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(54) **Vinyl gutter**

(57) The disclosure relates to a floor part, comprising a walkable floor part surface and a drain arranged in the floor part, which drain has a bottom surface and walls rising from the bottom surface, which standing walls con-

nect to the walkable floor part surface, wherein at least the whole floor part surface is formed by a seamless, flexible finishing layer such as a vinyl layer, and wherein the inflow opening of the drain is bounded by the seamless, flexible finishing layer.

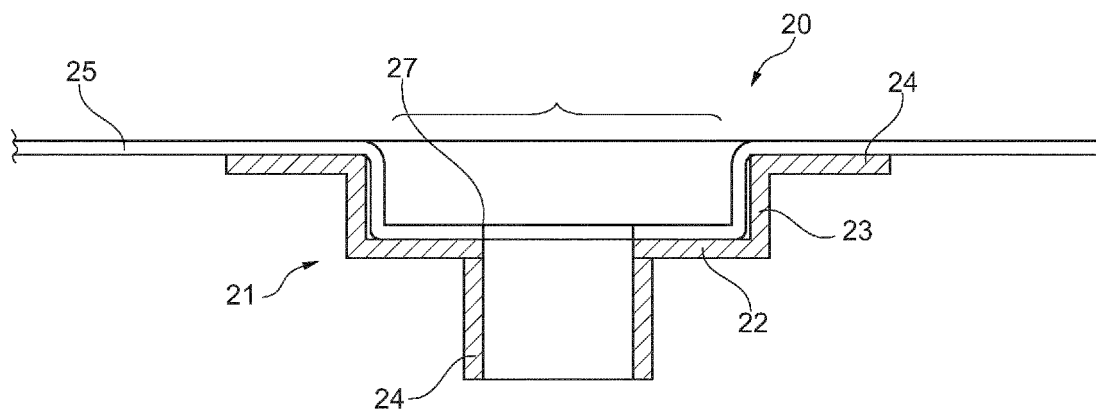


Fig. 2

Description

[0001] The invention relates to a floor part, comprising a walkable floor part surface and a drain arranged in the floor part, which drain has a bottom surface and walls rising from the bottom surface, which standing walls connect to the walkable floor part surface.

[0002] A drain is understood to mean different drains, such as an elongate drain provided with a siphon, a square or triangular drain with siphon, but also discharge channels which guide water falling thereon to a central drain housing.

[0003] A rising wall is further understood to mean both a vertically upright wall and a wall which rises at an angle to the bottom surface and is optionally curved. The rising wall ensures that a height difference is created between the walkable floor part surface and the bottom surface.

[0004] It is common to arrange existing drains in the cement layer during construction of a floor. A watertight layer such as a sealing membrane is then often arranged on this cement layer, wherein the watertight layer is adhered to the drain in order to obtain a watertight connection. Finally, a finishing layer is also arranged thereover. This finishing layer is often a tile layer, but can also be a sheet layer such as vinyl.

[0005] WO 2009 120081 describes a method for arranging a sealing membrane on a lower tray with flanges in order to form a watertight layer. An incision is made in the sealing membrane so that the edges of the opening in the sealing membrane come to lie against the side walls of the lower tray.

[0006] The sealing membrane is however not a finishing layer on which it is possible to walk. The sealing membrane will tear after being walked on only a few times. It is precisely the intention with sealing membrane that a further walkable finishing layer, such as tiles in particular, be arranged thereover.

[0007] EP 2248956 also shows a shower drain, wherein a sealing membrane is arranged on the shower drain. In this publication the sealing membrane is arranged on either side of the flange for a better attachment. It is however also the case here that it cannot be deemed possible to walk on sealing membrane and that it is necessary to arrange a walkable finishing layer over the sealing membrane.

[0008] Sealing membrane consists of a base layer having for instance non-woven web layer arranged thereon. This web layer provides for a rough surface, whereby the adhesive with which the membrane is adhered to the ground and tiles to the sealing membrane adheres properly.

[0009] In addition to the fact that a sealing membrane is not intended to serve as finishing layer due to the poor wear-resistance of sealing membrane, the rough surface of sealing membrane also causes problems during cleaning; dirt and bacteria are easily left behind in the web layer.

