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(54) **TILED FLOOR**

(57) The invention relates to a tiled floor (1), comprising:
- a drain element (4, 26) arranged in the tiled floor and having an inflow opening (8) which can be connected to an outlet pipe (9);
- a discharge channel (5, 23, 24) which is formed in the floor and connects to an inflow side of the drain element, and along which water can be carried to the drain element and wherein the bottom of the discharge channel is formed by tiles (5);
- an inclining surface (A) which is formed in the surface of the tiled floor and the downward inclining direction of which is directed toward the drain element,
wherein the discharge channel is elongate, with two parallel inflow edges (12) over which water can flow into the discharge channel,
that the drain element comprises two parallel upper edges (13), which upper edges are arranged in line with the inflow edges of the discharge channel and wherein at least one upper edge and the inflow edge lying in line therewith connect to the inclining surface;
wherein the upper edge of the inflow side of the drain element extends between the two upper edges of the drain element and wherein the upper edge of the inflow side lies at least partially below the level of the two parallel upper edges of the drain element and connects to the bottom surface of the discharge channel.

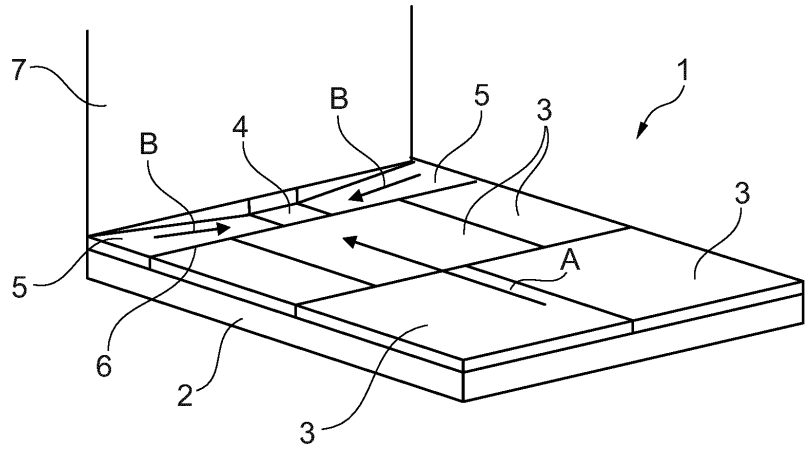

Fig. 1

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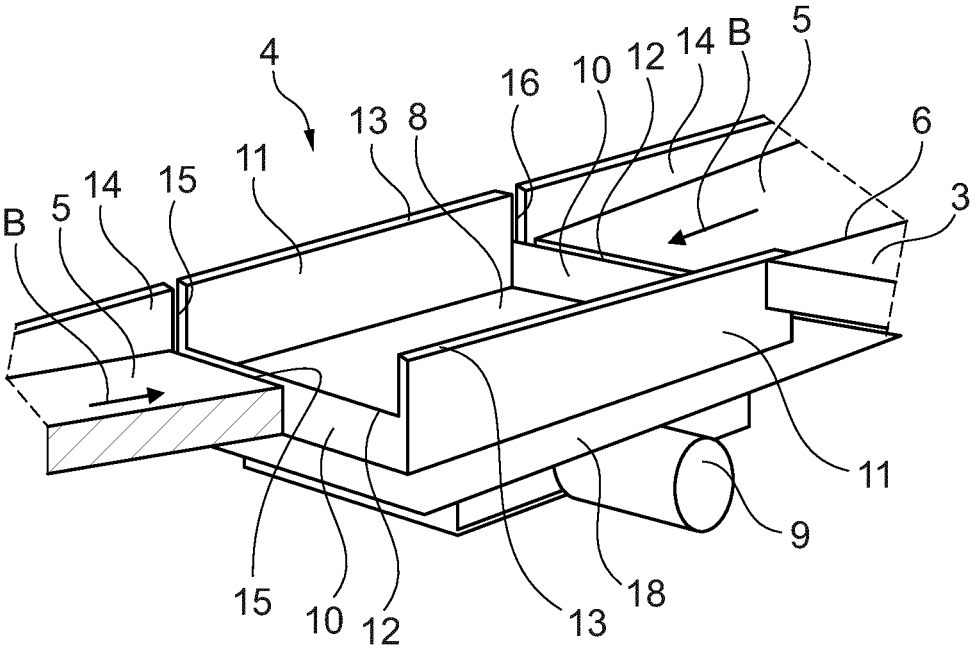
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Fig. 2

