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(54) **A drain base**

(57) Providing a drain base such as a shower tray (1) with a non slip surface can be problematic. Thus, by providing a drain base comprising a structural tray (2) having apertures and tactile elements (5) secured through the apertures to collectively define a non slip surface it is possible to conveniently achieve a drain base more acceptable for operational use. Furthermore, by

using a method of forming a drain base comprising forming a structural tray (2) with apertures, applying a tactile element mould part to the structural tray (2) and applying a tactile material through the apertures to form tactile elements (5) in association with the structural tray manufacture of such drain bases can be more readily achieved.

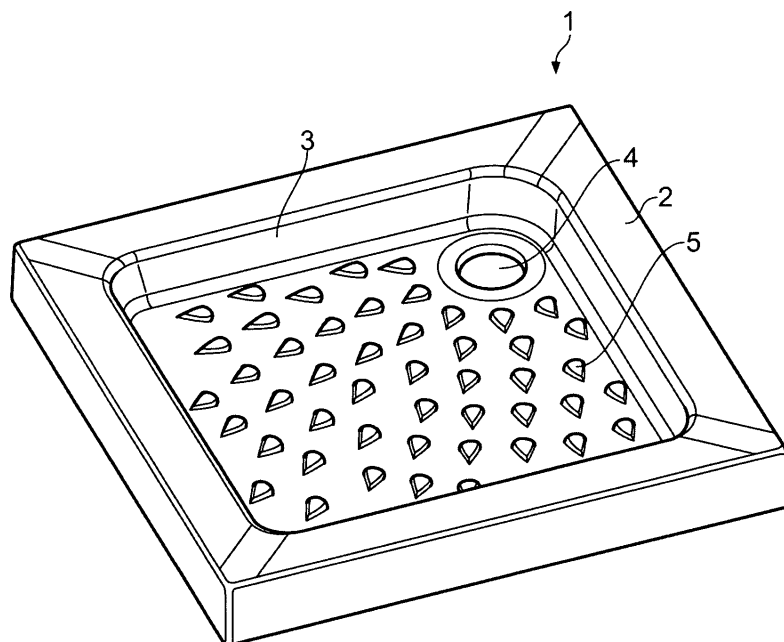


Fig. 1

Description

[0001] The present invention relates to drain bases and more particularly to drain bases provided as shower trays.

[0002] It is known to provide a shower tray generally formed from a hard moulded plastics material in order to provide sufficient structural strength to accept a user's weight, as well as suitable configurational features for drainage of water to a drain aperture. It will be understood that water itself can create slippery conditions, but with the added effects of detergents and soaps in shower products a flat surfaced drain base for a shower may be dangerous. In such circumstances it is known to provide undulations in the form of ribs, dimples and other features to improve user grip.

[0003] Although such features as dimples and ridges and grooves provide some improved grip, it will be understood that there is still a potential problem in that the feature cannot be too deep and will normally be relatively smooth. It will also be understood that introduction of such features into a generally relatively high strength structural base may cause problems with respect to providing initiation sites for cracking or poor formation processing in terms of material thickness at the bends and feature edges.

[0004] In accordance with aspects of the present invention there is provided a drain base comprising a structural tray having apertures and tactile elements secured through the apertures to collectively define a non slip surface.

[0005] Typically, the tactile elements are coupled together by an installation tree. Possibly, the installation tree adheres to the structural tray.

[0006] Advantageously, the tactile elements adhere to the structural tray. Generally, the tactile elements provide a seal closing the apertures in the structural tray.

[0007] Possibly, the tactile elements are tear drop shaped.

[0008] Possibly, the structural tray has recesses to receive the tactile elements. Alternatively, the tactile elements rise above a structural tray.

[0009] Possibly, the structural tray has stiffener members. Possibly, the stiffener members extend about the apertures.

[0010] Advantageously, the structural tray incorporates a drain aperture. Possibly, a gasket is provided about the drain aperture. Advantageously, the gasket forms part of the installation tree.

[0011] Typically, the structural tray is formed by a mould.

[0012] Advantageously, the tactile elements are provided by locating the structural tray with a tactile element mould part associated about the apertures whereby tactile material for the tactile elements is injected into the tactile element mould part to extend through apertures for location of the tactile elements upon the structural tray.

[0013] Advantageously, there is a tree mould part se-

cured upon the opposite side of the apertures to the tactile element mould part and the tactile material injected through the tree mould part through the apertures to the tactile element mould part to form tactile elements in-situ.

Typically, the tree mould part incorporates parts which define the installation tree for the drain base.

[0014] Generally, the base is formed from an unfilled polyester plastics material.

[0015] Generally, the tactile elements are formed from a relatively soft thermo plastic rubber.

[0016] Generally, the structural tray and the tactile elements are formed from materials which fuse together.

[0017] Also in accordance with aspects of the present invention there is provided a method of forming a drain base comprising forming a structural tray with apertures, applying a tactile element mould part to the structural tray and applying a tactile material through the apertures to form tactile elements in association with the structural tray.

