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(54) **A LINEAR DRAIN GROUP**
LINEARE ABLAUFGRUPPE
GROUPE DE DRAINS LINÉAIRES

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Description

Field of application

[0001] The present invention is applicable to the field of construction and, in particular, relates to elements belonging to showers.

[0002] More in detail, the present invention relates to a linear drain group of fluids from environments.

Background art

[0003] Recently, in the context of the drainage systems of environments which envisage the evacuation of liquids, for example showers, the use of linear drains has spread in place of the classic rounded or square-shaped drains.

[0004] This shift in favour of linear drainage systems finds reason, first and foremost, in an aesthetic choice. In fact, the possibility of being able to adapt and configure drains in synchrony with bathroom finishes and the peculiarity of the shapes thereof allow an aesthetic enhancement of the environment to the detriment of the use of traditional drains.

[0005] Furthermore, linear drains also have functional and hygienic advantages since the drain surface is conveniently accessible and consequently easily cleanable. In addition, the lengths can be adapted to any shower type and size.

[0006] Generally, such linear drains are composed of a water collection channel to which a cover body is coupled.

[0007] One of the problems encountered during the installation of linear drains is in arranging the cover at the floor level of the shower floor so that there is no unevenness, steps or the like, both for aesthetic reasons and to limit any injuries to users.

[0008] To overcome such difficulties, support elements of various heights capable of supporting the loads in operation and adapted to position most of the coatings at the desired height are generally used.

[0009] However, such support elements are generally positioned inside the collection channel and cause some drawbacks to the drainage of fluids.

[0010] In fact, on closer inspection, the presence of elements designed to raise the cover inside the channel to the desired height reduce the capacity of the channel itself. In other words, during the operation of the shower the fluids, which flow to cover inside the channel to the desired height reduce the capacity of the channel itself. In other words, during the operation of the shower the fluids, which flow to the sides or through the cover body, flow inside the collection channel towards a drain hole typically connected with the plumbing. The aforementioned presence of the support elements reduces the hydraulic section of the channel and therefore accordingly decreases the capacity and flow rate.

[0011] Furthermore, the support elements, due to the

shape thereof, tend to trap/jam residues of dirt accumulated in the shower tray such as, for example, hair transported by the flow of fluids along the channel, with the risk of obstructing the channel itself or the drain hole.

[0012] In order to overcome such drawbacks, linear drains are present in the known art which have collection channels provided with steps along the lateral perimeter, or along part thereof. Such steps allow the cover body to rest thereon, directly or by interposing support elements therebetween, so that there are no further objects inside the collection channel.

[0013] However, such steps present in the known drains do not allow to overcome the problems regarding the reduced hydraulic capacity of the collection channel; in fact, although eliminating the risk of blocking residues, the steps are positioned inside the channel similarly to the support elements, so they also reduce the hydraulic section of the channel. Moreover, since such steps are continuous and positioned along most of the channel itself, the hydraulic section and the collection capacity are greatly reduced.

[0014] Furthermore, the installation of the steps must consider the position of the drain hole as a constraint. Consequently, the known drainage systems have steps positioned at spacings such as to cause the bending of the cover bodies in operation.

[0015] In addition, the steps make it difficult to arrange the cover at the height of the floor surface, as they are not adapted to any thickness of the coating, which depending on the solution chosen has different dimensions.

[0016] The documents US 2011 /162137 A1, US 2018/038091 A1, EP 1505224 A2, DE 202013005513 U1, KR 20100003610 A, KR 20130133537 A, GB 2478055 A, EP 2808457 A2, CN 201952886 U, KR 20160035847 A, in the field of hydraulic drains, are known but they do not solve the technical problems listed above.

[0017] In particular, documents US2011/162137A1 and US2018/038091A1 disclose linear drains having a cover, the height of the cover can be adjusted by means of threaded screws. Document US2011/162137A1 is considered the closest prior art, and discloses bosses 29 protruding from the lateral edges of the drainage channel (and not from the bottom of the channel; see Fig.8 of this document). The height adjustment screws 33 engages the bosses 29.

