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(54) **A DRAIN AND A BUILDING STRUCTURE HAVING A DRAIN**

EIN ABLAUF UND EINE GEBÄUDESTRUKTUR MIT EINEM ABLAUF
DRAIN ET STRUCTURE DE BATIMENT POSSEDANT UN DRAIN

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EP 1 287 213 B9

Description

[0001] The present invention relates to a floor drain, a building structure having such a floor drain and a method for installing such a floor drain in a building structure. The building structure is in preferred embodiments of the invention a bathroom in which water, being splashed to the walls and floor, is drained from the room by the drain situated in the floor and connected to the sewer.

BACKGROUND FOR THE INVENTION AND INTRODUCTION TO THE INVENTION.

[0002] A technical problem in connection with such rooms is that the building structure defining the room must be sealed in a fluid tight manner in order to avoid water from penetrating into the wall and floor construction, which if occurring often results in rot in the structure which in turn requires a very expensive reconstruction of the structure.

[0003] While many - and excellent - solutions today exist for fluid tightening the walls and floor of such rooms no real solution to the problem regarding fluid tightening around the drain has been provided until now.

[0004] Fluid tightening around the drain is considered by experts to be a very delicate problem. Developments of today's drains has focused on adaptation of a sealing technique in which an initial liquid sealing compound (a membrane) is applied beneath the floor tiling, for tightening the floor at the intersection between the drain and the floor.

[0005] When using a conventional drain, i.e. a square shaped or circular drain, the drain must be placed at a distance from the walls of the structure to provide a sloping surface for leading water towards the discharge outlet. In this connection, the following problems/drawbacks are often experienced:

- the drain cannot properly be fixed,
- the grating of the drain is not level with the floor covering
- the drain is often misaligned during construction of the structure,
- the drain often tilts during construction of the structure,
- the drain cannot be placed very close to the structure's walls,
- the drain must be placed in the walking area of the structure,
- the construction's floor must be adapted to receive the drain,
- additional reinforcement must be included in the area around the drain,
- any reinforcement must be cut out around the drain,
- the floor is vulnerable in an area around the drain,
- the floor must be provided with a four-sided slope towards the drain; however, problems with water flowing in wrong directions with generation of pools

- of water are often encountered in the final structure,
- the joint between wall and floor close to the drain is very vulnerable with respect to leaks, as the drain does not guarantee a seal between wall and floor,
- the joint between the floor and drain is vulnerable with respect to leaks,
- the drain does not guarantee a sealed joint between walls and floor,
- the floor tiles must be cut around the drain, i.e. no possibility to hole tiles around the drain is normally present,
- floor tiles cannot be laid down so as to produce the four sides inclination, which results in plain and non-functional floor tiling,
- cleaning of the drain is difficult,
- it is difficult to guide the water towards a small drain,
- the construction of the structure is difficult and results often in serious construction errors, which at the same time increased the construction time.

[0006] It is an aim of the present invention to provide a drain and a building structure eliminating some or all of these problems/drawbacks.

[0007] GB 2 282 156 relates to a conventional floor drain that may be use in a shower room in which case a rectangular aperture for accommodating the drain is cut in a sheet material that covers the floor. This known drain does not disclose any way of preventing water in the shower room from penetrating into the wall construction, other than by arranging the drain in a position distant from the wall and then forming the shower room floor with an inclination in front of and behind of the drain such that water may run towards the drain from any location in the shower room. Accordingly, use of this drain requires great care and skill when laying the floor.

[0008] GB 2 215 598 shows a prefabricated shower tray with a flat bottom that forms the surface exposed to running water in use of the bathroom. The shower tray is disclosed as a standard unit provided with a separate upstanding flange adapted to be at least partially covered by a part of a water tight covering on an adjoining wall. The bottom surface of the tray carries a person taking a bath and ensures that the running water is discharged through a drain presumably formed in the bottom of the shower tray. Accordingly, the floor surrounding the tray need not be formed with an inclination towards the wall to enable bath water to flow towards said wall and to be discharged through the drain formed in the shower tray.

[0009] GB 2 271 128 shows a floor drain for use in a bathroom and having visible upstanding portions that extend above the level of the floor, and a bottom part in which the discharge opening is formed and which is also visible in use. Since this known drain does not allow for the provision of a grating, the upstanding parts and the bottom part must have an aesthetically attractive surface and, accordingly, this known drain does not allow the for the main parts of the drain to be manufactured from aesthetically less attractive materials but rather require that

the choice of material and color of the upstanding parts and the bottom part be made in accordance with the appearance of the floor lining..

[0010] The drain according to the first aspect of the present invention thereby defines a trough-shaped fluid tight drain, the objective of the flange part and the parts extending in use above the flange part being to integrate the drain in a building structure in such a manner that an excellent water sealing may easily be obtained between the walls, floor and drain.

[0011] The back part may also include mounting means allowing the drain to be fixed to the wall or floor of a building structure in a well-defined position when installing the drain.

[0012] In a preferred embodiment of the invention, the drain may further be elongated and be provided with two opposed side parts integral with the bottom part and the first part. The sidewalls extend in vertical direction from the bottom part, in use through and above a plane defined by the flange part. This drain is particularly suitable for use in narrowly confined spaces, such as in a shower bath where the drain extends between two opposed walls delimiting the bathroom and having each a watertight covering that covers the side walls of the drain. This allows the floor to be provided with a unidirectional slope towards the back part of the drain, making it significantly simpler to establish the wet area when comparing to conventional bathrooms.