[0018] Normally, the drain base is as described above.

[0019] Generally, the mould also includes applying a tree mould part on the opposite side of the structural tray to the tactile element mould part and applying the tactile material through the tree mould part.

[0020] Embodiments of the present invention will now be described by way of example and with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a drain base such as a shower tray in accordance with aspects of the present invention;

Fig. 2 is a schematic view of the drain based depicted in Fig. 1 with tactile elements removed;

Fig. 3 is a schematic illustration of the bottom of the base illustrating an installation tree in accordance with aspects of the present invention;

Fig. 4 is a schematic perspective cross section through a tactile element and installation tree in accordance with aspects of the present invention;

Fig. 5 is a perspective view of tactile elements and installation tree in accordance with aspects of the present invention with a structural tray removed; and,

Fig. 6 is a base perspective view of a drain base having an installation tree and base wall seal edge.

[0021] As indicated above, it is known to form drain bases such as shower trays from mouldings incorporating ribs or dimples or other features in order to provide a non-slip grip capability. However, provision of a more tactile surface than possible with the generally unfilled hard polyester plastic materials which are used to form such drain bases would be advantageous. Fig. 1 provides a perspective view of a drain base in the form of a shower

tray 1 comprising a structural tray 2 incorporating a well 3 and drain aperture 4. The well 3 on its bottom anti-slip surface incorporates tactile elements 5 secured in the structural tray 2. As can be seen, these tactile elements 5 have a generally tear drop shape but could have other shapes including diamond, triangle or circle dependent upon requirements. In short, the actual shape of each individual tactile element 5 as well as its distribution will generally be provided for aesthetic appearance effects and characteristics provided there is adequate drainage into the aperture 4 and, as indicated above, in accordance with aspects of the present invention provision of a surface having adequate anti-slip grip. As will be appreciated in a shower tray 1 the well 3 will typically collect a reasonable volume of water as well as detergents and therefore the bottom surface incorporating the tactile elements 5 may become slippery. The tactile elements 5 act to engage a user's foot in order to grip and therefore prevent slippage.

[0022] It will be understood a drainage base in accordance with aspects of the present invention as indicated could take the form of a shower tray 1 but also, where appropriate, may comprise a bathtub in which the bottom surface of that bathtub incorporates tactile elements to prevent slippage. This will be particularly useful in situations where slippage could be a problem, that is to say with elderly or less agile individuals and/or where the bathtub is utilised with a shower attachment to the tap fittings or an electric shower is used over the bathtub.

[0023] It will be understood that the tactile elements' 5 must be robustly secured to the drain base such that they do not become detached or break the sealing effect of the drain base leading to leakage. It will also be understood that the base 2 will generally be formed from a plastics material which is relatively hard such as an unfilled polyester. Compatibility with such hard plastics materials will generally be a necessity and therefore the tactile elements 5 will generally be formed from soft thermo plastic rubbers. In such circumstances a non slip nature is provided by the tactile elements 5 and the soft thermo plastic rubber will fuse and generally stick to the relatively hard unfilled polyester material.

[0024] Generally, the tactile elements 5 will radiate outwardly from the drain aperture 4 as depicted in Fig. 1. It will be understood typically there is a slight slope towards the drain aperture 4 and therefore by provision of tactile elements 5 radiating out this flow towards the aperture 4 is not overly inhibited.

[0025] Fig. 2 illustrates the drain base 1 with tactile elements removed. In such circumstances, as can be seen, the bottom of the well 3 incorporates apertures 6 which, in accordance with aspects of the present invention, will be utilised in order to provide tactile elements in use. Generally, the tray is formed between mould parts with the aperture 4 as well as the apertures 6 thin section in comparison with the other parts of the tray 1. In such circumstances the aperture 4 can be cut out with an appropriate tool. The apertures 6 may be drilled or otherwise

cut out as required at desired locations in the tray 1. The formation of the tray 1 is a first moulding step in accordance with aspects of the present invention. This moulding step is similar to that utilised with previous drain bases but, as indicated previously, recesses, ribs, dimples or other features may be provided within the base of the well 3 in order to provide some non slip nature.

[0026] In accordance with aspects of the present invention a second moulding stage is provided. Typically, this second moulding stage comprises applying within the well 3 (Fig. 1 and Fig. 2) a resilient element mould part. This resilient element mould part sits over the apertures 6 (Fig. 2) and defines each tactile element shape. Generally, the tactile element mould part is held in robust and normally compressive engagement with the surface of the formed structural tray 2. In such circumstances, tactile element material can be injected through the apertures 6 (Fig. 2) or through the tactile element mould part itself in order to create the tactile elements required.