Presentation of the invention

[0018] The object of the present invention is to provide a linear drain group of environments which envisage the evacuation of liquids which allows at least partially overcoming the drawbacks highlighted above.

[0019] In particular, an object of the present invention is to provide a linear group of environments which envisage the evacuation of liquids, such as a shower, which minimizes the reduction of the hydraulic capacity compared to the known equivalent drainage systems.

[0020] Another object of the present invention is to provide a drain group which eliminates, or at least limits, the risk of obstruction of the collection channel due to the blocking of residues transported by the drained fluids.

[0021] A further object of the present invention is to provide a linear drain group which allows to limit, or even eliminate, the bending of the cover body due to the loads in operation.

[0022] Another object of the present invention is to provide a drain group adapted to position the cover body at the floor level of the shower tray regardless of the coating thickness.

[0023] Said objects, as well as others which will become clearer below, are achieved by a linear drain group of a shower according to the following claims, which are to be considered as an integral part of the present patent.

[0024] In particular, it is provided with a collection channel of fluids to be drained and comprises at least one cover body superimposed on said collection channel and shaped to achieve the aesthetic coverage thereof. The cover body is also shaped to allow the flow of fluids to be drained towards the channel.

[0025] According to an aspect of the invention, the drain group also comprises a plurality of support feet coupled to the cover body and arranged resting on the collection channel to support at least the weight of the cover body.

[0026] According to a further aspect of the invention, it also comprises at least one drain hole located on the bottom of the aforementioned collection channel and shaped to allow the flow of fluids to be drained.

[0027] Furthermore, according to another aspect of the invention, the collection channel comprises a plurality of shaped reliefs emerging from the bottom of the collection channel so as to provide the support feet with a base in elevation with respect to the bottom of the channel.

[0028] According to a further aspect of the invention, such shaped reliefs are arranged in succession on at least two parallel orders and a plurality of areas of the bottom are interposed between the reliefs of each order so as to limit the overall dimensions of the reliefs on the same bottom of the collection channel.

[0029] As mentioned, advantageously, the reliefs emerging from the bottom of the channel are arranged to avoid, or at least limit, the formation of deflections on the cover bodies due to the bending imprinted by the loads in operation.

[0030] Still advantageously, the shaped reliefs being arranged only in the positions necessary to maintain the structural integrity of the cover body, therefore allow to minimize the reduction of the hydraulic capacity of the collection channel compared to the known equivalent drainage systems.

[0031] Furthermore, such shaped reliefs are shaped so as to eliminate, or at least limit, the risk of fluid flow obstruction due to the presence of residues transported by the fluids themselves.

[0032] According to another aspect of the invention,

such shaped reliefs are arranged in offset rows such as, for example, according to a quincunx arrangement.

[0033] Advantageously, the arrangement of the reliefs in offset rows allows to reduce the density thereof inside the bottom of the collection channel, so as to further minimize the reduction of the hydraulic capacity of the latter, without compromising the bending resistance of the cover body.

[0034] According to a further aspect of the invention, the support feet are coupled to the cover body by screw means so as to allow a continuous adjustment of the height of the cover body itself.

[0035] Advantageously, the adjustment by screw means is carried out continuously and therefore allows the cover to be arranged at the floor level of the shower tray regardless of the thickness of the visible coating.

Brief description of the drawings

[0036] Further features and advantages of the invention will become more evident in light of the detailed description of a preferred but not exclusive embodiment of a linear drain group of a shower according to the invention, illustrated by way of non-limiting example with the aid of the accompanying drawings, wherein:

FIG. 1 depicts an axonometric exploded view of a linear drain group according to the invention;

FIG. 2 depicts a section of the linear drain group of FIG. 1 in an axonometric view.