[0010] Because a sheet layer such as vinyl is per se

already watertight, drains are known wherein the flexible sheet layer is clamped directly onto the drain in order to obtain a watertight transition between the flexible sheet layer and the drain.

[0011] A known drain here comprises a ring running along the periphery of the drain. In the case of this drain the flexible finishing layer is arranged between the drain and the ring, after which the ring is secured to the drain using screws.

[0012] Another known drain comprises a clamping ring positioned in the outlet opening of the drain. In the case of this drain the flexible layer has to be folded into the outlet opening, after which the clamping ring is placed in the outlet opening in order to clamp the inward folded part.

[0013] The drawback of these known drains is that the water which falls onto the flexible finishing layer must run over a clamping ring or the like so as to eventually arrive in the drain tray formed by the bottom surface and the rising walls. The water thus runs along a transition from the flexible layer to the clamping ring and only then does it enter the drain tray of the drain via an inflow opening defined by the clamping ring.

[0014] This transition between flexible layer and clamping ring is normally situated in the walkable surface. Dirt also remains behind in this transition, whereby undesirable bacterial growth may occur. This is highly undesirable, particularly in a hospital environment.

[0015] In addition, it is practically impossible in the case of non-round drains to clamp the flexible finishing layer reliably in this manner. On the one hand this is because the tension in the finishing layer is not constant, whereby folds and the like can easily occur. On the other hand it is difficult to provide a clamping ring which exerts a sufficient clamping force along the whole clamping surface.

[0016] It is now an object of the invention to reduce or even obviate the above stated drawbacks.

[0017] This object is achieved with a floor part according to the preamble, which floor part is characterized in that at least the whole floor part surface is formed by a seamless, flexible finishing layer such as a vinyl layer, and wherein the inflow opening of the drain is bounded by the seamless, flexible finishing layer.

[0018] By providing a floor part with a flexible finishing layer which bounds the inflow opening of the drain, a reliable product can be obtained which complies with the antibacterial wishes or requirements of hospital and other environments. During fitting of the floor part it is now only required that the surrounding finishing layer, which will normally be of the same material, connects properly to the flexible finishing layer of the floor part according to the invention. With the invention it is now no longer necessary to bring about a reliable connection of the flexible finishing layer around the outlet opening, as is usual in the prior art. There is thus no longer any overlap between the responsibility of the plumber and of the person arranging the finishing layer. In the case of possible leakage

it is easier to determine who should solve this problem.

[0019] In addition, the inflow opening is now formed in the invention by the seamless, flexible finishing layer. There are no transitions to clamping rings as in the prior art, whereby a wholly flat walkable surface is obtained. The chance of bacterial growth is considerably reduced due to the absence of transitions.

[0020] Vinyl and similar finishing layers have the advantage that lengths are laid against each other (instead of overlapping) and subsequently welded. A homogeneous whole of the floor part with the surrounding floor is hereby obtained. This has advantages in cleaning and preventing bacterial growth. It also has advantages in the case of renovation, in that an old drain with a surrounding part can be cut out and a new floor part according to the invention can be easily placed.

[0021] A floor part according to the invention can for instance be made in the factory so that it is possible to guarantee that the flexible finishing layer is connected reliably to the drain. This connection of drain and finishing layer can for instance be effected by means of ultrasonic welding or by means of 2K (multi-shot) moulding.

[0022] In an embodiment of the floor part according to the invention the seamless, flexible finishing layer extends over at least a part of the rising walls. The flexible finishing layer thus runs partly into the drain.

[0023] In a preferred embodiment of the floor part according to the invention the edge of the flexible finishing layer lies against the rising walls of the drain tray. The edge can for instance be adhered to the rising wall or fused therewith.

[0024] In another preferred embodiment of the floor part according to the invention the edge of the flexible finishing layer lies against the bottom surface of the drain tray. The drain container is thus covered with the finishing layer, whereby a wholly seamless surface is obtained up to the bottom of the drain tray.

[0025] The drain tray is preferably provided with an outlet opening in the bottom surface, which outlet opening can be connected to an outlet pipe. The finishing layer can optionally extend into this outlet opening.