[0013] It may be desirable to provide the drain with a trap to avoid smell from the sewer spreading into the structure in which the drain is integrated. Thus, according to a preferred embodiment of the invention, the drain is provided with a trap which comprises a funnel shaped part having a straight part and comprising a bowl shaped part having a straight part being water penetrable distant from its bottom, said straight parts are arranged concentric to each other in such a manner that at least a part of the straight part of the funnel shaped part extends inside at least a part of the straight part of the bowl shaped part.

[0014] Preferably, when the floor drain is to extend along a wall, the trap may comprise a first elongated element including a funnel shaped part and a second elongated element including a bowl shaped part, said first element extending at least partially inside said second element, said first and second element being adapted to provide a flow of water essentially in two opposed directions parallel with the extension of said elongated bottom part. In this manner, a floor drain having a very small dimension perpendicularly to said wall may be provided.

[0015] In yet another aspect of the present invention a building structure is provided, which building structure defines a room, which structure comprising at least one wall and a floor having a watertight covering surface of tiling, a vinyl sheet or the like, said structure comprising a floor drain according to the first aspect of the present invention, optionally having a trap.

[0016] In this aspect, the floor drain is arranged in the structure so that:

- the flange part of the drain is situated below the watertight covering surface of the floor, and so that
- at least a part of the drain's back part which in use extends above the plane defined by the flange part is covered by the watertight covering surface of the structure's back wall, whereby the drain assembles the floor and the at least one wall in an integral manner in the drain area, that is, the area in the vicinity of the location of the drain.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] In the following, the invention and preferred embodiments thereof will be described in connection with the accompanying drawings in which

Fig. 1 shows a building structure, more specifically a section of a floor and the walls of a bathroom with the drain integrated in the room in a first embodiment of the invention,

Fig. 1a shows a cross sectional view of the building structure shown in fig. 1,

Fig. 1b shows a cross sectional view of a building structure similar to the one shown in fig. 1,

Fig. 2 shows a section of a floor and the walls of a bathroom with the drain integrated in the room in a second preferred embodiment of the present invention,

Fig. 2a shows a cross sectional view of the building structure of fig. 2,

Fig. 2b shows a perspective view of a floor drain similar to the one shown in fig. 2a,

Fig. 2c shows an enlarged view of the water discharge and trap depicted in fig. 2b,

Fig. 2d shows cross-sectional views of the trap in fig. 2b, seen in direction 2d marked in fig. 2b and perpendicularly thereto,

Fig. 3 shows a longitudinal cross section of an embodiment of a drain,

Fig. 3a shows in detail an exploded view of the trap shown in fig. 3,

Figs. 4a and 4b illustrates further variations of the floor drain,

Fig. 5 shows a transverse cross section of a detail of an alternative embodiment of the building structure according to the present invention,

Fig. 6 shows a transverse cross section of a detail of a further, alternative embodiment of the building structure according to the present invention, and

Fig. 7a-7f illustrates a method of constructing a building structure incorporating a floor drain according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0018] In the following the invention will be described in greater details and in particular different embodiments thereof will be addressed. The preferred embodiments will be addressed in connection with a bathroom. It should, however, be obvious for those skilled in the art, that the invention also is applicable to other kinds of rooms designed in such a manner that the walls and floor of the rooms are exposed to running water and wherein the water is to be drained.

[0019] In the following description, numerals used for identification of similar parts in different embodiments of the invention are the same in order to ease the understanding of the invention only.

[0020] In fig. 1 a section of the brick, concrete or plaster board wall and floor of a bathroom in which the drain is integrated is shown. The bathroom comprises the drain 100. The drain 100 is an elongated device and has a vertical back wall 1 integral with two vertical side walls 2, a front wall 3 comprising a horizontal part 3a and a vertical part 3b, and a bottom part 4. The drain 100 further comprises an outlet 5, which is connected to the sewer by pipe 6, and the surface of bottom part 4 slopes towards the outlet 5. The drain 100 is constructed/ designed in such a manner that these parts define a fluid tight drain - if, of course, the leak provided by the outlet 6 is not regarded.

[0021] The walls of the room further comprise watertight membranes 7, covered by respectively a tiling 8 and a floor tiling 9. At the intersection between the tiled lining of the floor 9 and the walls and at the intersection between the two walls the joints 10 are sealed by use of silicon or the like in order to take up small geometrical changes without damaging the sealing of the walls and floor.

[0022] As stated earlier, one aim of the present invention is to provide a building structure which is watertight close to or at the joint between the drain and the walls/ floor. This is provided, as indicated on fig. 1, in the first preferred embodiment by designing the drain 100 so that the back wall 1 and side walls 2 extend above the level of the floor (the level of the floor being defined by the upper surface of the floor tiling).

[0023] The back wall 1 and side walls 2 of the drain 100 are placed into contact with the wall construction of the bath room and the water tight membrane 7 is applied to the front surface of the back wall 1 and the side walls 2 of the drain 100 as well as to the wall construction. Finally, the tiling is attached to the membrane 7. The

horizontal part 3a of the front wall 3 is placed below the watertight membrane 7 upon which the floor tiling is placed. As may be seen, no floor covering behind and beside the drain is required and the slope of the floor needs only be unidirectional (towards the drain) and not as usual four sided.

[0024] Sealing of the room at the vicinity of - or at the - drain 100 is thus provided by the water sealing at the back and side walls of the drain and by the water sealing provided in the floor by the horizontal part 3a of the front wall 3.

