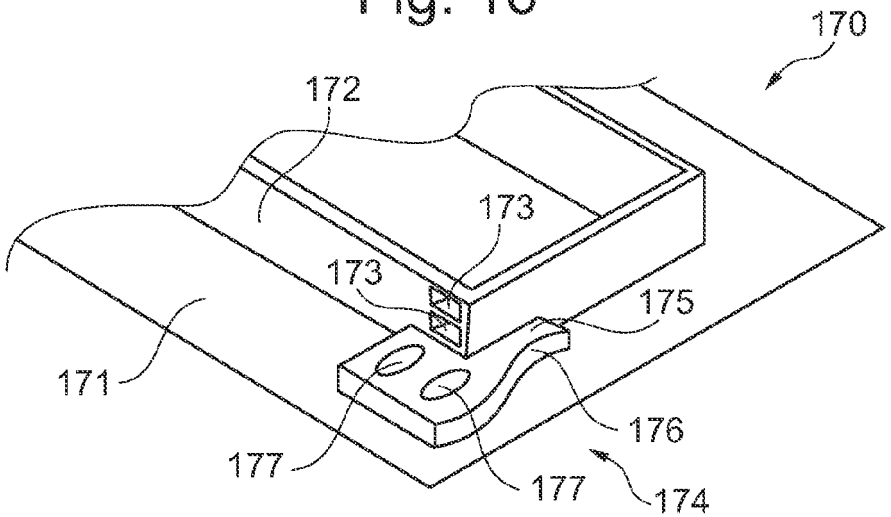

Fig. 17

Europäisches Patentamt
European Patent Office
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EUROPEAN SEARCH REPORT

Application Number
EP 11 16 7407

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2009/091245 A1 (EASY SANITAIRY SOLUTIONS B V [NL]; KEIZERS JURGEN HENDRIK PETER J [NL]) 23 July 2009 (2009-07-23) * the whole document *	1-4,9-13	INV. E03F5/04
X	DE 20 2006 014959 U1 (VIEGA GMBH & CO KG [DE]) 14 February 2008 (2008-02-14) * paragraph [0029] - paragraph [0046]; figures 5-10 *	1-3,9,10	
X	EP 1 961 879 A1 (KESSEL GMBH [DE] KESSEL AG [DE]) 27 August 2008 (2008-08-27) * paragraph [0029] - paragraph [0046]; figures 2-4 *	1-7, 11-13	
X	DE 20 2006 014745 U1 (DALLMER GMBH & CO KG [DE]) 23 November 2006 (2006-11-23) * paragraph [0018] - paragraph [0025]; figures *	1,2,6-8, 13	
			TECHNICAL FIELDS SEARCHED (IPC) E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 July 2011	Van Bost, Sonia

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 16 7407

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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28-07-2011

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