Detailed description of some preferred embodiments

[0037] With reference to the aforementioned figures, a linear drain group **1** of fluids from an environment is described herein, such as a shower, having a collection channel **3** of fluids to be drained.

[0038] In particular, it comprises a cover body **5**, a plurality of support feet **6** and a drain hole **7** located on the bottom **10** of the collection channel **3** and shaped to allow the flow of the fluids to be drained.

[0039] Obviously, the number of drain holes present should not be considered limiting for different embodiments of the invention.

[0040] According to the embodiment of the invention which is described, the aforementioned bottom **10** of the collection channel **3** is inclined so as to have a slope such as to direct the flow of fluids towards the drain hole **7**.

[0041] Advantageously, the inclination of the bottom **10** allows a rapid flow of the fluids to be drained so as to limit stagnation inside the channel **3**. However, the execution of the bottom of the collection channel is not to be understood in a limiting sense for different variants of the invention where, for example, it is a horizontal plane.

[0042] According to an aspect of the invention, the cover body **5** is superimposed on the collection channel **3** and is shaped to obtain the aesthetic cover thereof, i.e., the visible part of the drain group **1**. Furthermore, such

a cover body **5** is shaped to allow the flow of fluids to be drained towards the channel **3**.

[0043] According to the described embodiment, the fluids to be drained flow to the sides of the cover body **5**. Obviously, such an aspect should not be considered limiting for different embodiments of the invention, where, for example, the fluids to be drained flow towards the channel through openings present in the cover body itself.

[0044] According to another aspect of the invention, the support feet **6** are coupled to the cover body **5** and are arranged on the collection channel **3** to support the weight of the cover body **5** itself and of further loads in operation.

[0045] According to the described embodiment, the feet **6** are coupled to the cover body **5** by screw means **12** so as to allow a continuous adjustment of the height of the cover body **5** itself.

[0046] Advantageously, the possibility of continuously adjusting the height of the support feet **6** makes it possible to easily arrange the cover body **5** at the floor level of the shower tray, avoiding the presence of rises or cracks such that there is a risk of injury to users.

[0047] Still advantageously, the presence of screw means **12** allows the cover body **5** to be positioned at the desired height regardless of the thickness thereof.

[0048] Obviously, such an aspect must not be considered limiting for different embodiments of the invention where, for example, the height of the cover body is adjusted by means of telescopic elements or in the case where the support feet adjust the height by discrete levels.

[0049] According to a further aspect of the invention, the collection channel **3** comprises a plurality of shaped reliefs **15** emerging from the bottom **10** of the collection channel **3** so as to provide the support feet **6** with a base in elevation with respect to the aforementioned bottom **10** of the channel **3**.

[0050] Furthermore, such shaped reliefs **15** are arranged in succession on at least two parallel orders and a plurality of areas **16** of the bottom **10** of the collection channel **3** are interposed between the shaped reliefs **15** of each order.

[0051] According to the embodiment of the invention which is described, such reliefs **15** are shapes, made for example by moulding, of the collection channel **3**. However, the execution of the shaped reliefs is a feature which should not be understood in a limiting sense for different variants of the invention where, for example, they are additional elements stably coupled to the bottom of the collection channel.

[0052] Advantageously, the shaped reliefs **15** are arranged to eliminate, or at least limit, the bending of the cover body **5** following the application of loads in operation.

[0053] Furthermore, the reliefs **15** of the invention have limited overall dimensions and this still allows, advantageously, to minimize the reduction of the hydraulic ca-

capacity of the collection channel **3** compared to the known equivalent drainage systems.

[0054] Still advantageously, the shaping of the reliefs **15** emerging from the bottom **10** of the channel **3** allows to eliminate, or at least limit, the risk of obstruction of the fluid flow due to the blocking of residues transported by the fluids themselves.

[0055] In addition, the presence of the areas **16** of the bottom **10** interposed with the shaped reliefs **15** still allows, advantageously, to minimize the overall space occupied by the reliefs **15** themselves in order to reduce the hydraulic capacity of the collection channel **3** as little as possible.

[0056] According to the embodiment of the invention which is described, the shaped reliefs **15** are arranged in offset rows such as, for example, according to a quin-cunx arrangement.

[0057] Advantageously, the arrangement of the reliefs **15**, or part thereof, in offset rows allows to reduce the density thereof inside the bottom of the collection channel **3**, in order to further minimize the reduction of hydraulic capacity of the latter, without compromising the bending resistance of the cover body **5**.

[0058] As regards the cover body, according to the embodiment of the invention which is described, the cover body **5** comprises through holes **23**.

[0059] Advantageously, the through holes **23** allow to obtain a lower-weight cover body **5** and, given the use of a lower amount of material, to reduce the manufacturing costs of the drain group **1**.

[0060] Obviously, the presence of the through holes and the number thereof are features which should not be understood in a limiting sense for different variants of the invention.

[0061] Furthermore, according to an embodiment variant of the invention not shown in the figures, the cover body comprises a tray and/or an aesthetic coating typically, but not necessarily, tiles adapted to be arranged in the tray itself.

[0062] Advantageously, the tray and coating make it easier to install the drain group. Still advantageously, the tray allows to receive any coating resting thereon.

[0063] However, the embodiment of the cover body is a feature which should not be understood in a limiting sense for different variants of the invention where, for example, it is made in a single body.

[0064] In light of the foregoing, it is understood that the linear drain group of the invention achieves all the intended objects.

[0065] In particular, the drain group of the invention allows to minimize the reduction of the hydraulic capacity of the collection channel.

[0066] Furthermore, it allows to limit, if not eliminate, the residues transported by the fluids drained and retained in the collection channel.

[0067] In addition, the drain group of the invention allows to avoid, or at least reduce, the bending of the cover body due to the loads in operation.

[0068] Finally, the discharge unit of the invention allows to adjust the height of the cover body, so as to arrange it at the level of the floor surface, regardless of the thickness of the body itself.

[0069] The invention might be subject to many changes and variants, which are all included in the appended claims. Moreover, all the details and steps may furthermore be replaced by other technically equivalent elements, and the materials may be different depending on the needs, without departing from the protection scope of the invention defined by the appended claims.

Claims

1. A linear drain group of fluids from an environment having a collection channel (3) of fluids to be drained and comprising:

- at least one cover body (5) superimposed on said collection channel (3) and shaped to obtain a cover thereof, said cover body (5) being shaped to allow the flow of fluids to be drained to said collection channel (3);
- a plurality of support feet (6) coupled to said cover body (5) and arranged resting on said collection channel (3) to support the weight of at least said cover body (5);
- at least one drain hole (7) located on the bottom (10) of said collection channel (3) and shaped to allow the flow of fluids to be drained,

said collection channel (3) comprises a plurality of shaped reliefs (15) emerging from said bottom (10) of said collection channel (3) so as to provide said support feet (6) with a base in elevation with respect to said bottom (10) of said collection channel (3), said shaped reliefs (15) being arranged in succession in at least two parallel orders, a plurality of areas (16) of said bottom (10) being interposed between said shaped reliefs (15) of each said order so as to limit the overall dimensions of said reliefs (15) on said bottom (10) of said collection channel (3).

2. Linear drain group according to claim 1, **wherein** said shaped reliefs (15) are arranged in a quincunx arrangement.

3. Linear drain group according to claim 1 or 2, **wherein** said plurality of shaped reliefs (15) are shapes of said collection channel (3).

4. Linear drain group according to claim 1 or 2, **wherein** said plurality of shaped reliefs are additional elements permanently coupled to said bottom of said collection channel.

5. Linear drain group according to one or more of the

preceding claims, **wherein** said support feet (6) are coupled to said cover body (5) by screw means (12) so as to allow a continuous adjustment of the height of said cover body (5).

6. Linear drain group according to one or more of the preceding claims, **wherein** said bottom (10) of said collection channel (3) is inclined so as to direct the flow of said fluids towards said drain hole (7).

7. Linear drain group according to one or more of the preceding claims, **wherein** said cover body comprises at least one tray.

Patentansprüche

1. Lineare Ableitungsgruppe für Fluide aus einer Umgebung, die einen Sammelkanal (3) für abzuleitende Fluide aufweist und Folgendes umfasst:

- mindestens einen Abdeckkörper (5), der dem Sammelkanal (3) überlagert und dazu geformt ist, eine Abdeckung davon zu erhalten, wobei der Abdeckkörper (5) derart geformt ist, dass er den Fluss von Fluiden in den Sammelkanal (3) erlaubt;
- eine Vielzahl von Stützfüßen (6), die mit dem Abdeckkörper (5) gekoppelt auf dem Sammelkanal (3) ruhend eingerichtet sind, um das Gewicht zumindest des Abdeckkörpers (5) zu tragen;
- mindestens ein Ableitungsloch (7), das sich am Boden (10) des Sammelkanals (3) befindet und dazu geformt ist, das Ableiten des Flusses von Fluiden zu erlauben,

wobei der Sammelkanal (3) eine Vielzahl geformter Reliefs (15) umfasst, die sich aus dem Boden (10) des Sammelkanals (3) erheben, um den Stützfüßen (6) eine Basis in der Höhe in Bezug auf den Boden (10) des Sammelkanals (3) bereitzustellen, wobei die geformten Reliefs (15) aufeinanderfolgend in mindestens zwei parallelen Reihenfolgen eingerichtet sind, wobei eine Vielzahl von Bereichen (16) des Bodens (10) zwischen den geformten Reliefs (15) jeder dieser Reihenfolgen eingefügt ist, um die Gesamtabmessungen der Reliefs (15) auf dem Boden (10) des Sammelkanals (3) zu begrenzen.

2. Lineare Ableitungsgruppe nach Anspruch 1, wobei die geformten Reliefs (15) in einer versetzten Anordnung eingerichtet sind.

3. Lineare Ableitungsgruppe nach Anspruch 1 oder 2, wobei die Vielzahl geformter Reliefs (15) Formen des Sammelkanals (3) sind.

4. Lineare Ableitungsgruppe nach Anspruch 1 oder 2, wobei die Vielzahl geformter Reliefs zusätzliche Elemente sind, die dauerhaft mit dem Boden des Sammelkanals gekoppelt sind.
5. Lineare Ableitungsgruppe nach einem oder mehreren der vorstehenden Ansprüche, wobei die Stützfüße (6) mit dem Abdeckkörper (5) durch Schraubmittel (12) verbunden sind, um eine stufenlose Einstellung der Höhe des Abdeckkörpers (5) zu erlauben.
6. Lineare Ableitungsgruppe nach einem oder mehreren der vorstehenden Ansprüche, wobei der Boden (10) des Sammelkanals (3) derart geneigt ist, dass er den Fluss der Fluide in Richtung des Ableitungslochs (7) neigt.
7. Lineare Ableitungsgruppe nach einem oder mehreren der vorstehenden Ansprüche, wobei der Abdeckkörper mindestens eine Wanne aufweist.

Revendications

1. Groupe de drainage linéaire de fluides provenant d'un environnement présentant un canal de collecte (3) de fluides à drainer et comprenant :