[0025] The floor of the bathroom is typically inclined with respect to horizontal towards the drain. This inclination is normally provided by leveling layer situated beneath the floor tiling 9 and the watertight membrane 7. The horizontal part 3a is inclined in the same manner so as to reflect the inclination of the floor in order to provide a receiving surface for the floor tiling being smooth.

[0026] A grating is to be used in connection with the embodiment of fig. 1. This grating may be resting on supports abutting the bottom part.

[0027] Fig. 1b shows a slightly modified drain provided with mounting means for securing the drain to the wall. The mounting means may include perforations or holes 200 arranged in the back wall 1 and the side walls 2 and by means of which the drain may be secured to the wall 190, either directly or via a mounting bracket 250 onto which the drain may be secured by means of a screw or other attachment means.

[0028] In use the drain 100 is preferably designed to extend across the width (length) of the bathroom.

[0029] The drain 100 further comprises a grating 12 as shown in fig. 2. The grating comprises inclined abutment surfaces 12a and the drain 100 comprises corresponding bearing surfaces 15. In this embodiment the vertical part 3b extends above a plane defined by the horizontal part 3a and the bearing surface 15 extends from the termination of the vertical part 3b in a direction being inclined relative to the vertical part 3b. The reason for extending these parts above said plane is to elevate the grating to the level of the surface of the floor tiling and to embed/protect the edge of the floor tiling.

[0030] The embodiment of the elongated floor drain shown in fig. 2b comprises a trap 16 that allows for a significant reduction in the width of the drain perpendicular to the main extension thereof, i.e. perpendicular to the wall surface carrying tiling 191. The bottom part 4 of drain 100 is provided with an elongated outlet 5 for discharging water and in which the trap to be discussed below is mounted. The outlet pipe 6 connected to the outlet 5 extends generally horizontally perpendicularly to the main extension of the floor drain to connect with discharge tubes that extend generally horizontally with a small inclination beneath the floor tiling. The outlet pipe 6 may alternatively be connected to the trap so as to extend vertically there from.

[0031] This trap 16 is shown in greater details in fig. 2c. As seen, the trap 16 is assembled from three pieces,

an elongated upper piece 50, an elongated lower piece 51, and a receiving bowl 6' connected to the outlet pipe 6 and to the floor drain 100. The upper piece 50 is mainly funnel shaped having a straight part 31 with opposed parallel generally planar walls 31' and the lower piece 51 is mainly bowl shaped with two opposed parallel generally planar walls 36'.

[0032] Through the design of the trap 16, the flow of water is split up such that water essentially flows in two opposed directions, shown more clearly in fig. 2d, into the receiving bowl 6'. Preferably between 90% and 100%, more preferably essentially all, of the total flow of water flows in said two opposed directions.

[0033] For the purpose of assembling the trap 16, opposed walls 31' and opposed walls 36' are mutually spaced such that the upper piece 50 may fit snugly into or outside the lower piece 51, as shown in fig. 2d. Walls 31' and 36' may then be connected, e.g. by welding, to provide an integral unit which is then inserted into the receiving bowl 6' and nested on a sealing ring 33, through the elongated outlet 5.

[0034] In another embodiment of the floor drain (not shown), the bearing surface 15 is constituted by a ledge provided in the horizontal part 3a and the abutment surface of the grating 12 has abutment surfaces corresponding to said surfaces of the horizontal part 3a.

[0035] In yet another alternative of the floor drain, each or one of the side walls 2 comprises a vertical part extending from the bottom part 4 to the same height as the horizontal part 3a. After this position the side wall 2 extends in an integral manner with the horizontal part 3a until reaching a wall of the room and extends then along with the wall of the room in a vertical direction. As the side walls 2 extends in this manner, it is possible to integrate the drain in the building structure in such a way that the opening of the drain 100 does not have to extend up to the walls surrounding the drain 100.

[0036] A similar vertical part may also very advantageously be provided in the back wall 1 of the drain 100 which, again, will provide the possibility of integrating the drain 100 in such a manner that a floor tiling may be provided intermediate to the opening of the drain 100 and the back wall of the room.

[0037] In another embodiment of the invention, the building structure is considered being a bathing cabin. In this case only a back wall of the bathroom is considered to constitute an extremity of the wet area of the bathroom. The other extremities are considered to be elevations originating from the wall and encircling the wet area. In an alternative embodiment, the wet area of the cabin is defined by a depression in the floor.

[0038] In fig. 3, a longitudinal cross section of an embodiment of a drain 100 according to the present invention is shown, more specifically the cross section discloses the inclination of the bottom part 4 and a trap 16 inserted into the outlet 6 of the drain 100.

[0039] In the embodiment of fig. 3, the outlet 6 of the drain 100 is bend 90° but the outlet 6 may also be straight.

This bend is provided as the tubes connecting the drain 100 to the sewer in this situation extends beneath the floor tiling. The opening of the outlet 6 is at the level of the bottom part 4 covered by a grating 5 being fixed to the bottom part 4, for instance by use of screws (not shown). Below said grating 5 the trap 16 is positioned in releasable manner.

[0040] This trap 16 is shown in greater details in fig. 3a. As seen from this figure, the trap 16 is assembled from mainly two pieces, an upper piece 50 and a lower piece 51. The upper piece 50 is mainly funnel shaped having a straight part 31 and the lower piece is mainly bowl shaped having a straight part 36 made water penetrable distant from its bottom 35 by penetrations 36a. The trap 16 further comprises a grating 32 for avoiding foreign bodies from going into the sewer.

[0041] When water is flowing through the trap 16 it follows the path indicated by arrows on fig. 3a. When no water is flowing through the trap 16, an amount of water is present in the trap 16, which amount is determined by the position of the penetrations 36a - the surface of the water will be just below the penetrations 36.