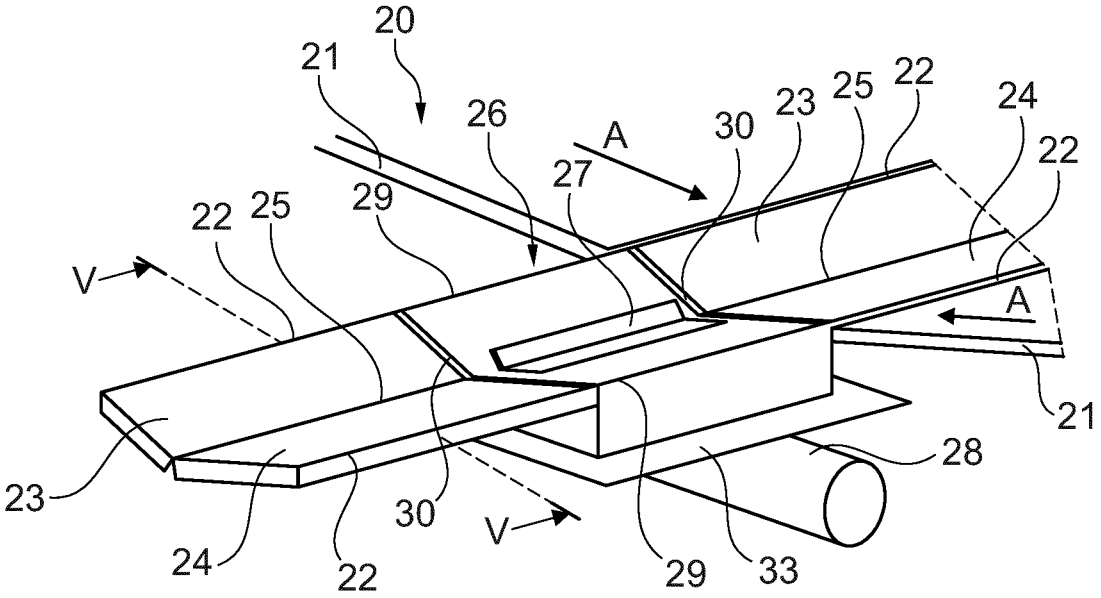
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Fig. 4

Description

[0001] The invention relates to a tiled floor, comprising:

- a drain element arranged in the tiled floor and having an inflow opening which can be connected to an outlet pipe;
- a discharge channel which is formed in the floor and connects to an inflow side of the drain element, and along which water can be carried to the drain element and wherein the bottom of the discharge channel is formed by tiles;
- an inclining surface which is formed in the surface of the tiled floor and the downward inclining direction of which is directed toward the drain element.

[0002] According to the invention, tiles are understood to mean ceramic tiles, but also plate-like covering elements such as wooden boards, glass plates, Corian plates and the like. It is characteristic here for tiles to have a uniform thickness.

[0003] In for instance a shower space or a bathroom it is usual to tile the floor with tiles. A drain element is here arranged in the floor so that water falling on the floor, for instance from a shower head, can be discharged in an outlet pipe. It is known to use an elongate shower drain as drain element. The advantage of an elongate shower drain is that an inclining surface, which is flat and can be covered with large tiles in simple manner, can be arranged adjacently. Often placed in the elongate shower drain is a stainless steel grating, through which the shower drain is clearly visible.

[0004] It is however a trend to conversely make the drain element less visible in the tiled floor. It is known for this purpose to place a so-called tile grating in an elongate shower drain. This is an element which is lined with a tile, and largely covers the inflow opening of the shower drain and leaves only small inflow gaps. A drawback of such a tile grating is that it is difficult to remove when the shower drain has to be inspected and cleaned.