[0026] The flexible finishing layer can be adhered to the drain tray by means of a suitable adhesive. This can for instance be a polyurethane adhesive which properly adheres an ABS drain tray to a vinyl finishing layer.

[0027] In addition, the finishing layer is preferably already adhered to the drain tray in the factory so that a reliable adhesion can be guaranteed. With the invention it is possible to arrange the whole of drain tray and flexible finishing layer in the floor, after which the outer edge of the flexible finishing layer can be connected in a usual manner to the surrounding finishing layer.

[0028] In yet another embodiment of the floor part according to the invention at least the edge of the flexible finishing layer is fused with the drain. A monolithic product is in fact thus obtained, whereby leakage can no longer occur and there are no transitions in which bacterial growth may occur.

[0029] In yet another embodiment of the floor part according to the invention the drain comprises flanges which are arranged on the rising walls and which extend under the seamless, flexible finishing layer. These flanges can contribute toward a good attachment of the flexible finishing layer to the drain tray.

[0030] It is highly preferable for the drain to be manufactured from polyvinyl chloride (PVC) or from acrylonitrile butadiene styrene (ABS), and for the flexible finishing layer to be vinyl. These materials are known individually of each other, but it is precisely with the combination thereof that a highly reliable and effective floor part can be obtained.

[0031] The drain and the flexible finishing layer can optionally be attached to each other by means of injection moulding. In this manufacture two different materials are injected simultaneously into a mould, whereby the two different materials adhere to each other.

[0032] The invention further comprises a method for manufacturing a floor part according to the invention, the method comprising the steps of:

- providing a drain with a bottom surface and walls rising from the bottom surface;
- providing a flexible finishing layer with a central opening;
- heating the flexible finishing layer;
- pressing the heated flexible finishing layer onto the drain such that at least a part of the finishing layer is deformed and such that the central opening of the flexible finishing layer debouches in the drain.

[0033] The flexible finishing layer can easily be deformed when it is heated, whereby the finishing layer can fit properly onto the drain tray, while the finishing layer remains seamless. The tension is moreover removed from the flexible finishing layer by heating the finishing layer. This prevents the flexible finishing layer returning to its original form after fitting.

[0034] It is easy to place in the drain an auxiliary frame having a number of points at suitable positions, after which the flexible layer is laid over the drain. Owing to the points it is possible to cut an opening at the correct position in the flexible layer. The auxiliary frame is then removed and the edge of the cut-out opening can be heated in accordance with the method according to the invention and pressed onto the drain.

[0035] In a preferred embodiment of the method according to the invention an edge of the heated flexible finishing layer is pressed against the rising walls of the drain. This pressing can take place manually, but preferably using a mould, whereby a reliable quality becomes possible.

[0036] In another preferred embodiment of the method according to the invention the flexible finishing layer is pressed against the drain such that at least the edge of the flexible finishing layer fuses with the drain.

[0037] In yet another embodiment of the method ac-

according to the invention an upright flange is provided on at least one peripheral edge of the flexible finishing layer.

[0038] This upright flange can lie against a wall, whereby a good sealing to the wall is obtained. If the transition area between the upright flange and the flexible layer is given a large radius, the flexible layer can hereby also be easily cleaned adjacently of the wall.

[0039] With this method according to the invention it is possible to form a shower tray or sloping plate in the flexible finishing layer by providing upright edges and flanges at suitable positions. An adapter is preferably formed here on the flexible finishing layer, whereby the formed finishing layer can be easily coupled to a siphon or outlet pipe arranged in the floor.

[0040] In addition, the finishing layer can easily be formed with this method such that the flexible layer comes to lie in recesses in the floor and walls. Handgrips and supports for instance can thus be easily integrated into the finishing layer, whereby they are easy to clean.

[0041] A floor part according to the invention thus has a drain with a surrounding flexible flange of a flexible finishing layer. The connection of a floor part according to the invention can thus take place at a distance from the drain, along the periphery of the flexible flange. The connection of the floor part to the surrounding floor hereby has no effect on the connection of the flexible flange to the drain.

[0042] The finishing layer can optionally also be formed by a material to be processed while liquid, such as a cast floor.