[0042] The straight part 31 of the upper piece 50 is when the trap 16 is assembled arranged concentric with the straight part 30 of the lower part 51 and as the straight part 31 does not extend to the bottom 5. This assembly defines a water channel through which the water flows when leaving the drain 100.

[0043] In order to ease the flow through trap 16 the bottom 35 is torus member shaped as shown in fig. 3a. Also, in order to ease the flow through the trap 16, the base part 52 has a rounded part 52 which, when the upper and lower parts 50, 51 are assembled, together with a similar rounded part 34 of the lower part 51 defines a rounded corner in the trap 16.

[0044] A sealing in form of an o-ring 33 is inserted between upper and lower parts 50, 51 in order to seal the assembly of the two parts and in order to seal the assembly of the trap 16 and the outlet 6. A groove 33 matching the shape of the o-ring is provided in the outlet 6 in order to improve the sealing and a protrusion 54 serving as an end stop for the trap 16 has been provided in the outlet 6.

[0045] Figs. 4a and 4b illustrates variations of the floor drain according to the invention in which only one side wall 2 extends in use above in plane of the flange part comprise a side wall.

[0046] In fig. 5 an embodiment of the structure according to the invention is shown, which structure is particularly useful in connection with vinyl sheet or the like used as floor covering. Again, the drain 100 comprises a horizontal part 3a to be situated between the vinyl sheet 18 and the floor base 24. In this embodiment the horizontal part 3a is fastened to the floor base and the vertical part 1 is fastened to the wall base by screws 23. Such fastening of the drain 100 may be dispensed on the account of using glue or the like.

[0047] The flexible vinyl sheet 18 (or any similar im-

permeable sheet) used as flooring covers the horizontal part 3a and is at its extremity bend and laid into the drain. More specific, the vinyl sheet abuts an inclined surface 22 of the drain and is forced against this surface by a frame 19, which is bolted to the drain 100 by bolts.

[0048] At the ends 2 of the drain 100 the vinyl sheet is also kept in place by the frame 19.

[0049] Fig. 6 shows a transverse cross section of a detail of an alternative embodiment of the building structure according to the present invention and shows more specific, a transverse cross section of the drain 100. The drain 100 comprises, again, the horizontal part 3a to be situated between the floor covers 9 and the floor base and comprises the vertical part 1 to be situated between the wall dressing and the wall base. In order to raise the grating 12 to the level of the floor covers 9 the drain 100 also comprises the heightening frame 26 so that the drain in use is similar to the embodiment of the drain shown in fig. 2. The heightening frame comprises an inner vertical part 28 resting on an edge 30 provided in the drain and extending towards the floor covers 9. Close to the floor covers 9 an edge is provided in the heightening frame 29 on which the grating 12 rests. Finally, the heightening frame comprises an outer vertical part 31 being parallel to the inner vertical part 28 and having foot portions 41 a and 41 b. The foot portion 41 is resting in a depression provided in the horizontal part 3a so as to form a straight abutment surface for the floor covers 9. The foot portion 41 b is made such as to provide the heightening frame 29 a mechanical strength in order to avoid deformation of the drain caused by forces acting upon the grating 12.

[0050] All the embodiments of the drain 100 shown above are preferably made of stainless steel but other materials may just as well be used. Such other materials may be of plastic such as PVC, ABS or PP, in which case the drain can be blow molded. In case a drain 100 is made of stainless steel, the drain 100 may be manufactured by applying normal fabrication methods such as pressing, welding etc..

[0051] Figs. 7a-7f illustrates a method for installing the floor drain according to the invention in a bathroom or the like. As shown, the floor drain 100, which may be of the type shown in fig. 2b, is at first fixed to the brick or plaster board wall and connected to a discharge pipe. Insulating bats with upper plywood boards are then laid out (fig. 7b), and concrete base is cast (fig. 7c) so as to extend in below the bottom part 4. A concrete leveling layer with a unidirectional slope is then laid (fig. 7d) using the location of the drain as a guide for establishing the proper slope of the leveling layer, following which a watertight membrane 7 is applied on the walls and the floor, the membrane covering the flange part of the drain according to the principles shown in figs. 1a, 1b and 2a. The walls, the floor and the flange part are finally tiled, and the floor drain is covered with grating 12. As is apparent, the mounting means 200 allow the floor drain to be positioned at the required location prior to establishing the floor surface.

[0052] Obviously, the invention may also be used in pre-cast concrete building structures where the floor drain is arranged slightly above the top surface of the concrete floor slab and connected with a discharge pipe following which the leveling layer and floor covering is applied.

Claims

1. A floor drain (100) for use adjacent to a wall in a wet area in a building structure, such as in a bath room or bath cabin, a floor of said wet area being exposed to running water in use of said wet area, the wall and the floor including a watertight covering (7, 8, 9, 17, 18), said floor preferably being inclined towards said wall to enable said water to flow by gravity towards said wall and to be discharged through said floor drain (100) arranged adjacent said wall, said floor drain (100) comprising:

- a) a bottom part (4) having at least one discharge opening (5),
- b) a front wall (3) being integral with the bottom part (4) and having a first part (3b) being inclined to said bottom part (4) at an angle of at least 30°, preferably about 90°, and a flange part (3a) being horizontal or inclined to the horizontal at an angle less than 20°, said flange part (3a) being adapted to be at least partially covered by said watertight covering (7, 9, 18) of said floor,
- c) two side walls (2) integral with said bottom part (4) and said first part (3b), and
- d) a grating (12) supported above said bottom part (4), said grating (12) having an upper surface extending above the level of said flange part (3a) whereby in use of the drain the upper surface of the grating (12) is essentially level with the level of the watertight covering (7, 9, 18) of said floor, **characterized in that** the floor drain (100) includes
- e) a back part (1) being integral with said bottom part (4), said back part (1) extending vertically from the bottom part (4), through and above the plane defined by said flange part (3a) said back part (1) being adapted to be at least partially covered by a part of said watertight covering (7, 8, 17) of said wall.