[0027] The approach described above with respect to creating the tactile elements may be messy in terms of introducing the tactile element material and may leave unsightly tell-tale signs on the tactile element if the material is injected through the mould itself or create waste on the other side of the aperture. Thus, in accordance with a preferred aspect of the present invention, an installation tree mould part is provided. This installation tree mould part will be presented on the opposite side to the tactile element mould part and again normally in compressive engagement. The installation tree mould part provides a network of pathways for tactile material to be presented to the aperture 6 (Fig. 2). Generally, the bottom surface of the well 3 in the structural tray will be held in a compressive sandwich between the tactile element mould part and the installation tree mould part. The tactile material will pass through the network of spurs and branches of the installation tree mould part to pass through the apertures 6 (Fig. 2) in order to create the tactile elements in the tactile element mould part above the apertures 6. Once the installation tree mould part and the tactile element mould part are removed it will be understood that an upper surface will show the tactile elements presented in the well 3 whilst below that surface the tactile element material remaining within the spurs and branches of the installation tree mould part will remain. As indicated above, generally the materials from which the structural tray is initially formed as well as the tactile element material will be compatible such that they fuse and create an appropriate seal in the aperture 6 and cause adhesion between the tactile element material, both through the tactile element engagement with the surface of the structural tray about the aperture 6, as well as between the remnant installation tree network created by the tactile material passing through the installation tree mould part. This will prevent water leakage through the aperture 6 and improve structural integrity and strength.

[0028] Fig. 3 illustrates a section of the underside of a

drain base in accordance with aspects of the present invention. Where appropriate, similar reference numerals have been utilised for comparison. Thus, as can be seen around the drain aperture 4, the tactile elements 5 radiate on one side of a well 3 surface and a tree network 7 on the other side of resilient element material remaining after that material has passed through an installation tree mould part to squirt through apertures 6 to define the tactile elements with an appropriate shape corresponding to the tactile element mould part. As can be seen, reinforcement or presenter elements 8 can be provided about apertures 6. These elements 6 facilitate alignment of the installation tree mould part with the aperture 6 and also once the installation tree mould part has been removed provide some reinforcement below the tactile elements 5. It will be noted that provision of each aperture 6 may provide initiation points for cracking in the tray 3. By provision of the elements 8 such cracking may be prevented or terminated. In the event of minor cracks it will be understood that, as indicated, the tactile element material will generally fuse with the material of the structural tray and so prevent significant seal breaches as a result of such cracking.

[0029] Fig. 4 illustrates a perspective view through a cross section of one tactile element 5, a tree 7 part in the well 3 of a drain base in accordance with aspects of the present invention. As can be seen the tactile element 5 extends through to the upper surface of the well 3 in order to facilitate an anti-slip nature to the base of the well 3. The tree network 7 extends below the surface of the well 3 about a drain base. Typically, as illustrated, the bottom of the structural tray forming the well 3 may have a mound 9 or recess to facilitate keying between the tactile element 5 and the well and therefore the base in accordance with aspects of the present invention. As indicated, it is advantageous that the material chosen such that there is fusion between the tactile element 5 and the material of the well 3. This fusion can be achieved on flat surface to surface mating, but may be enhanced by, as indicated, a surface contour whether that be through a mound 9 or recess within which the tactile element 5 is located. Again, provision of an element 8 about an aperture 6 through which the tactile material extends may be advantageous in creating the mould or recess 9.

[0030] Fig. 5 illustrates tactile elements 5 associated with a tree network 7 formed as a result of the installation tree mould part as described previously to facilitate tactile element release and presentation through apertures to create the elements 5. For clarity, the element 5 and tree network 7 are shown without the drain base surface which will generally separate them. As can be seen, the elements 5, as described previously, have a tear drop shape but other shapes can be provided. Most significantly in accordance with aspects of the present invention is the distribution for reinforcement of association in accordance with aspects of the present invention. The tactile elements 5 will generally take the form of significant mouldings of tactile material which, as indicated, will be

in good preferably fused association with the material of the drain base. Further anchoring will be achieved through the section of tactile material extending through the apertures 6 into the tray and furthermore, as indicated, the tree network 7 itself will generally adhere to the bottom surface of the drain base further enhancing adhesion to that base over a broad engagement surface. In such circumstances, the elements 5 will be robustly secured to the tray.

[0031] As indicated above, generally the drain base will incorporate a drain aperture. This drain aperture will be associated with drain elements to which pipework and other plumbing will be secured. In order to facilitate a seal, aspects of the present invention may provide a gasket ring either in a groove on one side, that is to say the bottom side, of the well utilising tactile material in accordance with the present invention, or if a groove and apertures are drilled about the drain aperture 4 gasket rings may be provided on either side of the drain aperture 4. Such gaskets may facilitate improved sealing about the drain aperture 4 in use.

[0032] Normally, in view of cost aspects of the present invention will utilise a single moulding process in order to create the structural tray of relatively hard unfilled polyester material and then a second moulding stage to introduce tactile element material to form the tactile elements 5 and tree network 7 as required in a second moulding step. However, it will be appreciated if it is desirable to provide tactile elements of different materials then a third moulding step may be provided where further tactile elements of a different material type may be introduced as a further mould tool part.