[0043] These and other features of the invention are further elucidated with reference to the accompanying drawings.

Figure 1 shows a cross-sectional view of a first embodiment according to the invention.

Figure 2 shows a cross-sectional view of a second embodiment according to the invention.

Figure 3 shows a perspective view of a third embodiment according to the invention.

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

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

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

[0044] Figure 1 shows a cross-sectional view of a first embodiment of a floor part 1 according to the invention. This floor part 1 has a drain with a bottom surface 2, walls 3 rising along bottom surface 2 and horizontal flanges 4 arranged on rising walls 3. Provided in bottom surface 2 is an outlet opening 5 with a tubular outflow.

[0045] Floor part 1 further comprises a seamless, flexible finishing layer 6. This finishing layer 6 bounds inflow opening 7 of drain 2, 3, 4.

[0046] The seamless, flexible finishing layer 6 is seamlessly connected via welds 8 to a surrounding finishing

layer 9. Finally, a removable grating 10 is provided in drain 2, 3, 4.

[0047] As shown clearly in the case of floor part 1 according to the invention, the walkable surface of floor part 1 formed by flexible finishing layer 6 is wholly seamless.

[0048] Figure 2 shows a second embodiment of a floor part 20 according to the invention. This floor part 20 has a drain tray 21 with a bottom surface 22, rising walls 23 and an outlet opening with tubular outflow 24. A flexible finishing layer 25 is arranged over this drain tray 21. This finishing layer 25 is formed against rising walls 23 and bottom surface 22 of drain tray 21 by heating. Edge 27 of finishing layer 25 hereby lies against outlet opening 24, while inflow opening 28 is fully bounded by finishing layer 25. Falling water can moreover flow without interruption over finishing layer 25 into outlet opening 24.

[0049] Figure 3 shows a perspective view of a third embodiment of a floor part 30 according to the invention. This floor part 30 has an elongate drain with an outlet opening 32 in bottom surface 31 for connection to an outlet pipe.

[0050] A seamless, flexible finishing layer 33 is arranged over drain 31, 32, wherein edge 34 of finishing layer 33 extends into drain 31, 32 and lies against the walls of drain 31, 32. A wholly transition-free, walkable surface is also obtained here, thereby limiting the chance of bacterial growth.

[0051] Figure 4 shows a fourth embodiment 40 of a floor part according to the invention. This floor part 40 has a drain manufactured by injection moulding, the drain having a bottom surface 42 and walls 43 rising from the bottom surface.

[0052] A horizontal flange 41 is provided on the upper side of rising walls 43 such that a rising ledge 44 is provided.

[0053] The floor part surface 45 lies against this ledge 44 such that floor part surface 45 can be easily fused with drain 41, 42, 43 using a welding wire 46 of a suitable plastic.

[0054] Figure 5 shows a fifth embodiment of a floor part 50 according to the invention. This floor part 50 has a drain with a bottom surface 51 and rising walls 52 to which horizontal flanges 53 are fixed. Drain 51 is further provided with an outlet opening 54.

[0055] In addition, floor part 50 has a floor part surface formed by a flexible material 55. Edges 56 of this flexible material 55 run downward along rising walls 52 and, as according to the method of the invention, are formed by heat.

[0056] A clamping part 57 is provided to enable clamping of the downward running parts of flexible material 55 in drain 51, 52, 53. This clamping part 57 is provided with an outflow 58 and extends into outlet opening 54. Owing to the C-shaped cross-section of clamping part 57 the flexible material 55 can be properly pressed down over for instance the whole length of an elongate drain channel.

[0057] A grating 59 is further provided on clamping part

57 for the purpose of finishing drain 51, 52, 53.

[0058] Figure 6 shows a sixth embodiment 60 of a floor part according to the invention. This floor part 60 also has a drain formed by a bottom surface 61, rising walls 62, horizontal flanges 63 and an outflow 64.

[0059] The walkable floor part surface 65 is formed by a layer of flexible material which extends along rising walls 62 and bottom surface 61 of the drain. Only at the position of outflow 64 is a recess provided in flexible material 65. Provided for the purpose of a good connection of flexible material 65 to outflow 64 is a connector 66 which is screwed into outflow 64 and clamps flexible material 65.