2. A floor drain (100) according to claim 1, at least one of the side walls (2) further comprising an intermediate part being horizontal or inclined to horizontal at an angle less than 15°, said intermediate part being arranged at the same horizontal level as the flange part (3a) of the front wall (3), or slightly above.

3. A floor drain (100) according to any of the preceding claims, said drain being elongated, each of said side walls (2) extending in use through and above a plane defined by the flange part (3a), said side walls (2) being adapted to be at least partially covered by a part of said water tight covering (7,8,17) of said wall (16), and said bottom part (4) defining a sloping surface to enable said water to flow by gravity along said sloping surface towards said at least one discharge opening (5). 5
4. A floor drain (100) according to any of the preceding claims, said front wall (3), back part (1) and said side walls (2) comprising bearing surfaces (15) for supporting said grating (12). 10
5. A floor drain (100) according to any of the preceding claims, said back part (1) including mounting means (200) for securing said floor drain (100) to an essentially vertical or horizontal surface. 15
6. A floor drain (100) according to claim 5, said mounting means being receiving holes for screws or nails. 20
7. A floor drain (100) according to any of the preceding claims, further comprising a heightening frame (26) for supporting said grating (12). 25
8. A floor drain (100) according to any of the preceding claims, said floor drain (100) including a vertical surface (13) providing a lateral support for a floor covering (9,18). 30
9. A floor drain (100) according to any of the preceding claims, said flange part (3a) having at an extremity thereof and remote from said first part (3b) a rearwardly bent section. 35
10. A floor drain according to any of the previous claims, said floor drain (100) moreover including a trap connected to said discharge opening (5) and having an outlet (6) connectable to discharge tubing. 40
11. A floor drain (100) according to claim 10, said trap including a funnel shaped part (50) with a straight part and a bowl shaped part (51) with a straight part, said straight parts being arranged concentrically such that at least a part of the straight part of the funnel shaped part extends inside at least a part of the straight part of the bowl shaped part (51), said straight part and said bowl shaped part (51) being arranged within a further trap bowl (6') including said outlet (6). 45
12. A floor drain (100) according to claim 11, wherein the bottom of the bowl shaped part (51) is torus member shaped. 50
13. A floor drain (100) according to any of the preceding claims 10-12, said trap having a bowl including a funnel shaped part and a second section (51) which includes a bowl shaped part, said first section (50) extending at least partially inside said second section, said first and second sections being arranged within said trap bowl part (6') and being adapted to provide a flow of water from said second section (51) and into said trap bowl part (6') in essentially two opposed directions parallel with the extension of said elongated discharge opening, for discharge of said flow of water through said outlet (6) of said trap bowl part (6'). 55
14. A floor drain (100) according to any of claims 10-13, wherein at least one of the trap parts (50, 51) is releasably secured to the trap bowl part (6').
15. A floor drain (100) according to any of claims 10-13, wherein the trap (16) is integral with said floor drain (100).
16. A floor drain (100) according to any of claims 1-15 wherein said back part (1) further comprises an intermediate part (14) being horizontal or inclined to the horizontal at an angle less than 15°, said intermediate part (14) being substantially at the same horizontal level as the flange part (3 a) of the front part, or slightly above.
17. A building structure defining a room, the structure comprising a wall and a floor, each including a watertight covering surface of tiling, vinyl sheet or the like, said building structure further comprising a floor drain (100) according to any of the preceding claims 1-16, which floor drain (100) is arranged in the structure so that:
 - a) the flange part (3a) of the floor drain (100) is situated below the watertight covering surface of the floor, and so that
 - b) at least a part of the back part (1) which extends in use above the plane defined by the flange part (3a) is covered by said covering surface of said wall, whereby
 - c) the floor drain (100) assembles the floor, said wall and the back part in an integral manner in a drain area.
18. A building structure defining a room, which structure in the drain area defines the room by a first wall, two opposed walls and a floor, each having a watertight covering surface of tiling, vinyl sheet or the like, said structure comprising a floor drain (100) according to any of the preceding claims 3-16, which floor drain (100) is arranged in the structure so that:
 - a) the flange part (3a) of the floor drain (100) is

situated below the watertight covering surface of the floor,

b) at least a part of said side walls (2) which extend in use above the plane defined by the flange part is situated behind the watertight covering surfaces of each of the opposed walls, and so that

c) at least a part of the back part (1) which extends in use above the plane defined by the flange part is covered by the watertight covering surface of said first wall, whereby

d) the floor drain (100) assembles the floor, said first wall and said opposed walls in an integral manner in a drain area.

19. A method of constructing a building structure according to claim 17, wherein a floor drain (100) according to any of claims 1 to 16 is secured into a floor and adjacent to a wall, the floor and the wall having a watertight covering surface, in a fixed position prior the watertight covering surface is being applied on the wall and the floor, the floor drain (100) being arranged in the building structure so that:

a) the flange part (3a) of the floor drain (100) is situated below the watertight covering surface of the floor, and so that

b) at least part of the back part (1) which in use extends above the plane defined by is covered by said covering surface of said wall, whereby

c) the floor drain (100) assembles the floor, the wall and the back part (1) in an integral manner in a drain area.

20. A method of constructing a building structure according to claim 18, wherein a floor drain (100) according to any of claims 3 to 16 is secured adjacent to a first wall and two opposed walls and into a floor, the first wall, the two opposed walls and the floor having a watertight covering surface, in a fixed position prior the watertight covering surface is being applied on the first wall, the two opposed walls and the floor, the floor drain (100) being arranged in the building structure so that

a) the flange part (3a) of the floor drain (100) is situated below the watertight covering surface of the floor,

b) at least part of each side wall (2) which in use extends above the plane defined by is situated behind the watertight covering surface of respective opposed wall, and so that

c) at least a part of the back part (1) which in use extends above the plane defined by upper surface of the floor covering is covered by the watertight covering surface of said first wall, whereby

d) the floor drain (100) assembles the floor, the

first wall and the two opposed walls in an integral manner in a drain area.

5 Patentansprüche

1. Bodenablauf (100) zur Verwendung angrenzend an einer Wand in einem Naßbereich in einer Gebäudestruktur, wie in einem Badezimmer oder Badehäuschen, wobei ein Boden des Naßbereichs im Gebrauch des Naßbereichs fließendem Wasser ausgesetzt ist, wobei die Wand und der Boden eine wasserdichte Abdeckung (7, 8, 9, 17, 18) aufweisen, wobei der Boden vorzugsweise zur Wand hin geneigt ist, um es zu ermöglichen, daß das Wasser durch die Schwerkraft zur Wand hin fließt und durch den Bodenablauf (100) abgelassen wird, der angrenzend an die Wand angeordnet ist, wobei der Bodenablauf (100) aufweist:

- a) ein Unterteil (4), das mindestens eine Abflußöffnung (5) aufweist,
b) eine Vorderwand (3), die integral mit dem Unterteil (4) ist und aufweist:

ein erstes Teil (3b), das zum Unterteil (4) unter einem Winkel von mindestens 30°, vorzugsweise etwa 90° geneigt ist, und einen Flanschteil (3a), das horizontal ist oder zur Horizontalen unter einem Winkel geneigt ist, der kleiner als 20° ist, wobei das Flanschteil (3a) angepaßt ist, mindestens teilweise durch die wasserdichte Abdeckung (7, 9, 18) des Bodens abgedeckt zu werden,

c) zwei Seitenwände (2), die integral mit dem Unterteil (4) und dem ersten Teil (3b) sind, und
d) ein Gitter (12), das über dem Unterteil (4) gehalten wird, wobei das Gitter (12) eine Oberseite aufweist, die sich über dem Niveau des Flanschteils (3a) erstreckt, wodurch im Gebrauch des Ablaufs die Oberseite des Gitters (12) sich im wesentlichen auf gleichem Niveau mit dem Niveau der wasserdichten Abdeckung (7, 9, 18) des Bodens befindet,

dadurch gekennzeichnet, daß der Bodenablauf (100) aufweist:

e) ein Hinterteil (1), das integral mit dem Unterteil (4) ist, wobei sich das Hinterteil (1) vertikal vom Unterteil (4) durch und über die Ebene erstreckt, die durch das Flanschteil (3a) definiert wird, wobei das Hinterteil (1) angepaßt ist, mindestens teilweise durch ein Teil der wasserdichten Abdeckung (7, 8, 17) der Wand abgedeckt zu werden.

2. Bodenablauf (100) nach Anspruch 1, wobei minde-

- stens eine der Seitenwände (2) ferner ein Zwischenteil aufweist, das horizontal ist oder zur Horizontalen unter einem Winkel geneigt ist, der kleiner als 15° ist, wobei das Zwischenteil auf demselben horizontalen Niveau wie das Flanschteil (3a) der Vorderwand (3) oder geringfügig darüber angeordnet ist.
3. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, wobei der Ablauf länglich ist, wobei sich alle Seitenwände (2) im Gebrauch durch und über eine Ebene erstrecken, die durch das Flanschteil (3a) definiert wird, wobei die Seitenwände (2) angepaßt sind, mindestens teilweise durch ein Teil der wasserdichten Abdeckung (7,8,17) der Wand (16) abgedeckt zu werden, und der untere Teil (4) eine abfallende Oberfläche definiert, um es zu ermöglichen, daß Wasser durch die Schwerkraft längs der abfallenden Oberfläche zu der mindestens einen Abflußöffnung (5) hin fließt.
 4. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, wobei die Vorderwand (3), die Hinterteile (1) und die Seitenwände (2) Auflageflächen (15) zum Halten des Gitters (12) aufweisen.
 5. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, wobei das Hinterteil (1) Befestigungseinrichtungen (200) zur Sicherung des Bodenablaufs (100) an einer im wesentlichen vertikalen oder horizontalen Oberfläche aufweist.
 6. Bodenablauf (100) nach Anspruch 5, wobei die Befestigungseinrichtungen aus Aufnahmelöchern für Schrauben oder Nägel bestehen.
 7. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, der ferner einen Aufstockungsrahmen (26) zum Halten des Gitters (12) aufweist.
 8. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, wobei der Bodenablauf (100) eine vertikale Oberfläche (13) aufweist, die einen seitlichen Halt für eine Bodenabdeckung (9, 18) bereitstellt.
 9. Bodenablauf (100) nach einem der vorhergehenden Ansprüche, wobei das Flanschteil (3a) an einem Ende davon und vom ersten Teil (3b) entfernt einen nach hinten gebogenen Abschnitt aufweist.
 10. Bodenablauf nach einem der vorhergehenden Ansprüche, wobei der Bodenablauf (100) überdies einen Geruchsverschluß aufweist, der mit der Abflußöffnung (5) verbunden ist und einen Auslaß (6) aufweist, der mit einer Abflußrohrleitung verbunden ist.
 11. Bodenablauf (100) nach Anspruch 10, wobei der Geruchsverschluß ein trichterförmiges Teil (50) mit einem geraden Teil und ein beckenförmiges Teil (51) mit einem geraden Teil aufweist, wobei die geraden Teile konzentrisch angeordnet sind, so daß mindestens ein Teil des geraden Teils des trichterförmigen Teils sich in mindestens ein Teil des geraden Teils des beckenförmigen Teils (51) erstreckt, wobei das gerade Teil und das beckenförmige Teil (51) in einem weiteren Geruchsverschlußbecken (6') angeordnet sind, das den Auslaß (6) umfaßt.
 12. Bodenablauf (100) nach Anspruch 11, wobei der untere Teil des beckenförmigen Teils (51) rundwulstgliedförmig ist.
 13. Bodenablauf (100) nach einem der vorhergehenden Ansprüche 10-12, wobei der Geruchsverschluß ein Becken aufweist, das ein trichterförmiges Teil und einen zweiten Abschnitt (51) umfaßt, der ein beckenförmiges Teil aufweist, wobei der erste Abschnitt (50) sich mindestens teilweise in den zweiten Abschnitt erstreckt, wobei die ersten und zweiten Abschnitte im Geruchsverschlußbeckenteil (6') angeordnet sind und angepaßt sind, einen Wasserfluß aus dem zweiten Abschnitt (51) und in das Geruchsverschlußbeckenteil (6') in im wesentlichen zwei entgegengesetzte Richtungen, die parallel zur Ausdehnung der länglichen Abflußöffnung sind, zum Abfluß des Wasserflusses durch den Auslaß (6) des Geruchsverschlußbeckenteils (6') bereitzustellen.
 14. Bodenablauf (100) nach einem der Ansprüche 10-13, wobei mindestens eines der Geruchsverschlußteile (50, 51) abnehmbar am Geruchsverschlußbeckenteil (6') gesichert ist.
 15. Bodenablauf (100) nach einem der Ansprüche 10-13, wobei der Geruchsverschluß (16) integral mit dem Bodenablauf (100) ist.
 16. Bodenablauf (100) nach einem der Ansprüche 1-15, wobei das Hinterteil (1) ferner ein Zwischenteil (14) aufweist, das horizontal ist oder zur Horizontalen unter einem Winkel geneigt ist, der kleiner als 15° ist, wobei das Zwischenteil (14) sich im wesentlichen auf demselben horizontalen Niveau wie das Flanschteil (3a) des Vorderteils oder geringfügig darüber befindet.
 17. Gebäudestruktur, die einen Raum definiert, wobei die Struktur eine Wand und einen Boden aufweist, die jeweils eine wasserdichte Deckfläche aus einem Fliesenbelag, einer Vinylfolie oder dergleichen aufweisen, wobei die Gebäudestruktur ferner einen Bodenablauf (100) nach einem der vorhergehenden Ansprüche 1-16 aufweist, wobei der Bodenablauf (100) in der Struktur so angeordnet ist, daß:

- a) der Flanschteil (3a) des Bodenablaufs (100) unter der wasserdichten Deckfläche des Bodens angeordnet ist, und so daß,
- b) mindestens ein Teil des Hinterteils (1), das sich im Gebrauch über die Ebene erstreckt, die durch das Flanschteil (3a) definiert wird, durch die Deckfläche der Wand abgedeckt ist, wodurch
- c) der Bodenablauf (100) den Boden, die Wand und das Hinterteil in einer integralen Weise in einem Ablaufbereich zusammenfügt.
18. Gebäudestruktur, die einen Raum definiert, wobei die Struktur im Ablaufbereich den Raum durch eine erste Wand, zwei gegenüberliegende Wände und einen Boden definiert, von denen alle eine wasserdichte Deckfläche aus einem Fliesenbelag, einer Vinylfolie oder dergleichen aufweisen, wobei die Struktur einen Bodenablauf (100) nach einem der vorhergehenden Ansprüche 3-16 aufweist, wobei der Bodenablauf (100) in der Struktur so angeordnet ist, daß:
- a) der Flanschteil (3a) des Bodenablaufs (100) unter der wasserdichten Deckfläche des Bodens angeordnet ist,
- b) mindestens ein Teil der Seitenwände (2), die sich im Gebrauch über die Ebene erstrecken, die durch das Flanschteil definiert wird, hinter den wasserdichten Deckflächen jeder der gegenüberliegenden Wände angeordnet ist, und so daß
- c) mindestens ein Teil des Hinterteils (1), das sich im Gebrauch über die Ebene erstreckt, die durch das Flanschteil definiert wird, durch die wasserdichte Deckfläche der ersten Wand abgedeckt ist, wodurch
- d) der Bodenablauf (100) den Boden, die erste Wand und die gegenüberliegenden Wände in einer integralen Weise in einem Ablaufbereich zusammenfügt.
19. Verfahren zum Errichten einer Gebäudestruktur nach Anspruch 17, wobei ein Bodenablauf (100) nach einem der Ansprüche 1 bis 16 in einem Boden und angrenzend an eine Wand gesichert wird, wobei der Boden und die Wand eine wasserdichte Deckfläche aufweisen, wobei bevor die wasserdichte Deckfläche in einer festen Position auf die Wand und den Boden aufgebracht wird, der Bodenablauf (100) in der Gebäudestruktur so angeordnet wird, daß:
- a) der Flanschteil (3a) des Bodenablaufs (100) unter der wasserdichten Deckfläche des Bodens angeordnet wird, und so daß
- b) mindestens ein Teil des Hinterteils (1), das sich im Gebrauch über die Ebene erstreckt, die durch das Flanschteil (3a) definiert wird, durch

die Deckfläche der Wand abgedeckt wird, wodurch

c) der Bodenablauf (100) den Boden, die Wand und das Hinterteil (1) in einer integralen Weise in einem Ablaufbereich zusammenfügt.

20. Verfahren zum Errichten einer Gebäudestruktur nach Anspruch 18, wobei ein Bodenablauf (100) nach einem der Ansprüche 3 bis 16 angrenzend an eine erste Wand und zwei gegenüberliegende Wände und in einem Boden gesichert wird, wobei die erste Wand, die beiden gegenüberliegenden Wände und der Boden eine wasserdichte Deckfläche aufweisen, wobei bevor die wasserdichte Deckfläche in einer festen Position auf die erste Wand, die beiden gegenüberliegenden Wände und den Boden aufgebracht wird, der Bodenablauf (100) in der Gebäudestruktur so angeordnet wird, daß

a) der Flanschteil (3a) des Bodenablaufs (100) unter der wasserdichten Deckfläche des Bodens angeordnet wird, und so daß

b) mindestens ein Teil jeder Seitenwand (2), das sich im Gebrauch über die Ebene erstreckt, die durch das Flanschteil (3a) definiert wird, hinter der wasserdichten Deckfläche einer jeweiligen gegenüberliegenden Wand angeordnet wird, und so daß

c) mindestens ein Teil des Hinterteils (1), das sich im Gebrauch über die Ebene erstreckt, die durch die Oberseite der Bodenabdeckung definiert wird, durch die wasserdichte Deckfläche der ersten Wand abgedeckt wird, wodurch

d) der Bodenablauf (100) den Boden, die erste Wand und die beiden gegenüberliegenden Wände in einer integralen Weise in einem Ablaufbereich zusammenfügt.

Revendications

1. Drain de sol (100) pour l'utilisation à proximité d'un mur dans une zone humide d'une structure de bâtiment, telle qu'une salle de bain ou une cabine de bain, un sol de ladite zone humide étant exposé à un écoulement d'eau lors de l'utilisation de ladite zone humide, le mur et le sol comprenant un revêtement étanche (7, 8, 9, 17, 18), ledit sol étant de préférence incliné vers ledit mur pour permettre à ladite eau de s'écouler par gravité vers ledit mur et d'être évacuée à travers ledit drain de sol (100) disposé à proximité dudit mur, ledit drain de sol (100) comprenant :
- a) une partie de fond (4) ayant au moins un orifice d'écoulement (5),
- b) une paroi avant (3) faisant partie intégrante de la partie de fond (4) et ayant

- une première partie (3b) inclinée vers ladite partie de fond (4) selon un angle d'au moins 30°, de préférence environ 90°, et
 - une partie d'aile (3a) horizontale ou inclinée par rapport à l'horizontale selon un angle inférieur à 20°, ladite partie d'aile (3a) étant adaptée pour être au moins partiellement recouverte par ledit revêtement étanche (7, 9, 18) dudit sol,
- c) deux parois latérales (2) faisant partie intégrante de ladite partie de fond (4) et de ladite première partie (3b), et
- d) un caillebotis (12) soutenu au-dessus de ladite partie de fond (4), ledit caillebotis (12) ayant une surface supérieure s'étendant au-dessus du niveau de ladite partie d'aile (3a), étant précisé que lors de l'utilisation du drain (100), la surface supérieure du caillebotis (12) se trouve sensiblement au niveau du revêtement étanche (7, 9, 18) dudit sol,
- caractérisé en ce que** le drain de sol (100) comprend
- e) une partie arrière (1) faisant partie intégrante de ladite partie de fond (4), ladite partie arrière (1) s'étendant verticalement depuis la partie de fond (4), à travers et au-dessus du plan défini par ladite partie d'aile (3a), ladite partie arrière (1) étant adaptée pour être au moins partiellement recouverte par une partie dudit revêtement étanche (7, 8, 17) dudit mur.
2. Drain de sol (100) selon la revendication 1, au moins une des parois latérales (2) comprenant en outre une partie intermédiaire horizontale ou inclinée par rapport à l'horizontale selon un angle inférieur à 15°, ladite partie intermédiaire étant disposée au même niveau horizontal que la partie d'aile (3a) de la paroi avant (3) ou légèrement au-dessus.
 3. Drain de sol (100) selon une quelconque des revendications précédentes, ledit drain étant allongé, chacune desdites parois latérales (2) s'étendant lors de l'utilisation à travers et au-dessus d'un plan défini par la partie d'aile (3a), lesdites parois latérales (2) étant adaptées pour être au moins partiellement recouvertes par une partie dudit revêtement étanche (7, 8, 17) dudit mur (16), et ladite partie de fond (4) définissant une surface en pente pour permettre à ladite eau de s'écouler par gravité le long de ladite surface en pente vers ledit ou chaque orifice d'écoulement (5).
 4. Drain de sol (100) selon une quelconque des revendications précédentes, ladite paroi avant (3), la partie arrière (1) et lesdites parois latérales (2) comprenant des surfaces d'appui (15) destinées à supporter ledit caillebotis (12).
 5. