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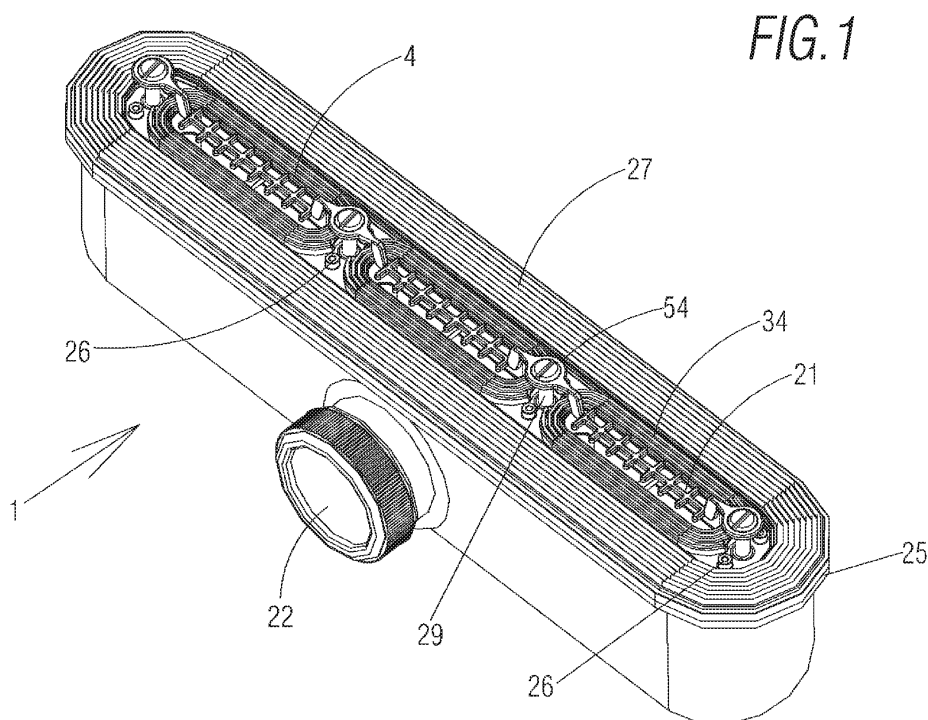
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(54) **DRAINAGE DEVICE AND SHOWER ASSEMBLY WITH SUCH A DEVICE**

(57) Drainage device connectable to a drain hole and provided for draining fluids which comprises a drainage body with an upper inlet and an outlet mouth in fluid communication with the upper inlet, the drainage body comprising siphon means in communication with the upper inlet by way of a downstream channel and the siphon means are also in fluid communication with the outlet

mouth by way of a chamber, the downstream channel comprises a window which directly connects the upper inlet and said chamber, the drainage body further comprising plugging means for the window; furthermore, a bath assembly is also an object of the invention which comprises a shower tray associated with said drainage device.



Description

OBJECT OF THE INVENTION

[0001] The object of the present application is to register a drainage device and a bath assembly which incorporates notable innovations.

[0002] More specifically, the invention proposes the development of a drainage device which is connectable to the drain of a shower tray or similar and is configured for eliminating the siphoning effect if required. Furthermore, a bath assembly has also been developed in which the drain hole of the shower tray has minimal dimensions.

BACKGROUND OF THE INVENTION

[0003] The use of drainage devices for draining fluids such as grey water from sanitary elements, for example shower trays, bathtubs, etc., is known in the state of the art.

[0004] These drainage devices can adopt various shapes such as for example elongated in order to optimize space and in order to be adapted to particular designs of shower trays. In the most advanced designs, they incorporate siphon structures in order to avoid the outlet of unpleasant odors through the drain of the shower.

[0005] When these known designs are placed in installations which already have a siphon trap, the water cannot be correctly drained through the drain. This occurs due to the duplication of the two siphons in series. Therefore, it is necessary to know whether or not the installation has a siphon trap. Nevertheless, in the majority of cases it is not known in advance whether the installation is already equipped with a siphon trap, consequently, there is no indication of its presence until problems with the drainage of water appear.

[0006] At present, in order to eliminate the effect of the siphon, an element of the siphon has to be removed, which has to pass through the drain hole which the shower tray or bathtub has when it is removed. This element is usually rigid, with dimensions smaller than that of the hole of the shower tray or bathtub so that it can pass through it. This also involves the dimensions of the hole, through which the water has to pass, being less than those of the hole of the tray.

[0007] The new shower tray designs in the sector require geometries of the elongated drain holes where one of the dimensions, in this case the width, is greatly reduced. The geometry of the elongated siphon aims at the drain hole being as narrow as possible, however, if the system used at present is applied, the hole of the tray would not be optimized like the minimum available width.

DESCRIPTION OF THE INVENTION

[0008] The present invention has been developed with the aim of providing a drainage device which resolves

the previously mentioned drawbacks, also providing other additional advantages which will be evident from the description which follows below.

[0009] In the present description, the use of words such as upper, lower, frontal, rear, longitudinal, transversal, etc is understood in a condition of use. Furthermore, it should be understood that the drain hole relates to a shower tray, bathtub or similar.

[0010] A drainage device is, therefore, an object of the invention, of the type connectable to a drain hole and provided for draining fluids which comprises a drainage body, said drainage body which, in turn, comprises, at least one upper inlet and an outlet mouth in fluid communication with the upper inlet, the drainage body also comprising siphon means, in which the siphon means are in communication with the upper inlet by way of a downstream channel and the siphon means are also in communication with the outlet mouth by way of a chamber, the downstream channel comprises at least one window configured such that it directly connects the upper inlet and said chamber, the drainage body also comprising plugging means for the window, said plugging means being fixable in a releasable manner on said window.

[0011] Owing to these characteristics, a drain device is obtained which allows the siphon effect to be eliminated in a simple and fast manner, most importantly when the device is placed in an installation which already has a siphon trap. The operator does not need to uninstall the drain body completely or partially in order to eliminate the siphon effect. Furthermore, in the case of having various upper water inlets, maintenance can be facilitated in case of breakage or damage to the plugging means.

[0012] According to one example of the invention, the downstream channel comprises a widened portion in communication with the upper inlet and said window being arranged on said widened portion. Thus another route for draining fluids is obtained in order to overcome the siphon effect. Furthermore, the plugging means can be partially housed in a releasable manner in the widened portion.

[0013] In order to achieve water-tightness between the upper inlet and the drain, the plugging means can comprise a plurality of first ribbings capable of coming into contacting with a shower plate.

[0014] In another example of the invention, the plugging means can comprise a projection that can fit so as to coincide with the window which allows the cited window to be optimally plugged.

[0015] In one example, the plugging means comprise a plug in the manner of a seal, in which the plug has at least one opening provided such that it connects the upper inlet with the interior of the downstream channel. As a result, with a ring, circular or oval shape the window can be easily plugged. Furthermore, in order to guarantee the optimal utilization of the space available for draining the water, the transversal cross section of the opening of the plug advantageously at least coincides in shape and dimensions with the interior transversal cross section

of the downstream channel. That is to say, the transversal cross section of the opening of the plug can have dimensions greater than those of the interior transverse cross section of the downstream channel.

[0016] The plug has at least one rib in the manner of a bridge in the opening. This rib facilitates the removal of the plug through the drain hole.

[0017] In one aspect of the invention, the drain body can comprise coupling means between the plug and widened portion, thus tighter positioning is obtained. Particularly the coupling means comprise a groove and a protrusion respectively arranged on the plug and the widened portion of the downstream channel in which the groove and the protrusion are configured so as to coincide with each other such that a male-female relation is defined during use.

[0018] In an addition example, an upper wall of the drain body comprises at least one stop, capable of coming into contacting with a shower tray. These stops exercise a safety function in order to avoid, during the installation of the present drainage device, the latter undergoing deformations.

[0019] An upper wall of the drainage body can comprise a plurality of second ribbings capable of coming into contacting with a shower tray. Thus the water-tightness between the drainage body and the shower tray is assured.

[0020] In order to avoid hairs or other objects entering through the drain, the drainage body also comprises filtering means housed in a releasable manner in the upper inlet. These filtering means can comprise a trunk and branches in the manner of a fishbone, the branches extend from the trunk towards the plugging means.

[0021] In another additional example, the drainage body comprises a plurality of upper inlets associated with a common chamber, in this way, the present invention can be flexibly adapted to any design requirement.

[0022] The respective filtering means of each upper inlet can be joined to each other using arms. This facilitates the removal and placement of the filtering means provided in a plurality of upper inlets.

[0023] Furthermore, the drainage body can have an elongated configuration, adapted to drains with the same configuration. In one alternative embodiment of the invention, said drainage body (2) can also have a generally notably cylindrical configuration, the downstream channel (31) having a circular contour bottom.

[0024] According to another characteristic of the invention, the siphon means can comprise at least one receptacle capable of containing fluid, the downstream channel being at least partially introduced into the receptacle, the downstream channel and the receptacle are configured and arranged such that a downstream area in the interior of the downstream channel and an upstream area arranged between the downstream channel and the receptacle are defined, the upstream and downstream areas being in fluid communication, in which the upstream area and the outlet mouth are in fluid communication at least

by way of the chamber.

[0025] According to another object of the invention, a bath assembly is provided which comprises a shower tray or bathtub associated with a drainage device as has been previously described, the shower tray, which comprises at least one drain hole which has a transversal cross section coinciding in shape and dimensions with a respective downstream channel. And it is achieved with the possibility of being able to overcome the siphon effect.

[0026] The problem of the prior art whereby the useful area of the downstream channel is smaller than the transversal cross section of the drain hole is thus resolved.

[0027] Other characteristics and advantages of the drainage device and bath assembly objects of the present invention will be evident from the description of a preferred, but not exclusive, embodiment which is illustrated by way of nonlimiting example in the drawings which are enclosed, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0028]

Figure 1 is a perspective schematic view of a drainage device with three upper openings according to the invention;

Figure 2 is a perspective schematic view of a drainage device of Figure 1 in which the filtering means and some plugging means have been removed;

Figure 3 is a perspective schematic view from below an embodiment of the plugging means;

Figure 4 is a perspective schematic view of an embodiment of the filtering means;

Figure 5 is a schematic view of a lateral cross section of the drainage device of Figure 1;

Figure 6 is a schematic view of a lateral cross section of the drainage device of Figure 5 without the plugging means;

Figure 7 is a perspective and partial schematic view of a bath assembly according to the present invention;

Figure 8 is a partial schematic plan view of the bath assembly of Figure 7;

Figure 9 is a perspective view of a second embodiment of the drainage device in a general cylindrical shape with an upper opening according to the invention in which some parts have been omitted for the purposes of clarity;

Figure 10 is a schematic view of a lateral cross section of the drainage device of Figure 9 in which the plugging means are included; and

Figure 11 is a perspective and partial schematic view of a bath assembly based on the drainage device of Figure 9.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0029] As is shown in the attached figures, a preferred,

but not exclusive, embodiment of a drainage device has been illustrated which will be designated generally with the reference numeral 1. In Figures 5 and 6, the flow of the fluid to be drained is depicted by means of arrows.

[0030] In Figure 1, a drainage device 1 of the type connectable to a drain hole 300 and provided for draining fluids such as for example grey water can be seen. The drainage device 1 comprises a drainage body 2 which, in the present embodiment, in turn, comprises three upper inlets 21 and an outlet mouth 22 in fluid communication with the upper inlets 21. It is evident that the number of upper inlets and outlet mouths 22 can vary, as well as the relative positioning of the outlet mouth 22, although it is preferred for it to be centered on a frontal or rear face of the drainage body 2. It is also preferred for the drainage body 2 to have an elongated configuration such that the different upper openings 21 are arranged along the length of the drainage body 2. In an alternative manner, other geometric shapes can be provided for the drainage body 2, for example a drum configuration (not depicted).

[0031] In Figures 5 and 6, it can be seen that the drainage body 2 also comprises siphon means 3 in which the siphon means 3 comprise, in the present embodiment, a downstream channel 31 in communication with each upper inlet 21, each downstream channel 31 being partially introduced into a receptacle 32 capable of containing grey water. The downstream channel 31 and the receptacle 32 are configured and arranged such that a downstream area B in the interior of the downstream channel 31 and an upstream area S arranged between the downstream channel 31 or downstream channels 31 and the receptacle 32 are defined, the upstream S and downstream B areas being in fluid communication.

[0032] In the present embodiment, the three downstream channels 31 are introduced into the same common receptacle 32. However, it will be evident that there can be one respective receptacle 32 for each downstream channel 31.

[0033] Furthermore, in other embodiments, different arrangements of the siphon means 3 can be used, which fulfil the same functions as the present embodiment.

[0034] It can also be seen that the upstream area S is in fluid communication with the outlet mouth 22 by way of a chamber 23 which, in the present case, is common for the three downstream channels B. Said chamber 23 surrounds the receptacle 32 to receive the grey water.

[0035] Each downstream channel 31 comprises a window 24 configured such that it directly connects the upper inlet 21 and said chamber 23. The number of windows 24 can vary as a function of the requirements. The drainage body 2 also comprises plugging means 4 for said window 24, in which said plugging means 4 are fixable in a releasable manner on said window 24. The passage of fluid through this window 24 is allowed when it is open, thus eliminating the siphon effect when the flow of water exits directly to chamber 23, without passing through the siphon means 3.

[0036] Each downstream channel 31 preferably com-

prises a widened portion 33 in communication with the upper inlet 21 such that said window 24 is arranged on the widened portion 33 (see Figures 2, 5 and 6). In this widened portion 33, the plugging means 4 can be housed in a releasable manner.

[0037] Continuing with the Figures 1, 2, 5 and 6, it can be seen that the plugging means 4 preferably comprise a plurality of first ribbings 34 capable of coming into contact with a shower tray 200. The plugging means 4 also comprise a projection 45 that can fit so as to coincide with the window 24 such that the cited window 24 is closed.

[0038] In the present embodiment, the plugging means 4 are formed like a plug in the manner of a seal, in which the plug has at least one opening 41 arranged such that it connects each upper inlet 21 with the interior of the respective downstream channel 31. In order to facilitate the draining of grey water, the transversal cross section of the opening 41 of the plug notably coincides in shape and dimensions with the interior transversal cross section of the downstream channel 31. However, there is the possibility of the dimensions of the opening 41 being greater than those of the interior transversal cross section of the downstream channel 31.

[0039] In Figure 3, it can be seen that the plug has a rib 42 in the manner of a bridge which passes through the opening 41. It is clear that the number of ribs 42 can be modified as a function of the particular requirements, incorporating shapes or elements which facilitate the removal of the plug.

[0040] The plug is preferably made in an integral manner with the first ribbings 34 using synthetic rubber. However, it will be obvious for the person skilled in the art to vary the material for another with equivalent properties.

[0041] The drainage body 2 comprises coupling means between the plug and the widened portion 33. As can be seen in Figures 2, 3, 5 and 6, these coupling means comprise a groove 43 and a protrusion 44 respectively arranged on the plug and the widened portion 33, in which the groove 43 and the protrusion 44 are configured so as to coincide with each other such that a male-female relation is defined during use. It is evident that both the groove 43 and the protrusion 44 can be interchangeably situated on the plug or on the widened portion 33.

[0042] In Figures 1 and 2, it can be observed that an upper wall of the drainage body 2 comprises a plurality of stops 26 capable of coming into contacting with a shower tray 200. In the upper wall 25 of the drainage body 2, there is a plurality of second ribbings 27 capable of coming into contacting with a shower tray 200. The second ribbings 27 are preferably pieces that are independent of the rest of the drainage body 2 which can be joined to the same.

[0043] In order to achieve a guaranteed watertight effect, the second ribbings 27 are arranged in the manner of an oval crown, preferably following the perimeter of the drainage body 2 viewed in plan view. Additionally,

the first ribbings 34 also adopt an oval crown configuration with rounded ends. Both the first ribbings 34 and the second ribbings 27 can have other shapes such as square, rounded, etc. which are adapted to the contour of the drainage body 2 or the upper inlets 21.

[0044] The second ribbings 27 are also preferably made from a synthetic rubber which guarantees the watertightness between the shower tray 200 and the drainage body 2.

[0045] Preferably, but not exclusively, these stops 26 accompany bores 28 in pairs, preferably threaded in which screwing elements 29 are introduced. In the present embodiment, the screwing element 29 is used to join the present drainage device 1 below a shower tray. Each pair of stops 26 is arranged at both sides of each bore 28; in this way the stops 26 can act effectively as a stop if an excessive force is applied on the screwing elements 29 and thus avoid deformations. In an ideal case, said stops 26 should not contact the shower tray 200.

[0046] Unlike the state of the art, the bores 28 are not placed in the useful area of the upper inlet 21, nor are the screwing elements 29 placed in the drain hole 300, in order to avoid, for example the drain hole having to be larger in order to compensate.

[0047] The drainage body 2 also comprises filtering means 5 housed in a releasable manner in each upper inlet 21. In the present embodiment, the filtering means 5 comprise a trunk 51 and branches 52 in the manner of a fishbone, the branches 52 extend from the trunk 51 towards the plugging means 4 (see Figures 1 and 4). The respective filtering means 5 of each upper inlet 21 are joined to each other with arms 53 connectable to a shower tray by way of the screwing elements 29. An optimized use of the different components of the present invention is thus achieved.

[0048] In Figure 1, it can be seen that the filtering means 5 of the different upper inlets 21 are arranged in the interior of the same and that the arms 53 are clamping the screwing elements 29 in portions elevated towards the height of the head of the screwing elements 29. The filtering means 5 are clamped around the screwing elements 29 owing to rings 54 arranged on the elevated portions and notably at the height of the heads of the screwing elements 29. This configuration allows the rapid placement (by gravity) and removal of the filtering means 5 if they have to be replaced.

[0049] In Figures 5 and 6, it can be seen that the chamber 23 has an inclined base, with the lower region close to the outlet mouth 22, it is thus possible to utilize the action of the force of gravity for draining fluids. The outlet mouth 22, in turn, has a knurled nut 6 for connecting the present drainage device 1 to a draining installation (not depicted). Instead of a knurled nut 6, other equivalent solutions can be used within the scope of the person skilled in the art.

[0050] In turn, in Figures 7 and 8, a bath assembly 100 has been depicted which comprises a shower tray 200

or bathtub associated with a drainage device 1 as previously described. The shower tray 200 illustrated comprises three drain holes 300 which have a transversal cross section coinciding in shape and dimensions with the respective downstream channels 31. Due to these characteristics, the drain hole 300 does not have to be oversized with respect to the area required for draining the flow in addition to the area occupied by a removable element for eliminating the siphon effect. In this way, the drain hole 300 only has the area required for the removal of the grey water flow; the dimensions of the drain hole 300 are utilized and optimized, the dimensions being able to be reduced with respect to the drains of the state of the art provided for draining the same flow quantity. This characteristic can be seen better in Figure 8 of the present invention.

[0051] In a second preferred embodiment of the drainage device 1 of the present invention depicted in Figures 9 and 10 in which the same parts or components have the same reference numerals as in the example previously stated, the drainage body (2) has a generally notably cylindrical configuration such that the downstream channel (31) has a circular contour base provided with a plurality of windows (4) which are distributed radially along a lateral wall forming the downstream channel (31).

[0052] According to the attached figures, a brief explanation of the functioning of the invention is described below.

[0053] The present drainage device 1 according to Figures 1 to 6 is installed connected at the bottom to a shower tray drain 200 (see Figure 7). The fixing between both is ensured by the screwing elements 29 which are tightened until the first and second ribbings 26, 27 contact the shower tray 200. In the same way, in Figure 11, a shower tray 200' is shown with drain holes 300' for the drainage device according to Figures 9 and 10.

[0054] At first, the drainage device 1 is installed with the filtering means 5 and with the plugging means 4 because it is considered that the drain installation does not have additional siphon elements. In this way, once in use, both can fulfill the function thereof as is depicted in Figures 1 and 5. When the plugging means 4 are in position, they block the window 24, the grey water which is going to be drained falls and passes through the filtering means 5 where dirt is trapped such as hairs and other objects which may fall. The water continues its fall through the downstream channel 31, through the downstream area B and arrives at the receptacle 32 where it may encounter water previously positioned and which acts as a barrier against unpleasant odors from the draining installations downstream. The fact of having the plugging means 4 in place also prevents the passage of unpleasant odors. The fluid or grey water comes, in a progress manner, through the upstream area S until overflowing at the upper edges of the receptacle 32 owing to the push of the incoming water. From there it passes to the chamber 23 where it is gathered up to the outlet mouth 22. In this situation, all the grey water to be drained circulates

through the siphon means 3.

[0055] In Figure 6, the functioning when the plugging means 4 have been removed is depicted. This may be the case when, once installed, the drainage device 1 detects the presence of a siphon in the draining installations. The draining is carried out with difficulty and in order to resolve this, the technician simply has to remove the filtering means 5 and subsequently remove the plugging means 4 owing to the rib 42. When the plug is removed from the plugging means, the window 24 is released, thus the upper inlet 21 is directly connected to the chamber 23 and the water flows as is labeled in Figure 6. In this way, a bypass is achieved in a simple manner which deflects the passage of water from the siphon means 3.

[0056] The details, forms, dimensions and other accessory elements as well as the materials used in the manufacture of the drainage device of the invention can be conveniently substituted for others which do not depart from the scope defined by the claims which are included below.

Claims

1. A drainage device (1) of the type connectable to a drain hole (300) and provided for draining fluids which comprises a drainage body (2), said drainage body (2) which, in turn, comprises, at least one upper inlet (21) and an outlet mouth (22) in fluid communication with the upper inlet (21), the drainage body (2) further comprising siphon means (3), in which the siphon means (3) are in communication with the upper inlet (21) by way of a downstream channel (31) and the siphon means (3) are also in communication with the outlet mouth (22) by way of a chamber (23), **characterized by** the fact that the downstream channel (31) comprises at least one window (24) configured such that it directly connects the upper inlet (21) and said chamber (23), the drainage body (2) also comprising plugging means (4) for the window (24), said plugging means (4) being fixable in a releasable manner on said window (24).
2. The drainage device (1) according to the preceding claim, **characterized by** the fact that the downstream channel (31) comprises a widened portion (33) in communication with the upper inlet (21) and said window (24) being arranged on the widened portion (33).
3. The drainage device (1) according to the preceding claim, **characterized by** the fact that the plugging means (4) are housed in a releasable manner in the widened portion (33).
4. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the plugging means (4) comprise a plurality of first ribbings (34) capable of coming into contacting with a shower tray (200).
5. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the plugging means (4) comprise a projection (45) that can fit so as to coincide with the window (24).
6. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the plugging means (4) comprise a plug in the manner of a seal, in which the plug has at least one opening (41) arranged such that it connects the upper inlet (21) with the interior of the downstream channel (31).
7. The drainage device (1) according to the preceding claim, **characterized by** the fact that the transversal cross section of the opening (41) of the plug at least coincides in shape and dimensions with the interior transversal cross section of the downstream channel (31).
8. The drainage device (1) according to any of claims 6 - 7, **characterized by** the fact that the plug has at least one rib (42) in the manner of a bridge in the opening (41).
9. The drainage device (1) according to claims 2 and 6, **characterized by** the fact that the drainage body (2) comprises coupling means between the plug and the widened portion (33).
10. The drainage device (1) according to the preceding claim, **characterized by** the fact that the coupling means comprise a groove (43) and a protrusion (44) respectively arranged on the plug and the widened portion (33) in which the groove (43) and the protrusion (44) are configured so as to coincide with each other such that a male-female relation is defined during use.
11. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that an upper wall (25) of the drainage body (2) comprises at least one stop (26) capable of coming into contacting with a shower tray (200).
12. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that an upper wall (25) of the drainage body (2) comprises a plurality of second ribbings (27) capable of coming into contacting with a shower tray.
13. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the drainage body (2) also comprises filtering means (5)

housed in a releasable manner in the upper inlet (21).

tion coinciding in shape and dimensions with a respective downstream channel (31).

14. The drainage device (1) according to the preceding claim, **characterized by** the fact that the filtering means (5) comprise a trunk (51) and branches (52) in the manner of a fishbone (52) which extend from the trunk (51) towards the plugging means (4). 5
15. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the drainage body (2) comprises a plurality of upper inlets associated with a common chamber (23). 10
16. The drainage device (1) according to claims 14 and 15, **characterized by** the fact that the respective filtering means (5) of each upper inlet (21) are joined to each other with arms (53). 15
17. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the drainage body (2) has an elongated configuration. 20
18. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the drainage body (2) has a generally notably cylindrical configuration. 25
19. The drainage device (1) according to claim 18, **characterized by** the fact that the downstream channel (31) has a circular contour base. 30
20. The drainage device (1) according to claim 19, **characterized by** the fact that a plurality of windows (4) are distributed radially along a lateral wall forming the downstream channel (31). 35
21. The drainage device (1) according to any of the preceding claims, **characterized by** the fact that the siphon means (3) comprise at least one receptacle (32) capable of containing fluid, the downstream channel (31) being at least partially introduced into the receptacle (32), the downstream channel (31) and the receptacle (32) are configured and arranged such that a downstream area (B) in the interior of the downstream channel (31) and upstream area (S) arranged between the downstream channel (31) and the receptacle (32) are defined, the upstream (S) and downstream (B) areas being in fluid communication, in which the upstream area (S) and the outlet mouth (22) are in fluid communication at least by way of the chamber (23). 40 45 50
22. A bath assembly (100) which comprises a shower tray (200) associated with a drainage device (1) according to any one of the preceding claims, the shower tray (200) or bathtub which comprises at least one drain hole (300) which has a transversal cross sec- 55

FIG. 1

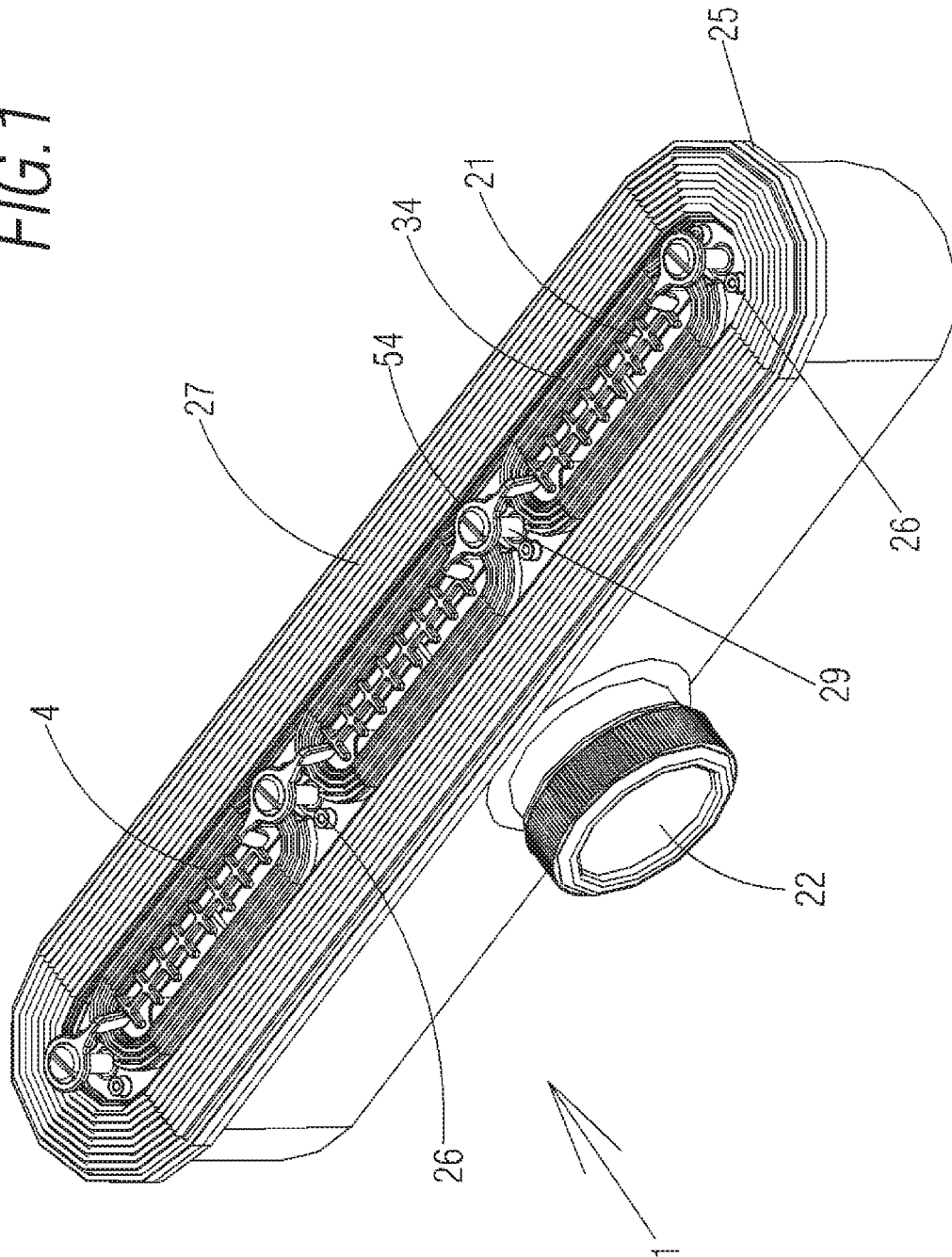


FIG.2

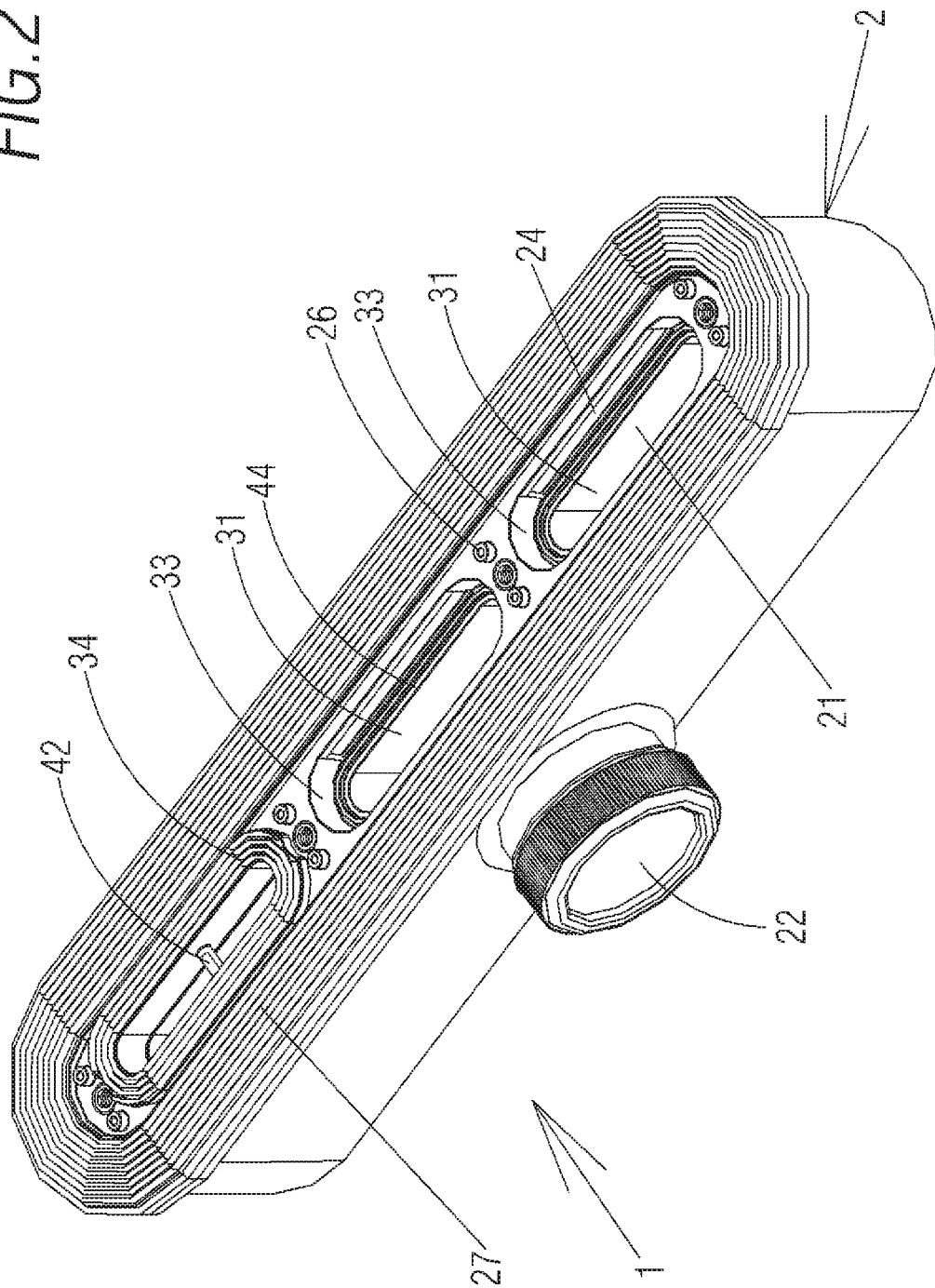


FIG. 3

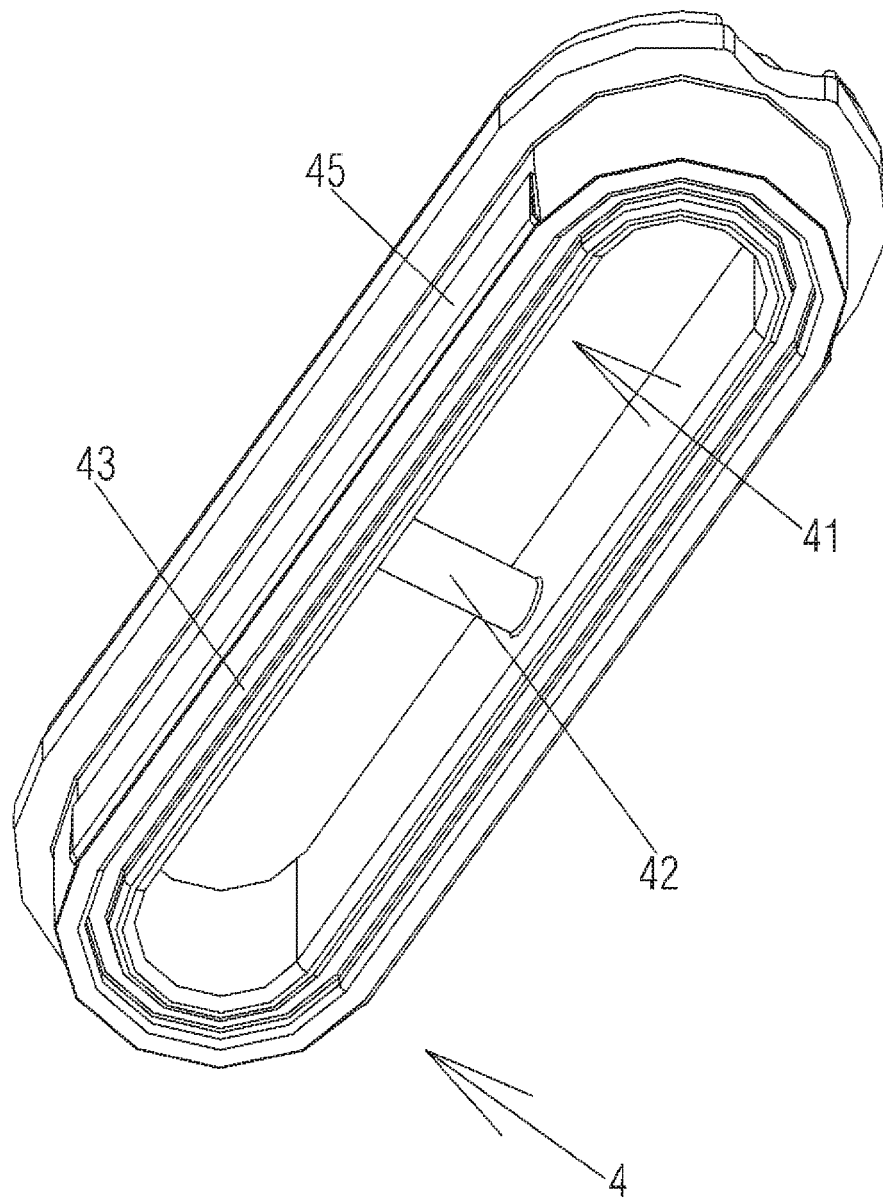


FIG. 4

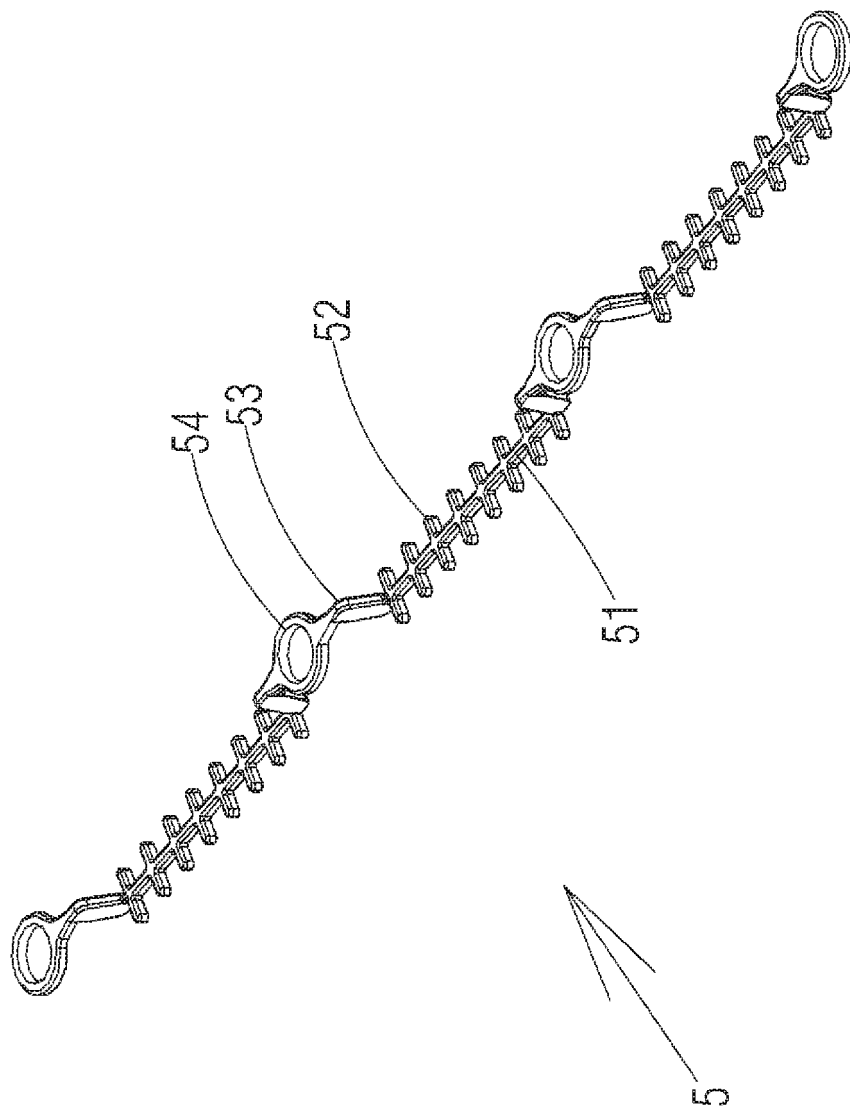


FIG. 5

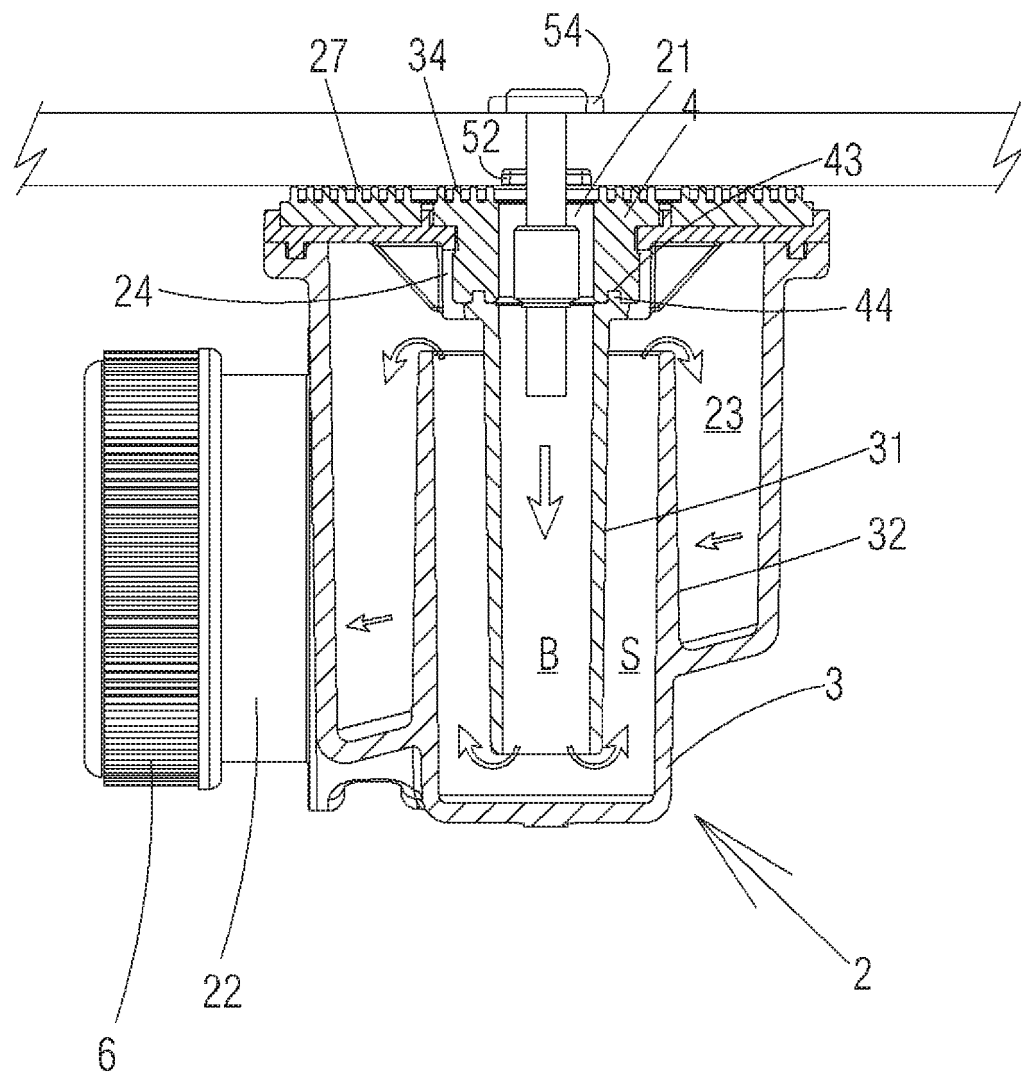


FIG. 6

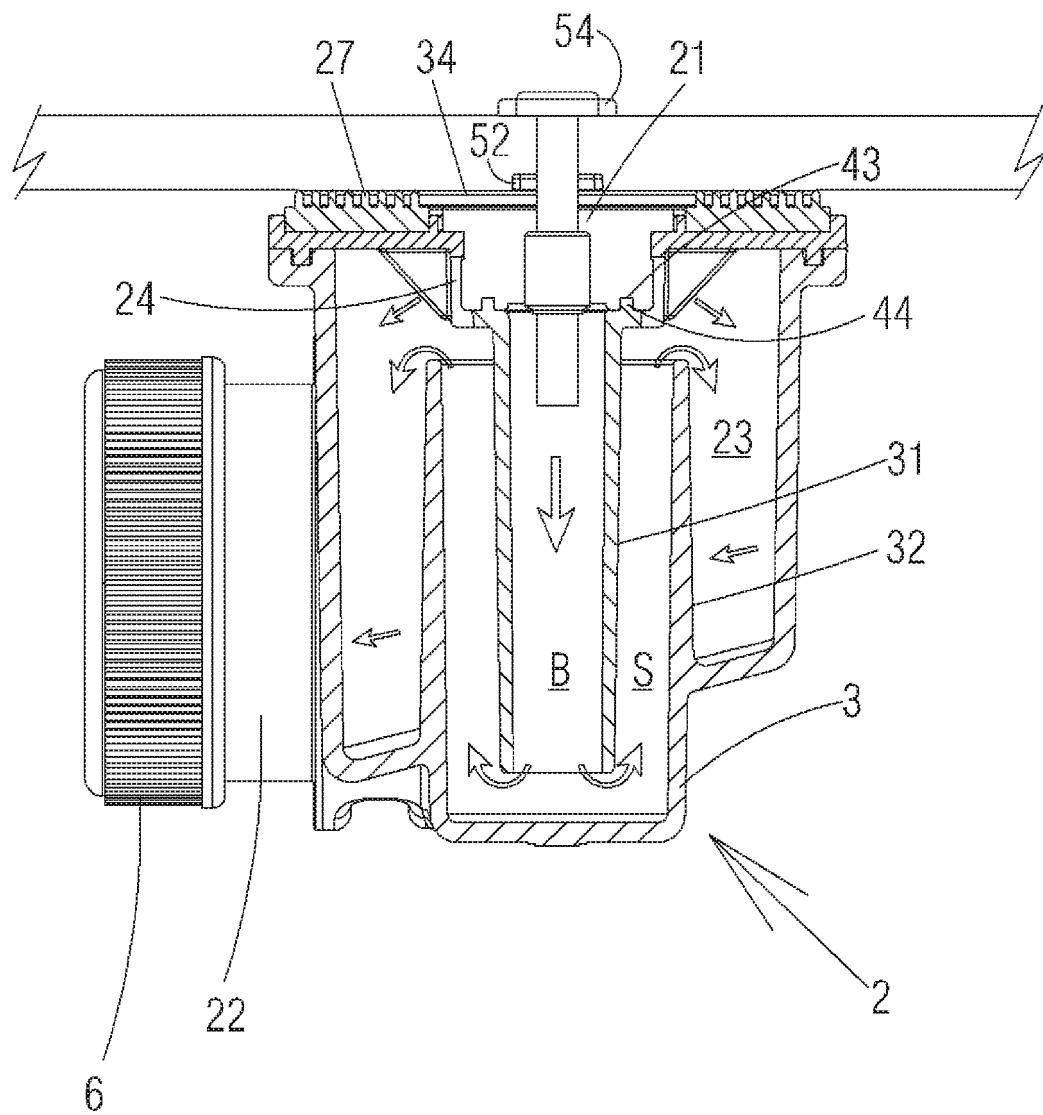


FIG. 7

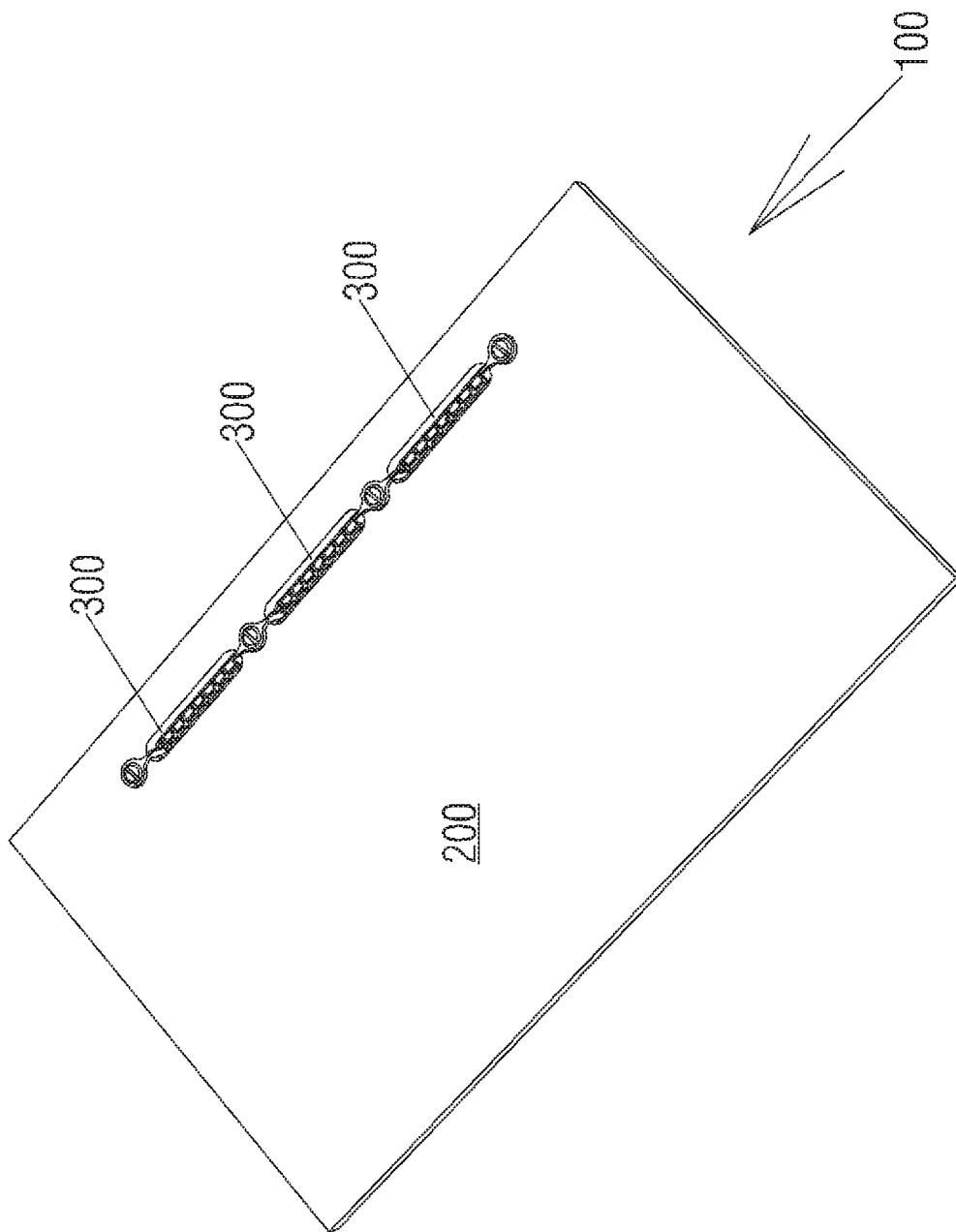


FIG. 8

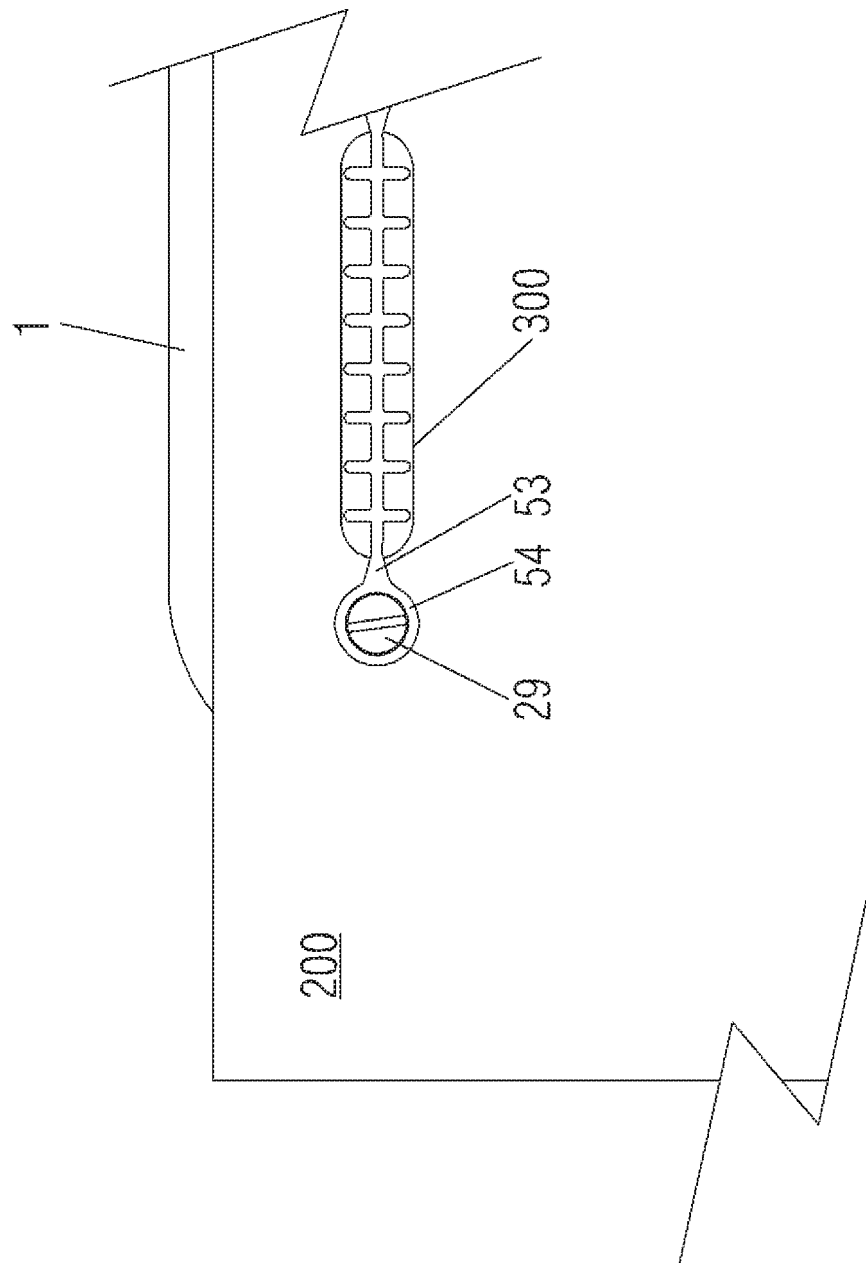


FIG. 9

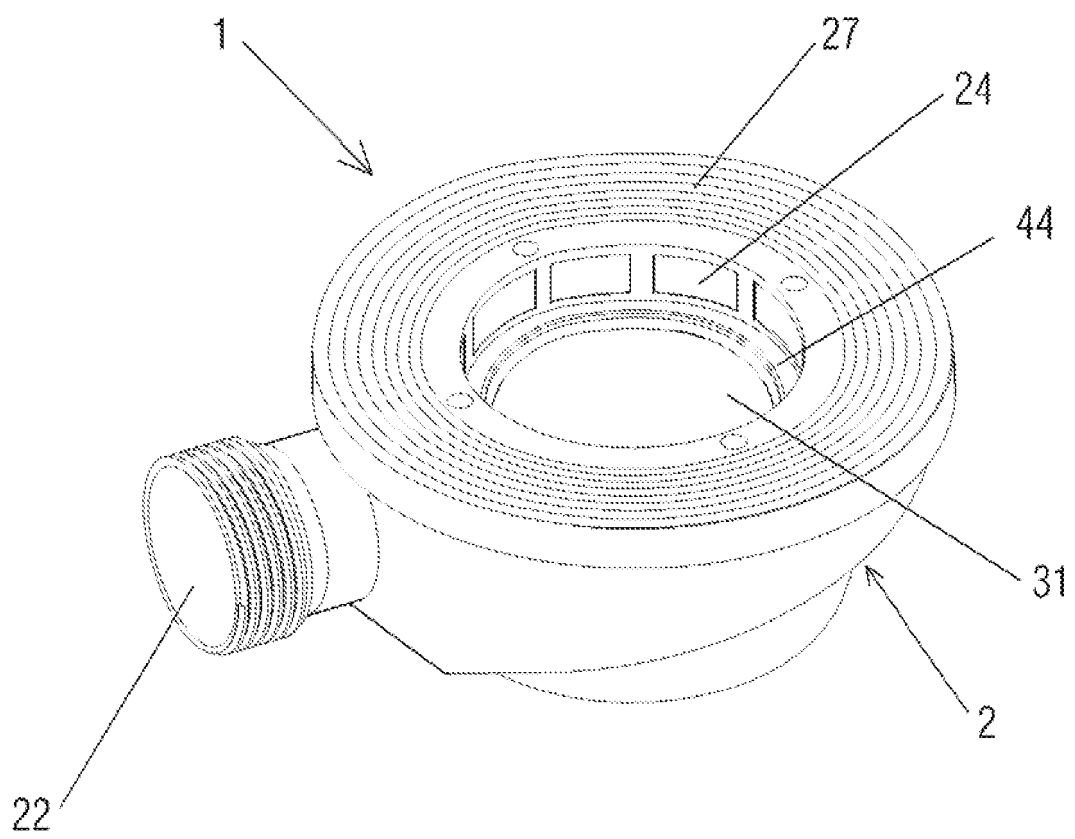


FIG. 10

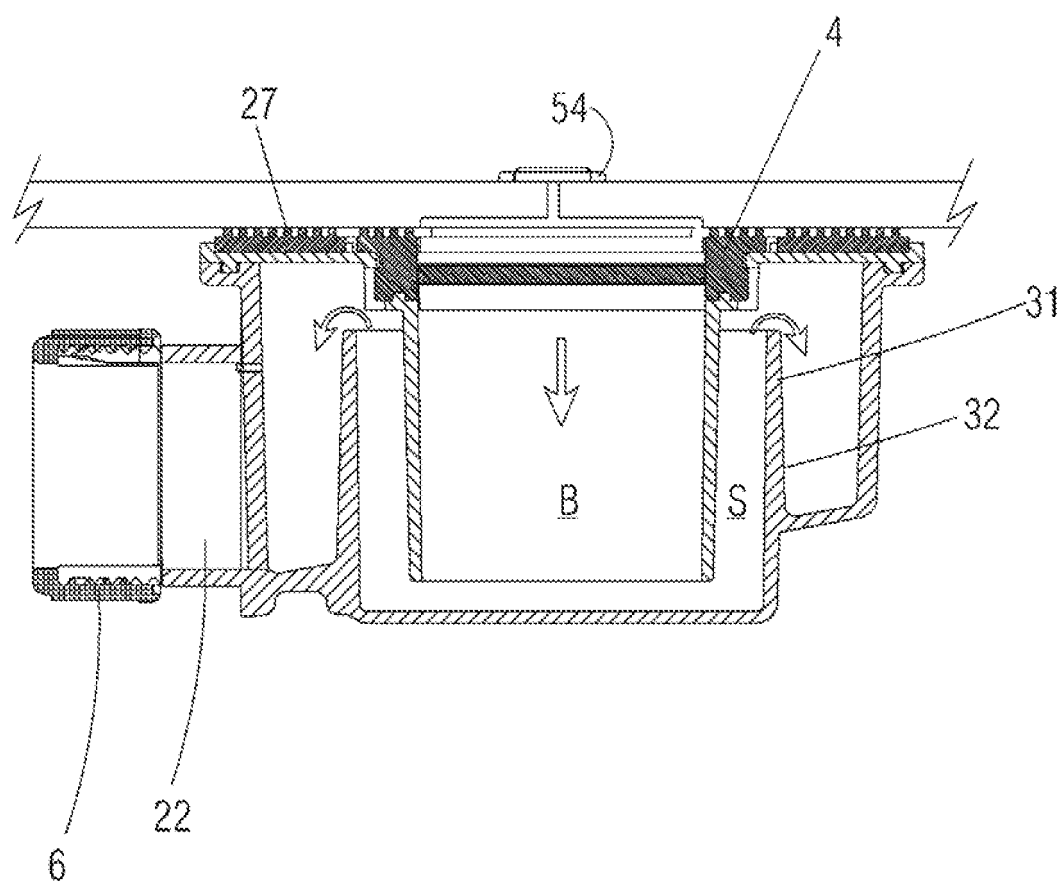
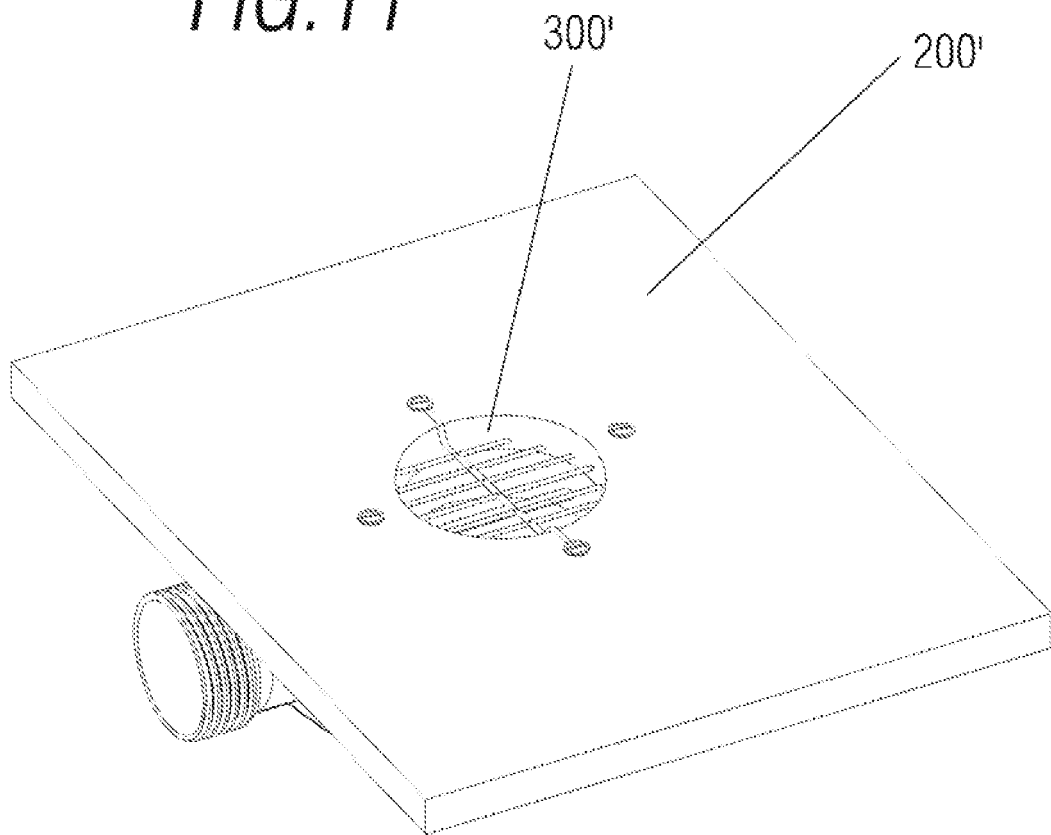


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2016/070458

A. CLASSIFICATION OF SUBJECT MATTER

INV. E03F5/04

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E03F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2008 038274 B3 (KALDEWEI FRANZ GMBH & CO [DE]) 17 December 2009 (2009-12-17) the whole document -----	1-3, 5-12,22
X	WO 2016/053116 A1 (BOURKE MICHAEL ALAN [NZ]) 7 April 2016 (2016-04-07) figure 6 -----	1-3,5, 9-12
X	US 3 066 802 A (WALTHER LOFFLER) 4 December 1962 (1962-12-04) figure 6 -----	1-5,9-12
X	GB 22211 A A.D. 1914 (JONES FRANK) 3 June 1915 (1915-06-03) the whole document -----	1-3,5, 9-11
A	DE 201 01 787 U1 (FRANZ VIEGENER II GMBH & CO KG [DE]) 13 June 2002 (2002-06-13) the whole document -----	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 February 2017

Date of mailing of the international search report

03/05/2017

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
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Authorized officer

Geisenhofer, Michael

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2016/070458

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-12, 22

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/ES2016/070458

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102008038274 B3	17-12-2009	DE 102008038274 B3	17-12-2009
		EP 2157247 A1	24-02-2010
		ES 2399778 T3	03-04-2013

WO 2016053116 A1	07-04-2016	AU 2015234301 A1	14-04-2016
		CA 2963067 A1	07-04-2016
		WO 2016053116 A1	07-04-2016

US 3066802 A	04-12-1962	NONE	

GB 191422211 A	03-06-1915	NONE	

DE 20101787 U1	13-06-2002	AT 295918 T	15-06-2005
		DE 20101787 U1	13-06-2002
		EP 1229174 A2	07-08-2002
		ES 2239691 T3	01-10-2005

Form PCT/ISA/210 (patent family annex) (April 2005)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12, 22

Details of the window/plugging means
 STF: window arranged in widened portion; plugging means releasable/comprising a projection fitting the window/coupling means for male-female connection; opening in a plug having a transversal cross section coinciding in shape and dimensions to downstream channel; stop for attaching to shower tray; first and second ribbings
 E: siphon can be short-circuited

2. claims: 13, 14(completely); 16(partially)

Additional filtering
 STF: filtering means comprising a tgrunk and branches; several connected filtering means
 E: filth is prevented from entering drainage device

3. claims: 15(completely); 16(partially)

Details of the drainage inlets
 STF: plurality of upper inlets leading into a common chamber
 E: increase of flow capacity

4. claims: 17-20

Geometry of drainage device
 STF: elongated or cylindrical; downstream channel has circular contour base; plurality of windows in lateral wall of the downstream channel
 E: use of the drainage device near a wall or at centre of the shower tray

5. claim: 21

Details of the siphon means
 STF: at least a removable receptacle forming an additional wall of the siphon
 E: additional siphoning effect