[0060] A grating 67 is further provided on flexible material 65 in drain 61, 62, 63.

Claims

1. Floor part, comprising a walkable floor part surface and a drain arranged in the floor part, which drain has a bottom surface and walls rising from the bottom surface, which rising walls connect to the walkable floor part surface, **characterized in that** at least the whole floor part surface is formed by a seamless, flexible finishing layer such as a vinyl layer, and wherein the inflow opening of the drain is bounded by the seamless, flexible finishing layer. 20
2. Floor part as claimed in claim 1, wherein the seamless, flexible finishing layer extends over at least a part of the rising walls. 30
3. Floor part as claimed in claim 1 or 2, wherein the edge of the flexible finishing layer lies against the rising walls of the drain tray. 35
4. Floor part as claimed in claim 1 or 2, wherein the edge of the flexible finishing layer lies against the bottom surface of the drain tray. 40
5. Floor part as claimed in any of the foregoing claims, wherein the drain tray is provided with an outlet opening in the bottom surface, which outlet opening can be connected to an outlet pipe. 45
6. Floor part as claimed in any of the foregoing claims, wherein at least the edge of the flexible finishing layer is fused with the drain. 50
7. Floor part as claimed in any of the foregoing claims, wherein the drain comprises flanges which are arranged on the rising walls and which extend under the seamless, flexible finishing layer. 55
8. Floor part as claimed in any of the foregoing claims, wherein the drain is manufactured from polyvinyl chloride (PVC) or from acrylonitrile butadiene sty-

rene (ABS), and wherein the flexible finishing layer is vinyl.

9. Method for manufacturing a floor part as claimed in any of the foregoing claims, the method comprising the steps of:

- providing a drain with a bottom surface and walls rising from the bottom surface;
- providing a flexible finishing layer with a central opening;
- heating the flexible finishing layer;
- pressing the heated flexible finishing layer onto the drain such that at least a part of the finishing layer is deformed and such that the central opening of the flexible finishing layer debouches in the drain.

10. Method as claimed in claim 9, wherein an edge of the heated flexible finishing layer is pressed against the rising walls of the drain.

11. Method as claimed in claim 9 or 10, wherein the flexible finishing layer is pressed against the drain such that at least the edge of the flexible finishing layer fuses with the drain.

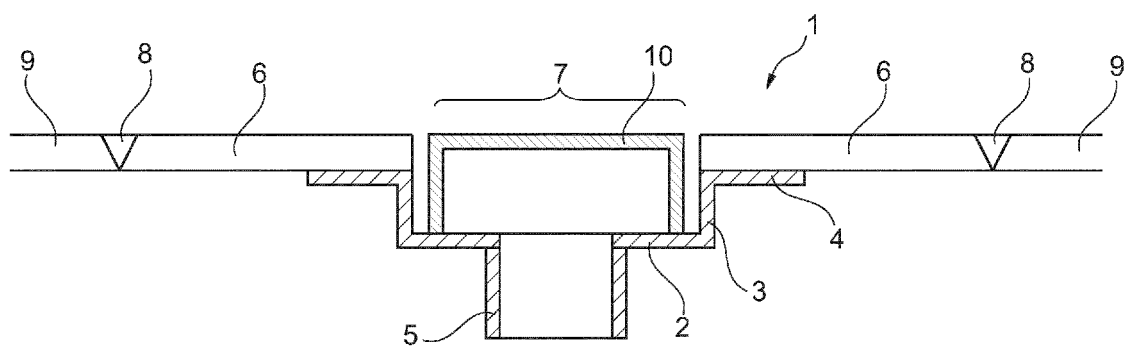


Fig. 1

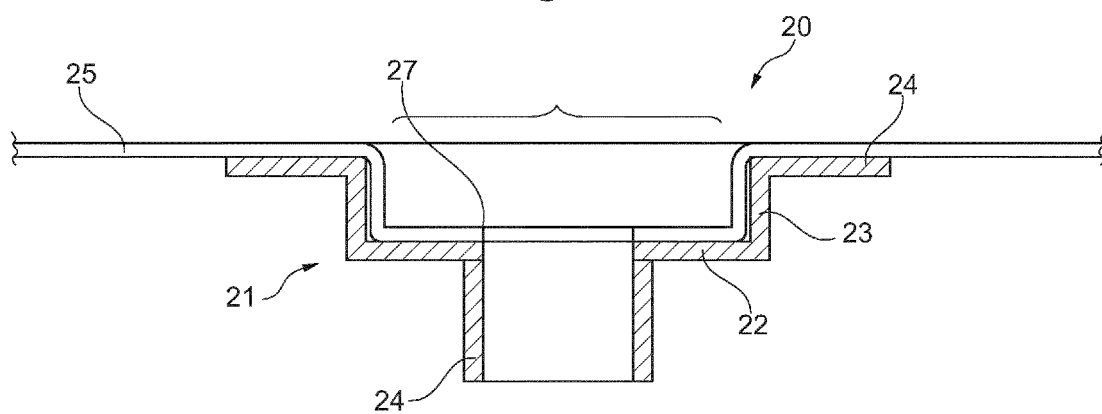


Fig. 2

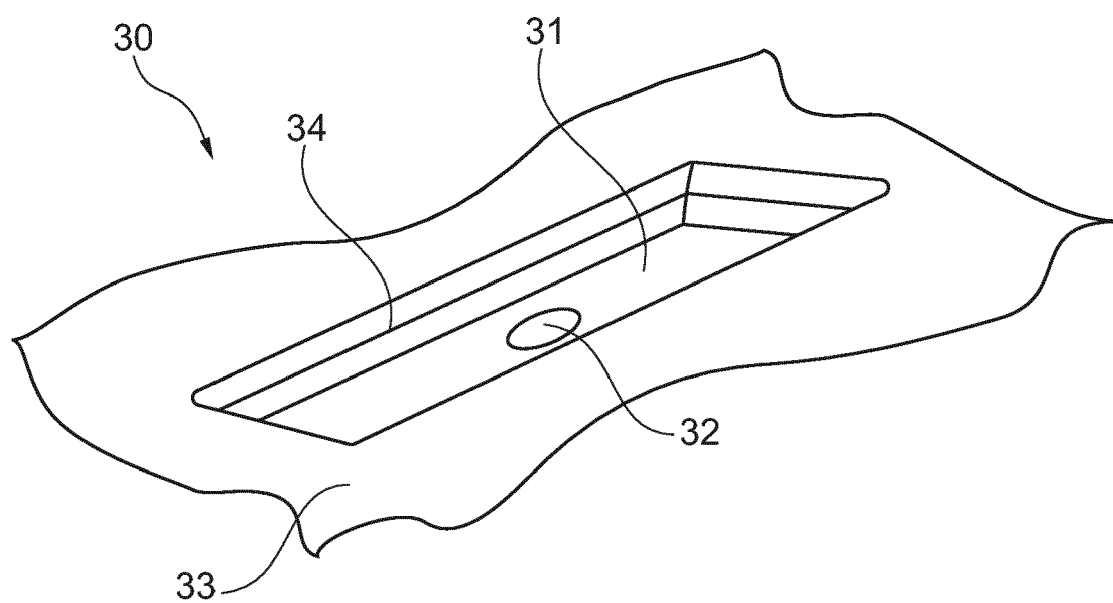


Fig. 3

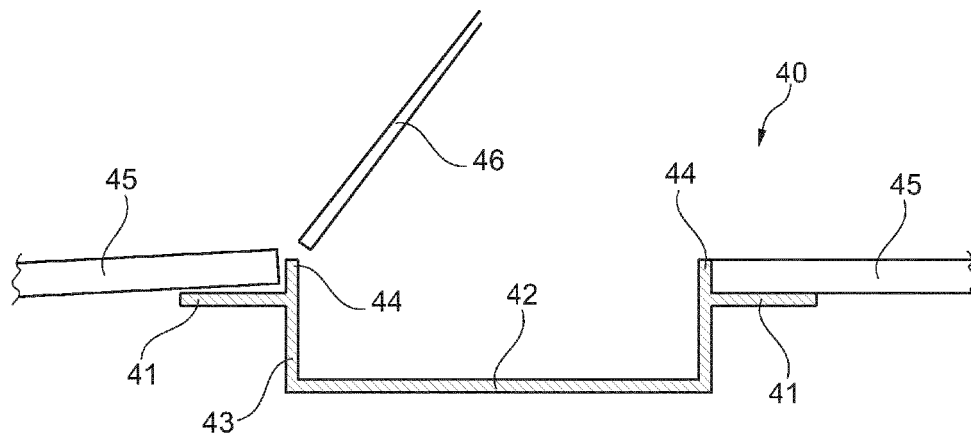


Fig. 4

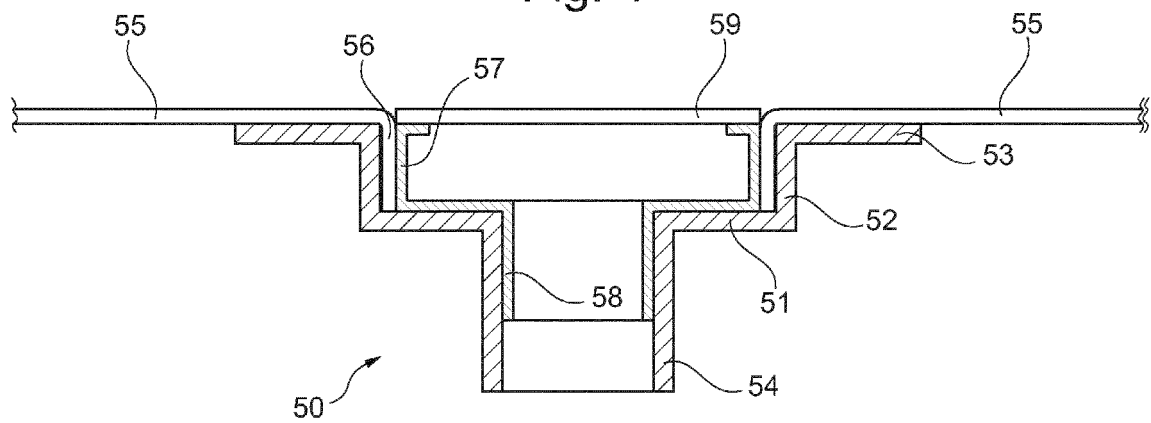


Fig. 5

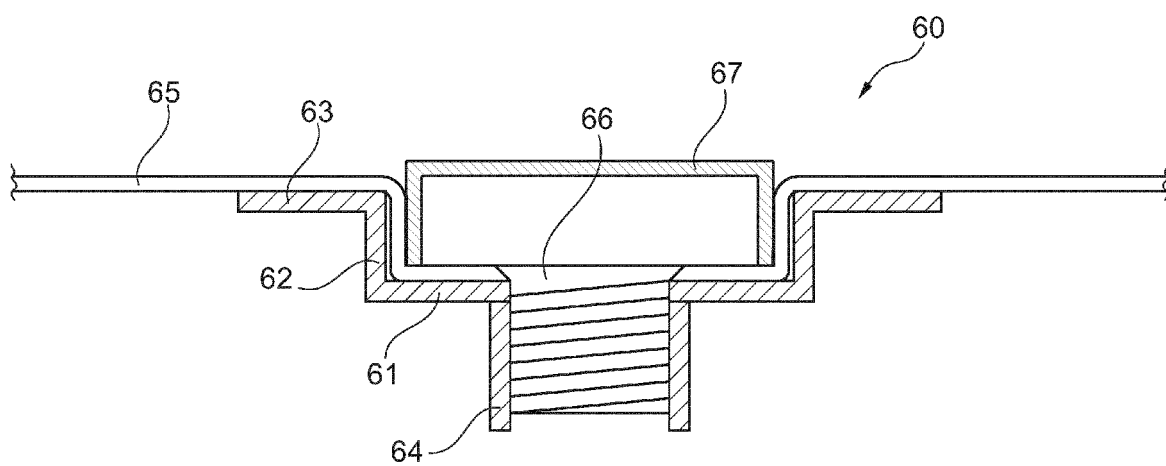


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 11 19 2510

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 March 2012	Examiner Urbahn, Stephanie
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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