[0005] The use of a smaller drain element in combination with relatively large tiles is difficult, since the large tiles have to be cut into many pieces for the purpose of providing a good downward incline toward the drain element. This is because it is necessary in the case of a smaller drain element to provide various inclining surfaces, each having an inclining direction toward the smaller drain element.

[0006] In addition, it is known in for instance sports facilities to provide a discharge channel, which is likewise tiled, in a tiled floor. Provided in the bottom of the discharge channel then is a known drain, whereby the water can be discharged. The edges of this drain are here flush with the surface of the bottom of the discharge channel.

[0007] The drawback of such a construction is that the width of the discharge channel is relatively large to provide for a good seal, among other things. In addition, the finish leaves something to be desired in this known construction. The transition between the drain and the surrounding tile floor, which lies at a higher position, is particularly difficult to finish, since the width of the discharge channel is preferably kept as small as possible.

[0008] Further known are shaped metal drain strips which are provided in a central part with an opening which connects to an outlet pipe. In these drain strips the roughness of the metal surface, the so-called R-value, is low compared to the roughness of tiles. This can cause a user to slip when he or she steps from the surrounding floor onto the metal drain strip.

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

[0010] This object is achieved according to the invention with a tiled floor according to the preamble, which is characterized in that the discharge channel is elongate, with two parallel inflow edges over which water can flow into the discharge channel,
that the drain element comprises two parallel upper edges, which upper edges are arranged in line with the inflow edges of the discharge channel and wherein at least one upper edge and the inflow edge lying in line therewith connect to the inclining surface;
wherein the upper edge of the inflow side of the drain element extends between the two upper edges of the drain element and wherein the upper edge of the inflow side lies at least partially below the level of the two parallel upper edges of the drain element and connects to the bottom surface of the discharge channel.

[0011] Because the at least one upper edge of the drain element and the inflow edge lying in line therewith connect to the inclining surface, a neat finish is obtained at the same time. A sealing mastic can moreover be arranged in simple manner between the tiles of the inclining surface and the upper edge and inflow edge in order to thus obtain a good seal. The upper edge and inflow edge connecting to the inclining surface is understood to mean that the two edges and the part of the inclining surface directly adjacently of the edges have the same height. Space can here be provided between the edges and the tiles of the inclining surface for the purpose of arranging a sealing mastic.

[0012] Also because the upper edge of the inflow side of the drain element and the bottom surface of the discharge channel connect to each other it is easy to arrange a sealing mastic in a gap therebetween.

[0013] An advantage of the tiled floor according to the invention is that less material is needed owing to the use of a drain element with fixed dimensions, wherein the tiles are then used to form the discharge channel on either side of the drain element.

[0014] The tiles, which according to the present invention have a uniform thickness, are used to cover the underlying floor. The tiles of the tiled floor thus form a top layer which the user walks on and comes into contact with.

[0015] The tiled discharge channel can be kept clean in simple manner, as can the surrounding tiled floor.

[0016] The tiler can further easily determine the incline of both the inclining surface and of the discharge channel during the work, and herein take into account the thickness of the chosen tile.

[0017] It will be self-evident that more discharge channels can be arranged against the drain element, wherein more inflow sides, to which the discharge channel in question connects, are arranged on the drain element.

[0018] The discharge channel according to the invention has two parallel inflow edges over which water can flow into the discharge channel. When the discharge channel is placed against a wall, one of the two inflow edges will effectively not be used, apart from water which drips down from the wall and thus finds its way into the discharge channel.

[0019] In a preferred embodiment of the tiled floor according to the invention the discharge channel comprises at least two walls standing upright from the bottom, wherein the upper edges of the upright walls form the parallel inflow edges and wherein the bottom inclines downward toward the drain element.

[0020] This embodiment can be formed in simple manner by providing two tiled surfaces, having therebetween an elongate trench in which a tile is arranged in recessed manner as bottom of the discharge channel. The sides of the tiles of the two tiled surfaces thereby form the upright walls.

[0021] The recess for the discharge channel in the covering floor can be provided in simple manner by placing a cement adapter prior to arranging the covering floor. A cement adapter is usually a piece of shaped foam which, for the discharge channel in particular, can be wedge-shaped. After pouring and curing of the covering floor, the cement adapter can be removed so that a recess remains in the covering floor.

[0022] When the discharge channels are placed at the position of a door, the upright wall which is placed furthest downstream forms a barrier to foam and the like, thus preventing it from flowing under the door and into an adjacent space.

[0023] In a further preferred embodiment finishing profiles are provided, which form the upright walls of the discharge channel and thereby at the same time provide for a finish of the tiled surfaces adjacently of the discharge channel.

[0024] The finishing profiles can be easily shortened, whereby the discharge channel with accompanying finish can be easily made to size. The finishing profiles can optionally be arranged fixedly on the drain element.

[0025] In another preferred embodiment of the tiled floor according to the invention the bottom of the discharge channel comprises at least two bottom surfaces abutting each other along a separating edge, the separating edge runs substantially parallel to the inflow edges, wherein each bottom surface extends between an inflow edge and the separating edge and wherein the separating edge lies below the level of the inflow edges.

[0026] This embodiment can also be formed in simple manner by once again providing two tiled surfaces with an elongate trench therebetween. Two strips of tile, forming in cross-section a kind of V-shape for the bottom surface, are then arranged in the trench. The separating edge lies here parallel to the inflow edge, and thereby horizontally. Because the bottom of the discharge channel has a V-shape in cross-section, the water will automatically flow from the discharge channel into the drain element.

[0027] At least the separating edge preferably connects to the upper edge of the inflow side. The upper surface of the drain element here likewise has in cross-section a V-shape, which connects to the V-shape of the discharge channel.

[0028] In another embodiment of the tiled floor according to the invention the drain element comprises a grating which is arranged in the inflow opening. By removing the grating easy access can be gained to the outlet opening and outlet pipe connected thereto, and these can be inspected and cleaned.

[0029] In yet another embodiment of the tiled floor according to the invention the tiled floor comprises an underlayer and tiles arranged on the underlayer.

[0030] In a highly preferred embodiment of the tiled floor the underlayer comprises a foam layer. Foam plates for providing an incline in the underlayer are per se known, but provide the advantage for the invention that, after placing of the foam layer, this layer need then only be lined with tiles because the desired inclining surface and the form of the discharge channel are already provided in the foam plate.

[0031] A tile can further likewise be provided on the bottom of the drain element so that the discharge channel and drain element can be incorporated into the tiled floor as well and concealed as possible.

[0032] These and other features of the invention are further elucidated with reference to the accompanying drawings.

Figure 1 is a perspective view of a first embodiment of the tiled floor according to the invention.

Figure 2 is a perspective view of a detail of the floor according to figure 1.

Figure 3 is a cross-sectional view of the floor according to figure 1.

Figure 4 is a perspective view of a second embodiment of the tiled floor according to the invention.

Figure 5 is a cross-sectional view of the embodiment according to figure 4.

Figure 6 is a perspective view of a drain element for a tiled floor according to the invention.

[0033] Figure 1 shows a first embodiment of the tiled floor 1 according to the invention. Tiled floor 1 has an underlayer 2, such as a foam plate, with a number of tiles 3 arranged thereon. These tiles 3 form an inclining surface which has a downward inclining direction A directed toward a drain element 4.

[0034] Drain element 4 is arranged recessed in floor 1, and arranged on either side of the drain element are tiles 5 which form a downward incline B toward drain element 4.

[0035] Together with side 6 of tiles 3 and the opposite wall 7, tiles 5 form discharge channels which guide water toward drain element 4.

[0036] Figure 2 shows a perspective view of a detail of the floor 1 according to figure 1. Drain element 4 has an inflow opening 8 which is connected to outlet pipe 9. Inflow opening 8 is surrounded by upright walls 10, 11 with respective upper edges 12, 13.

[0037] Upper edges 12 lie at a lower level than upper edges 13 and thereby form two inflow sides of drain element 4. The upper surface of tiles 5 connects to the upper edges 12 of the inflow sides. Upper edges 13 connect to the side 6 of tiles 3 or to a wall 7. Finishing profiles 14, the upper edge of which runs in line with upper edge 13, can further be provided adjacently of tiles 5.

[0038] The space 15, 16 between drain element 4 and discharge channel 5, 6, 14 is here filled with a sealing mastic 17 (see figure 3).