[0033] It will be understood that generally the tactile elements in accordance with aspects of the present invention will be of consistent shape and size for aesthetic appearance. However, where desirable and again for desired aesthetic appearance effects, different shapes and sizes of tactile elements may be provided. Furthermore, the tactile elements may incorporate a thermally reactive dye to indicate temperature. Thus, when the drain base is cold as a result of inactivity or cold water presence, the tactile elements may have one colour whilst when warmed to an appropriate temperature, due to warm water incident upon the tactile elements, then a second colour may be created. Thus, providing an indication that the shower is ready for use. Furthermore, such a colour change may be used with babies and the infirm to indicate that the shower or bath has water at a safe temperature.

[0034] As indicated above, generally a structural tray will be constructed in accordance with the present invention and then apertures 6 provided through which resilient elements will be created and anchored to the structural tray by injection of tactile element material. In such circumstances, positioning of the apertures 6 may be varied to enable different tactile element distributions and shapes to be provided. Alternatively, a standard distributional pattern of apertures 6 may be provided and then through appropriate shaping tactile elements introduced

into a desired pattern. Thus, by a bespoke distribution of apertures 6 or a standard pattern distribution of apertures 6 different tactile element patterns can be created for aesthetic effect or to meet an individual user's requirements such as presenting a corporate pattern or logo through the distribution of tactile elements in the well.

[0035] Provision of a second moulding step allows other features to be incorporated into a drain base. Thus, as illustrated in Fig. 6 when an installation tree 17 is provided by the moulding process it will be understood that a gasket seal 28 for a drain aperture 24 could also be formed and an edge seal 29 formed about the edge of a base structural tray 22. These seals 28, 29 will provide some situational sealing in use on their own or in association with other seal elements.

[0036] Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A drain base comprising a structural tray having apertures and tactile elements secured through the apertures to collectively define a non slip surface.
2. A base as claimed in claim 1 wherein the tactile elements are coupled together by an installation tree.
3. A base as claimed in claim 2 wherein the installation tree adheres to the structural tray.
4. A base as claimed in any of claims 1, 2 or 3 wherein the tactile elements adhere to the structural tray.
5. A base as claimed in any preceding claim wherein the tactile elements provide a seal closing the apertures in the structural tray.
6. A base as claimed in any preceding claim wherein the tactile elements are tear drop shaped.
7. A base as claimed in any preceding claim wherein the structural tray has recesses to receive the tactile elements.
8. A base as claimed in any preceding claim wherein the tactile elements rise above a structural tray.
9. A base as claimed in any preceding claim wherein the structural tray has stiffener members.
10. A base as claimed in claim 9 wherein the stiffener members extend about the apertures.

11. A base as claimed in any preceding claim wherein the structural tray incorporates a drain aperture.
12. A base as claimed in claim 11 wherein a gasket is provided about the drain aperture.
13. A base as claimed in claim 12 wherein the gasket forms part of the installation tree, as claimed in claim 2 and any claim dependent thereon.
14. A base as claimed in any preceding claim wherein the structural tray is formed by a mould.
15. A base as claimed in any preceding claim wherein the tactile elements are provided by locating the structural tray with a tactile element mould part associated about the apertures whereby tactile material for the tactile elements is positioned within the tactile element mould part to extend through apertures for location of the tactile elements upon the structural tray.
16. A base as claimed in claim 15 wherein there is a tree mould part secured upon an opposite side of the apertures to the tactile element mould part and the tactile material positioned through the tree mould part through the apertures to the tactile element mould part to form tactile elements in-situ therebetween.
17. A base as claimed in claim 16 wherein the tree mould part incorporates parts which define the installation tree as claimed in claim 2 and any claim dependent thereon.
18. A base as claimed in any preceding claim wherein the base is formed from an unfilled polyester plastics material.
19. A base as claimed in any preceding claim wherein the tactile elements are formed from a relatively soft thermo plastic rubber.
20. A base as claimed in any preceding claim wherein the structural tray and the tactile elements are formed from materials which fuse together.
21. A drain base as claimed in any preceding claim wherein the drain base comprises a shower tray.
22. A drain base substantially as hereinbefore before described with reference to the accompanying drawings.
23. A method of forming a drain base comprising forming a structural tray with apertures, applying a tactile element mould part to the structural tray and applying a tactile material through the apertures to form tactile elements in association with the structural tray.

- 24.** A method as claimed in claim 23 wherein the drain base is as claimed in any of claims 1 to 22.
- 25.** A method as claimed in claim 23 or claim 24 wherein the method also includes applying a tree mould part on the opposite side of the structural tray to the tactile element mould part and applying the tactile material through the tree mould part. 5
- 26.** A method of forming a drain base substantially as hereinbefore described with reference to the accompanying drawings. 10

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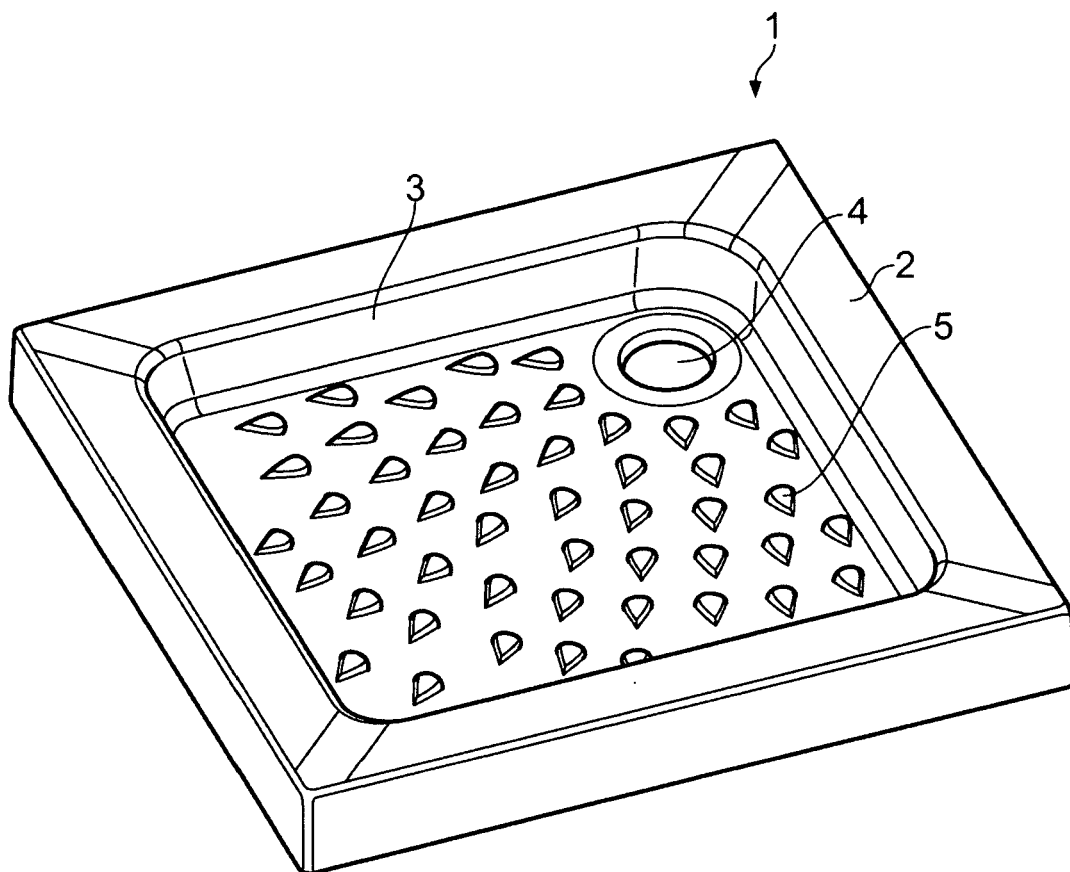


Fig. 1

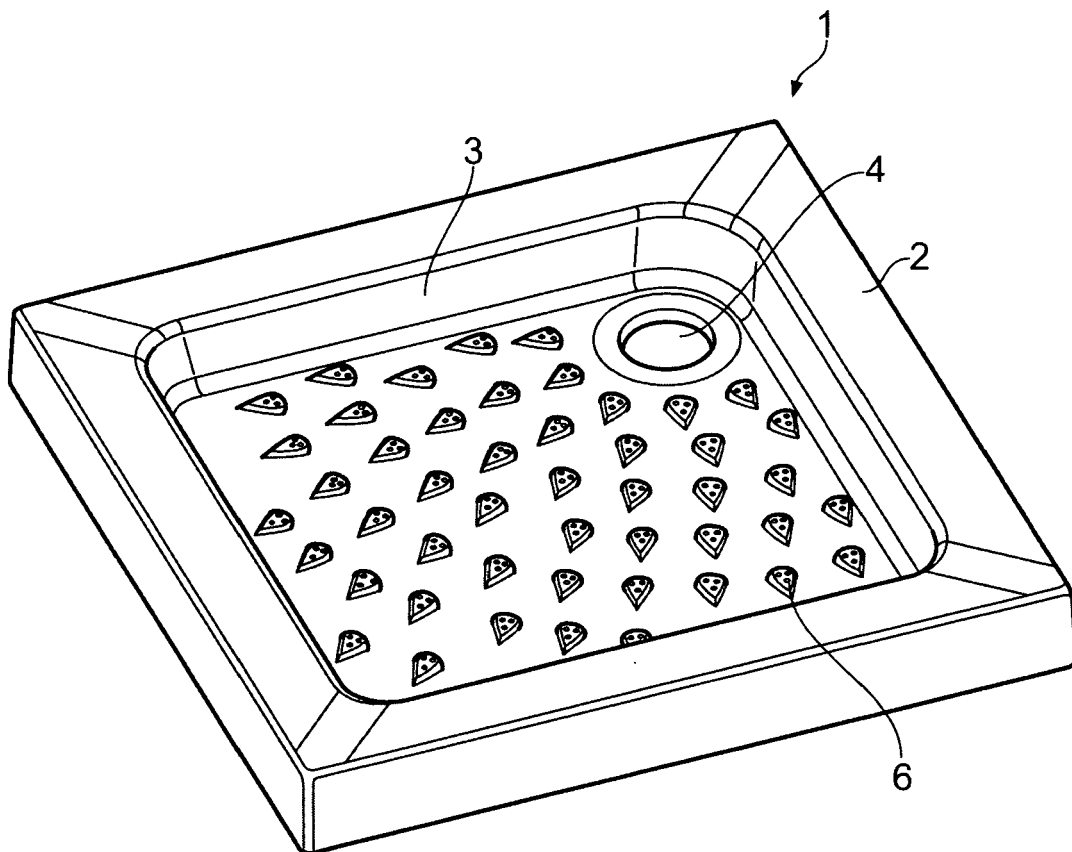


Fig. 2

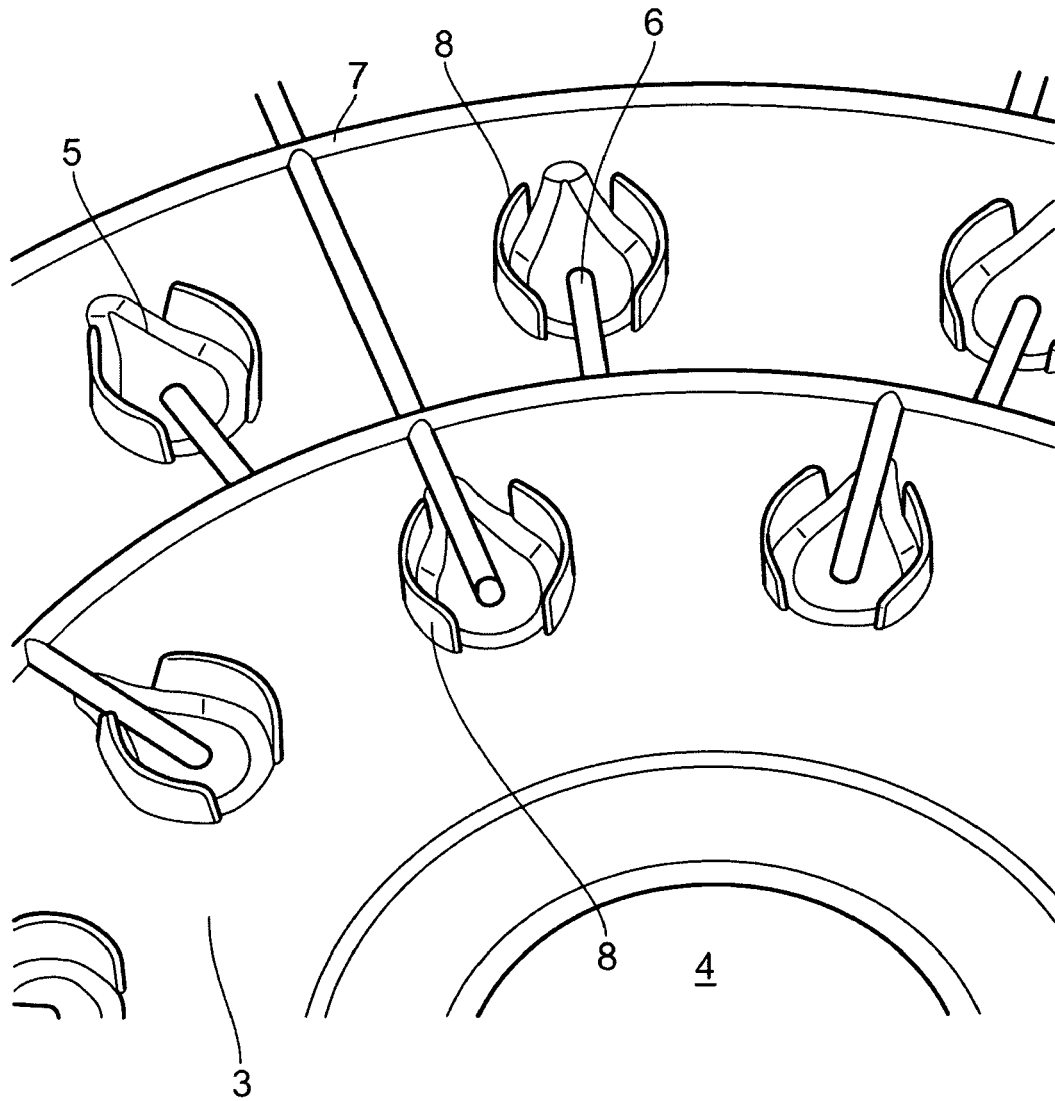