- au moins un corps de couvercle (5) superposé sur ledit canal de collecte (3) et façonné pour obtenir un couvercle de celui-ci, ledit corps de couvercle (5) étant façonné pour permettre le drainage du flux de fluides vers ledit canal de collecte (3) ;
- une pluralité de pieds de support (6) couplés audit corps de couvercle (5) et agencés en appui sur ledit canal de collecte (3) pour supporter le poids d'au moins ledit corps de couvercle (5) ;
- au moins un trou de drainage (7) situé sur le fond (10) dudit canal de collecte (3) et façonné pour permettre le drainage du flux de fluides,

ledit canal de collecte (3) comprend une pluralité de reliefs façonnés (15) émergeant dudit fond (10) dudit canal de collecte (3) de manière à fournir auxdits pieds de support (6) une base en élévation par rapport audit fond (10) dudit canal de collecte (3), lesdits reliefs façonnés (15) étant agencés successivement selon au moins deux ordres parallèles, une pluralité de zones (16) dudit fond (10) étant interposées entre lesdits reliefs façonnés (15) dudit chaque ordre de manière à limiter les dimensions générales desdits reliefs (15) sur ledit fond (10) dudit canal de collecte (3).

2. Groupe de drainage linéaire selon la revendication 1, dans lequel lesdits reliefs façonnés (15) sont

agencés selon un agencement en quinconce.

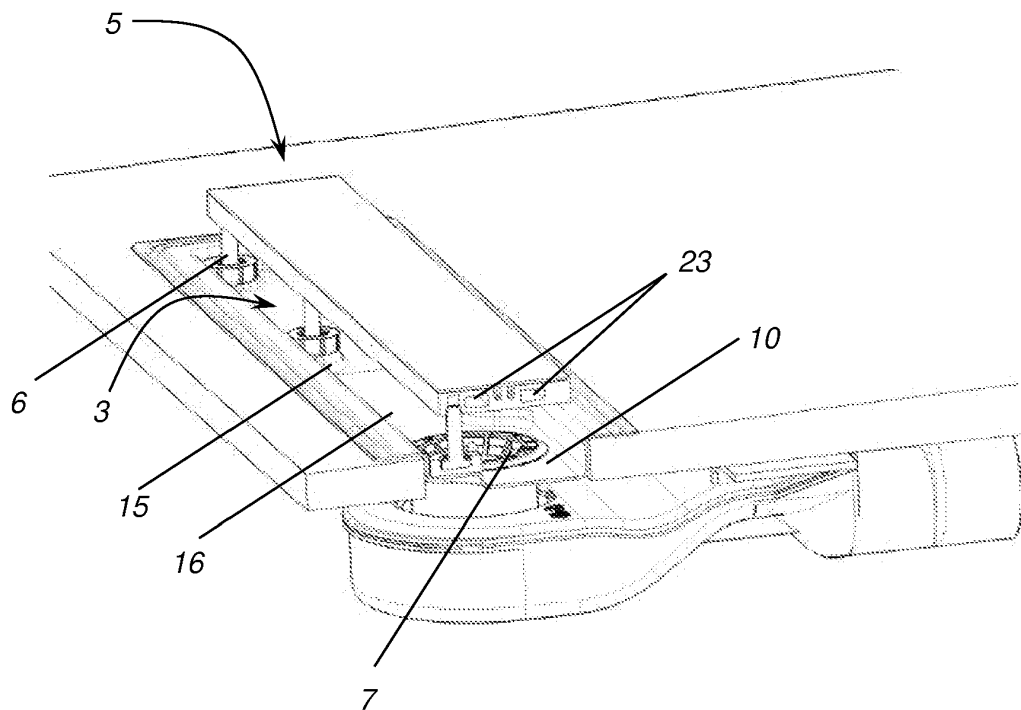
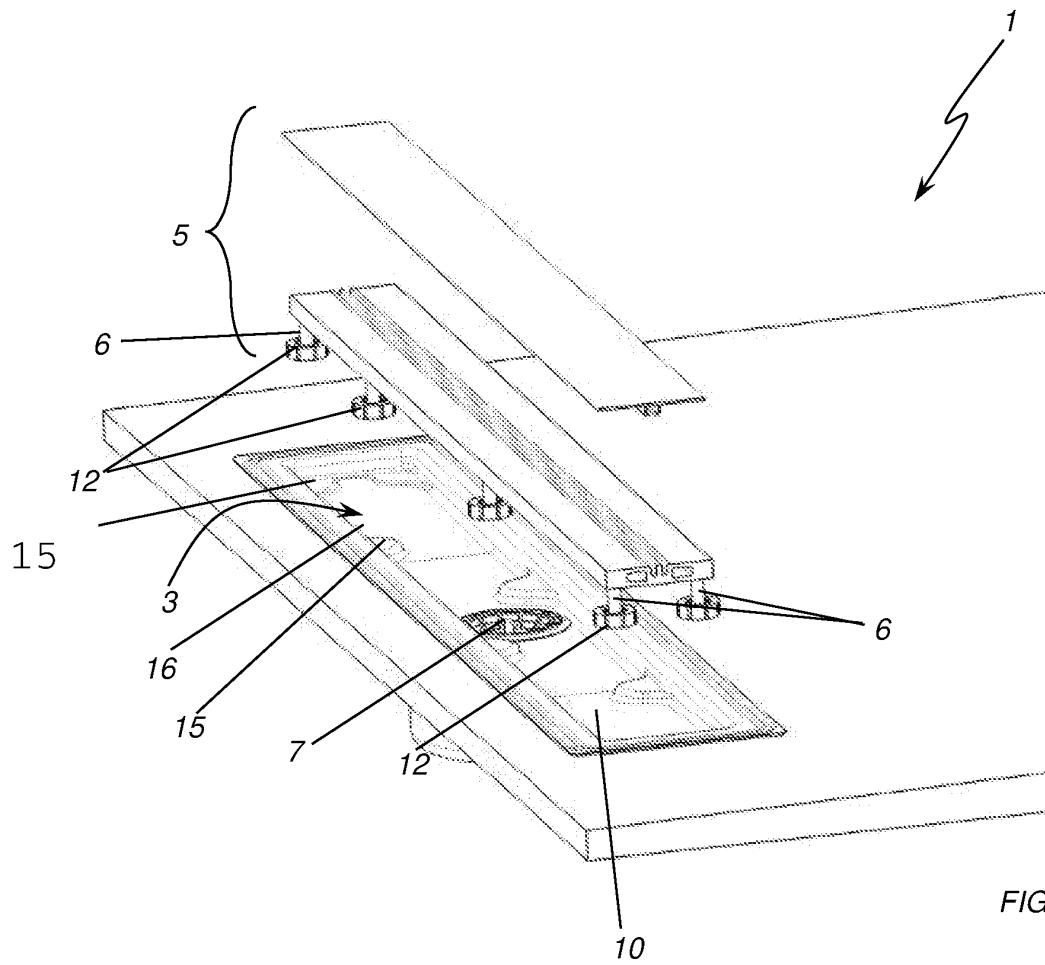
3. Groupe de drainage linéaire selon la revendication 1 ou 2, dans lequel ladite pluralité de reliefs façonnés (15) sont des formes dudit canal de collecte (3).

4. Groupe de drainage linéaire selon la revendication 1 ou 2, dans lequel ladite pluralité de reliefs façonnés sont des éléments supplémentaires couplés en permanence audit fond dudit canal de collecte.

5. Groupe de drainage linéaire selon une ou plusieurs des revendications précédentes, dans lequel lesdits pieds de support (6) sont couplés audit corps de couvercle (5) par des moyens à vis (12) de manière à permettre un ajustement continu de la hauteur dudit corps de couvercle (5).

6. Groupe de drainage linéaire selon une ou plusieurs des revendications précédentes, dans lequel ledit fond (10) dudit canal de collecte (3) est incliné de manière à diriger le flux desdits fluides vers ledit trou de drainage (7).

7. Groupe de drainage linéaire selon une ou plusieurs des revendications précédentes, dans lequel ledit corps de couvercle comprend au moins un plateau.



REFERENCES CITED IN THE DESCRIPTION

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