[0039] Further provided around the upright walls 10, 11 is a horizontal flange 18 on which a tile membrane 19 is arranged (see figure 3) in order to provide a watertight layer under tile floor 3.

[0040] Figure 4 shows a perspective view of a second embodiment 20 of the tiled floor according to the invention. Floor 20 is tiled with tiles 21 which connect with an edge to the inflow edges 22 of discharge channels 23, 24. These discharge channels 23, 24 are formed by strips of tile 23, 24 which are mutually abutting along a separating edge 25.

[0041] Because of the tilted position of tiles 23, 24, the water will flow via separating edge 25 to drain element 26 and there run via an inflow opening 27 to an outlet pipe 28.

[0042] Drain element 26 has upper edges 29, 30. Upper edges 29 connect here to the surrounding tile floor 21. Upper edges 30 are angled and follow the cross-sectional profile of discharge channels 23, 24. At least a part of the upper edge 30, which forms an inlet side for drain element 26, lies hereby at a lower level than upper edges 29.

[0043] Further provided around drain element 26 is a horizontal flange 33 for attachment of a tile membrane 34 (see figure 5) for the purpose of providing a watertight layer under tiles 21.

[0044] Figure 5 shows a cross-sectional view of the embodiment according to figure 4. The V-shaped cross-section of discharge channel 23, 24 is apparent herefrom.

[0045] It can further be seen that joints 31 are filled with a flexible sealing mastic, since a difference in expansion can result between tiles 21 and the material of drain element 26. Joint 32 between the tile strips 23, 24 can be filled with the usual tile adhesive.

[0046] Figure 6 shows a drain element 40 for a tiled floor according to the invention. Drain element 40 has a bottom 41 with an outlet opening 42. Bottom 41 is surrounded by upright walls 43, 44 with respective upper edges 45, 46, which surround the inflow opening.

[0047] As in the case of the drain element 4 shown in figure 2, the upper edges 45 lie at a lower level than the upper edges 46 and thereby form two inflow sides of drain element 40.

[0048] Side walls 44 are each provided on either side with finishing profiles 47 so that the sides of the tiles which lie along the discharge channel in the tiled floor according to the invention are finished and are thereby invisible.

[0049] Further provided around drain element 40 is a horizontal flange 48 for attachment of a tile membrane for the purpose of providing a watertight layer under the tile floor.

Claims

1. Tiled floor, comprising:

- a drain element arranged in the tiled floor and having an inflow opening which can be connected to an outlet pipe;
- a discharge channel which is formed in the floor and connects to an inflow side of the drain element, and along which water can be carried to the drain element and wherein the bottom of the discharge channel is formed by tiles;
- an inclining surface which is formed in the surface of the tiled floor and the downward inclining direction of which is directed toward the drain element,

characterized in that
the discharge channel is elongate, with two parallel inflow edges over which water can flow into the discharge channel,
the drain element comprises two parallel upper edges, which upper edges are arranged in line with the inflow edges of the discharge channel and wherein at least one upper edge and the inflow edge lying in line therewith connect to the inclining surface;
wherein the upper edge of the inflow side of the drain element extends between the two upper edges of the drain element and wherein the upper edge of the inflow side lies at least partially below the level of the two parallel upper edges of the drain element and connects to the bottom surface of the discharge channel.

2. Tiled floor according to claim 1, wherein the discharge channel comprises at least two walls standing upright from the bottom, wherein the upper edges of the upright walls form the parallel inflow edges and wherein the bottom inclines downward toward the drain element.

3. Tiled floor according to claim 2, wherein the upright walls comprise finishing profiles extending at least between the bottom surface and the upper surface of the surrounding tiled floor.

4. Tiled floor according to claim 1, wherein the bottom of the discharge channel comprises at least two bottom surfaces abutting each other along a separating edge, the separating edge runs substantially parallel to the inflow edges, wherein each bottom surface extends between an inflow edge and the separating edge and wherein the separating edge lies below the level of the inflow edges.

5. Tiled floor according to claim 4, wherein at least the separating edge connects to the upper edge of the inflow side.

6. Tiled floor according to any one of the foregoing claims, wherein the drain element comprises a grating which is arranged in the inflow opening.

7. Tiled floor according to any one of the foregoing claims, wherein the tiled floor comprises an underlayer and tiles arranged on the underlayer.

8. Tiled floor according to claim 7, wherein the underlayer comprises a foam layer.

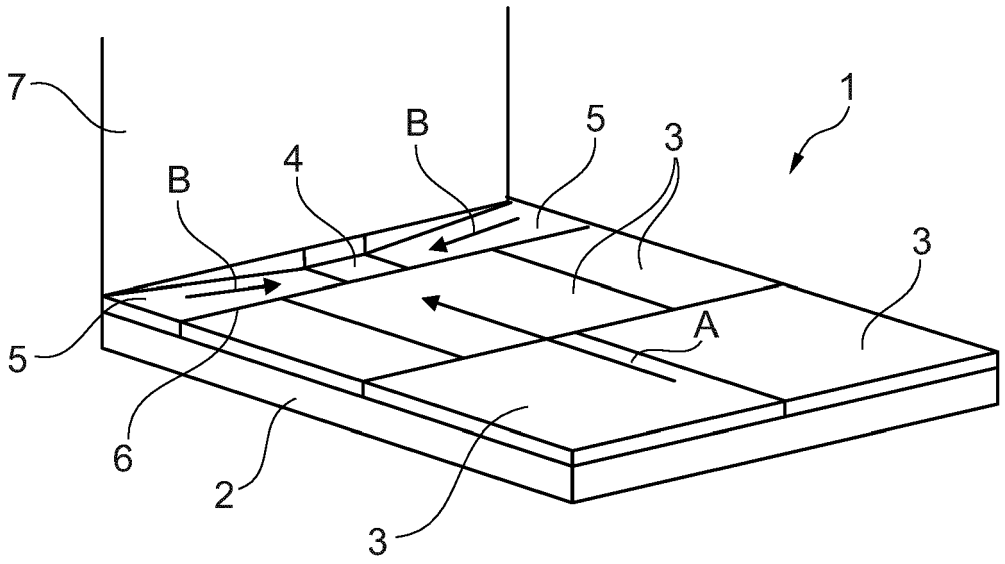
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Fig. 1

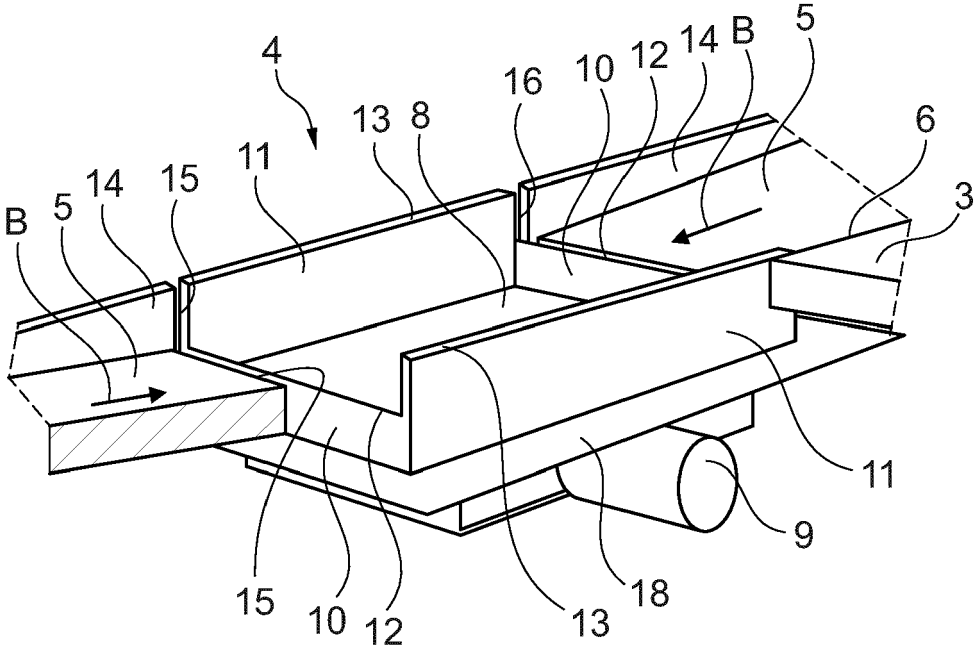
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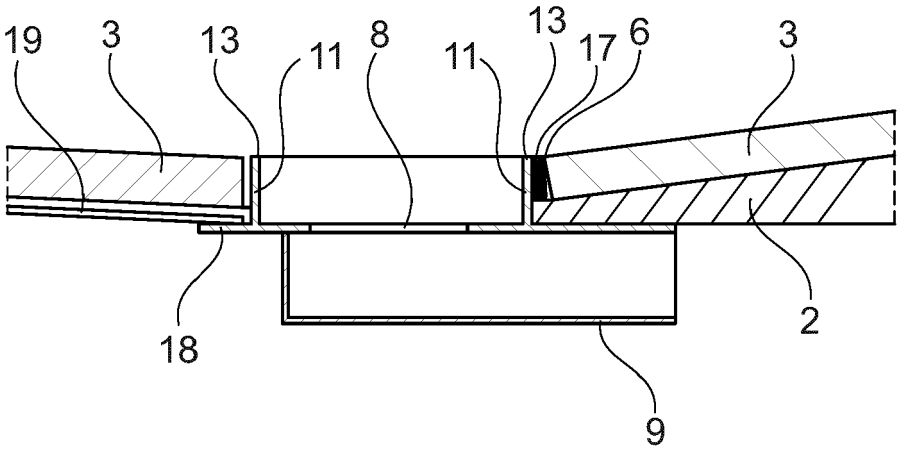
Fig. 2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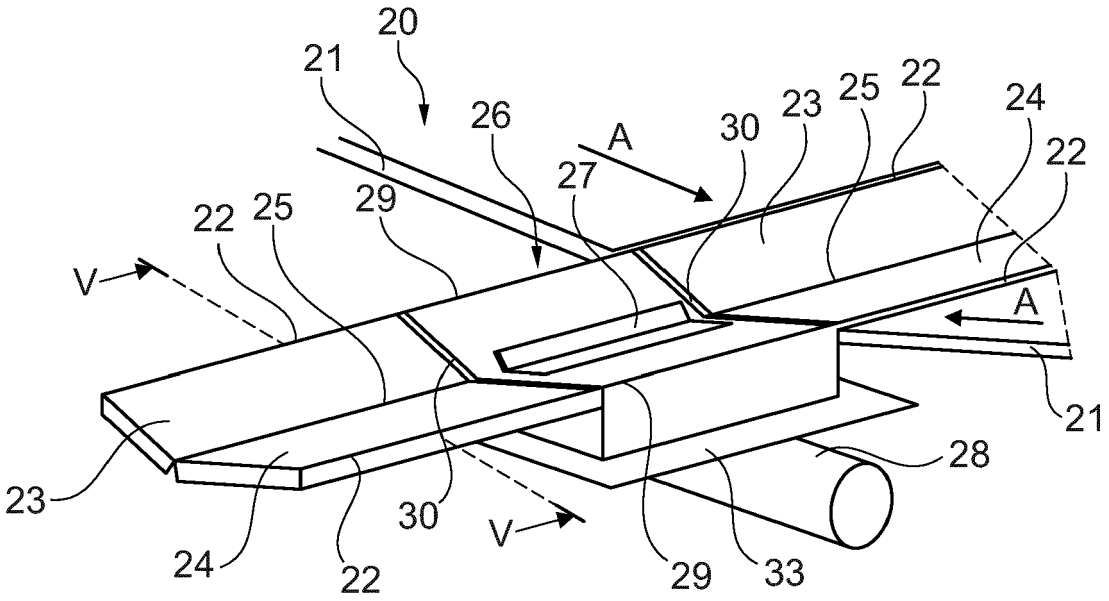
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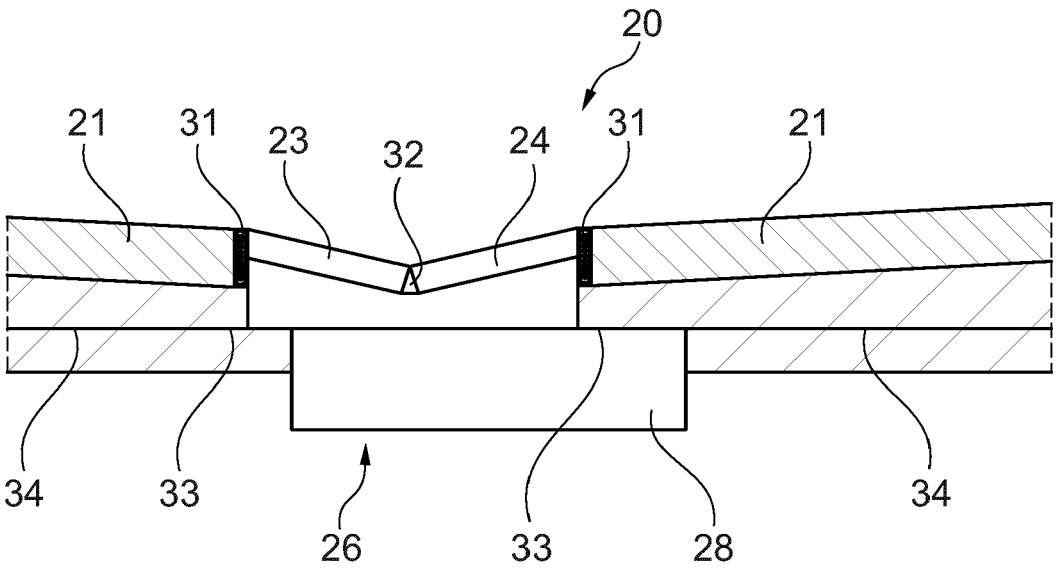
Fig. 4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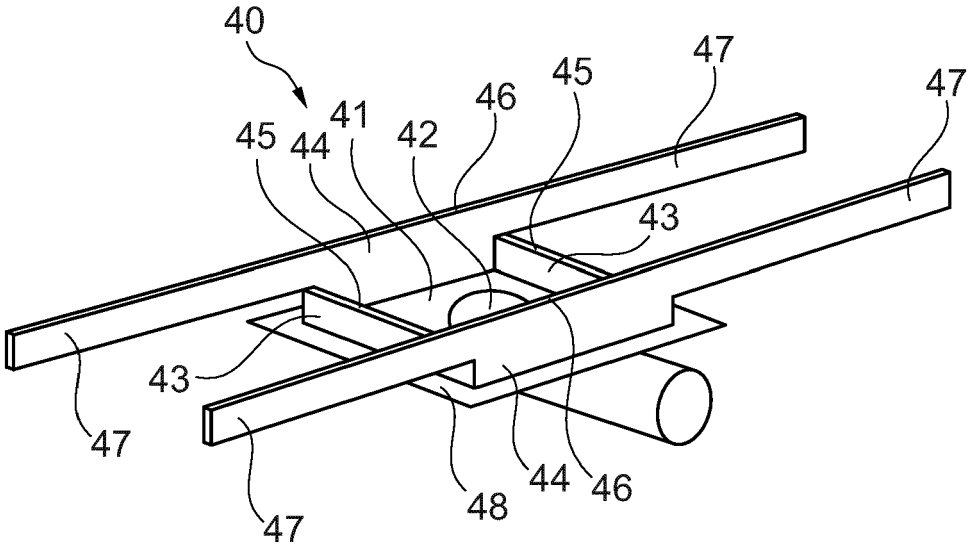
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 20 15 3975

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2012/110827 A1 (DOOLITTLE MARK E [US] ET AL) 10 May 2012 (2012-05-10) * paragraph [0041]; figures 1,2,4,6,9 * -----	1-3,6-8	INV. E03F5/04
X	EP 3 366 852 A1 (DALLMER GMBH & CO KG [DE]) 29 August 2018 (2018-08-29) * paragraphs [0030], [0031]; figures 1,3,6-8 * -----	1,4,5	

TECHNICAL FIELDS SEARCHED (IPC)

E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 June 2020	Flygare, Esa

CATEGORY OF CITED DOCUMENTS

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22-06-2020

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