Fig. 3

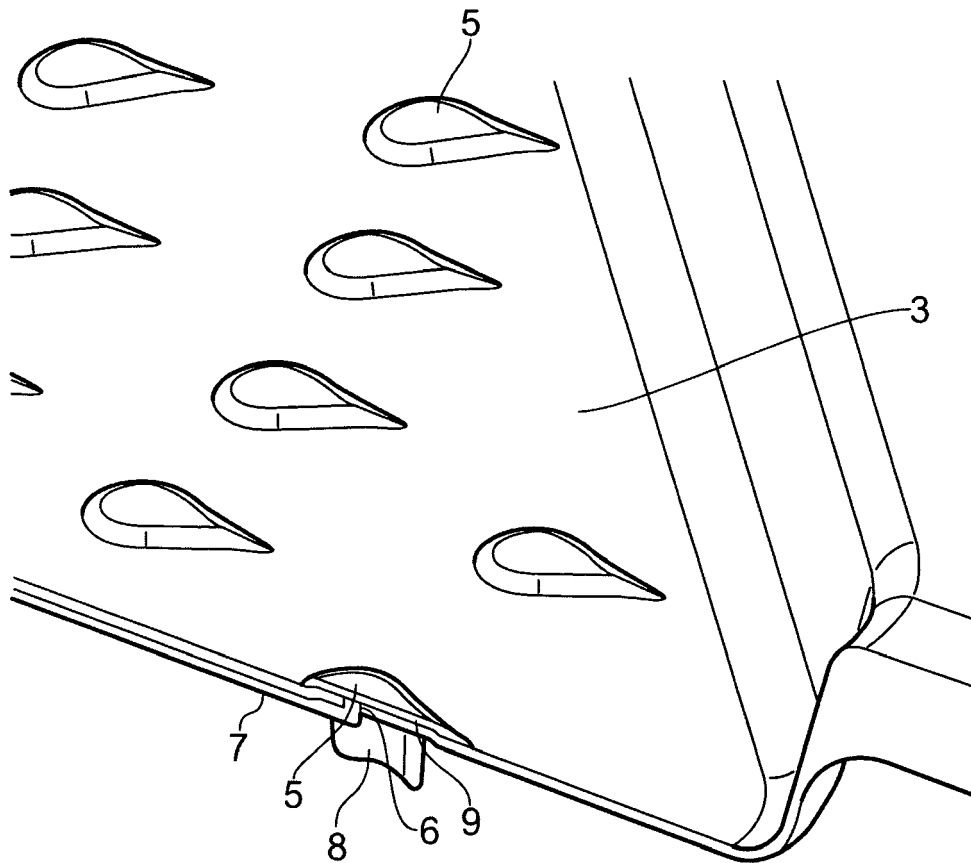


Fig. 4

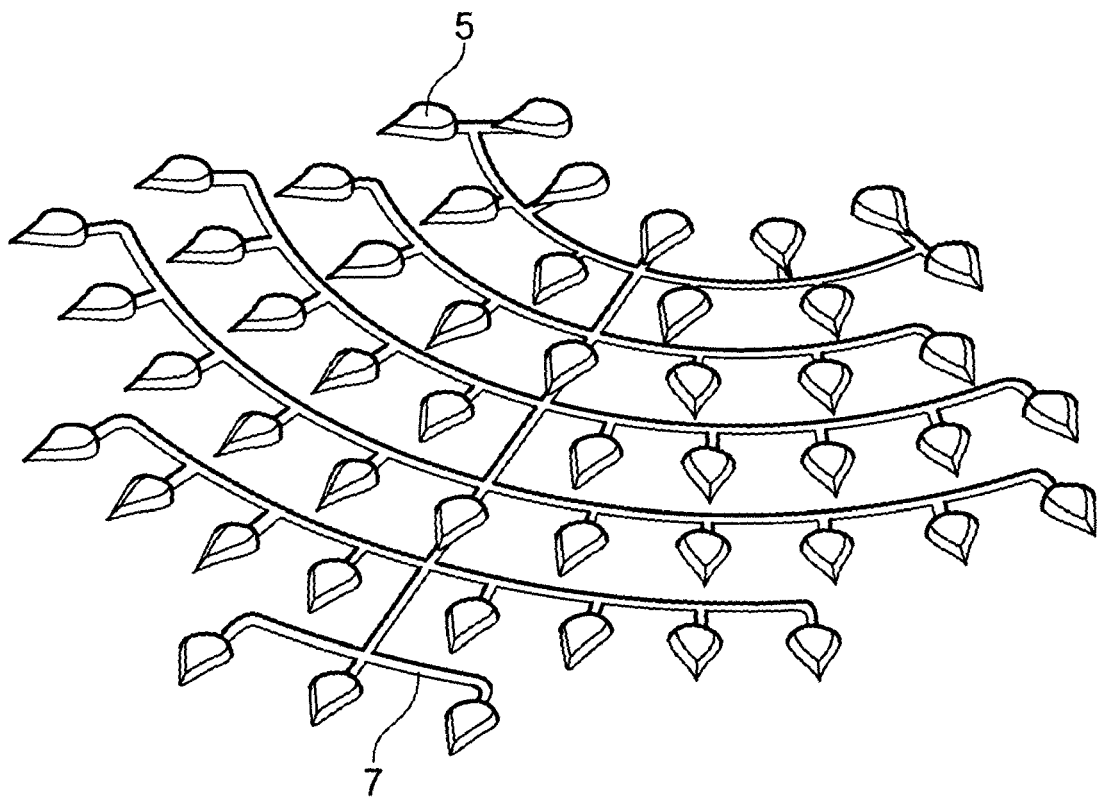


Fig. 5

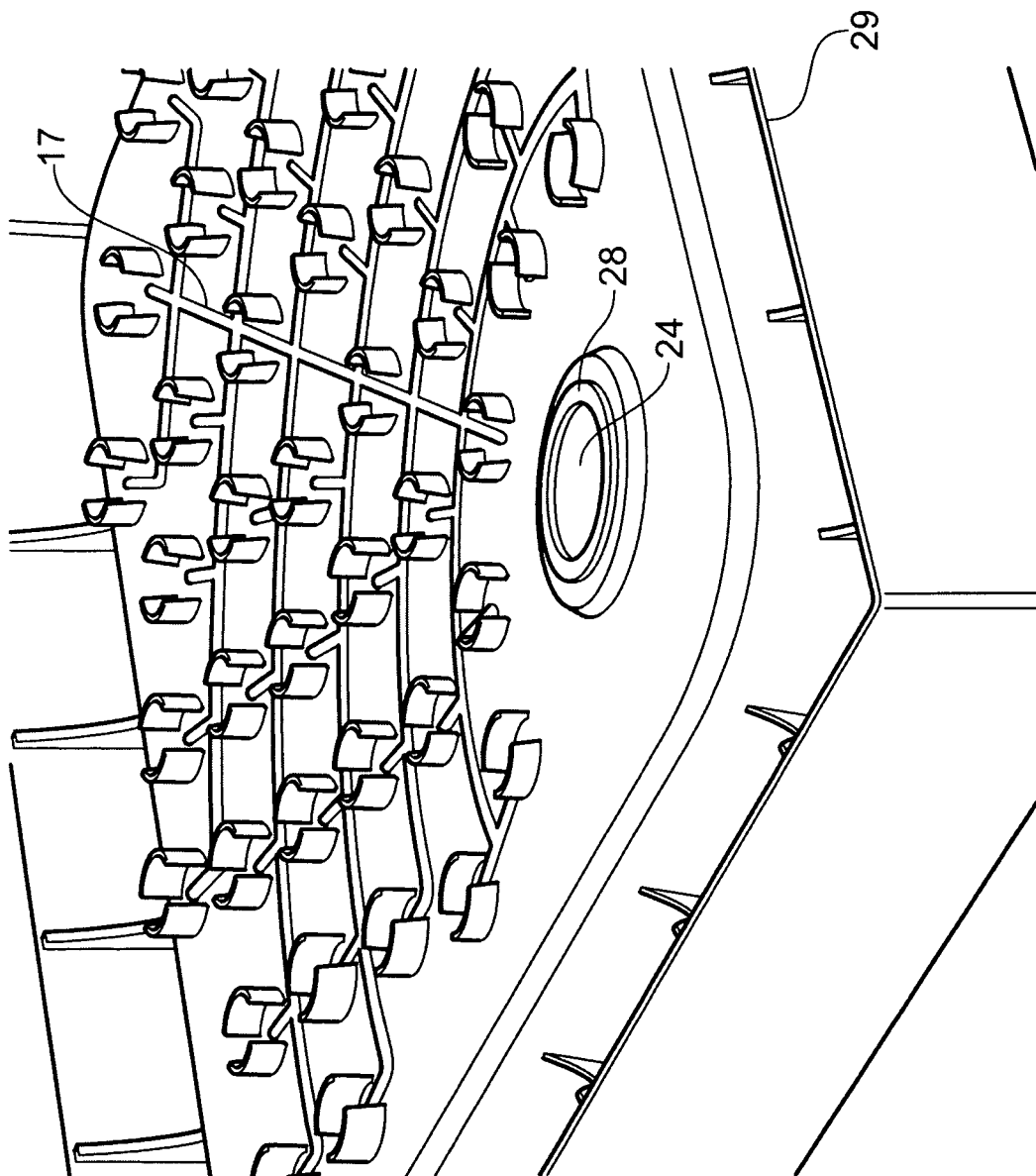


Fig. 6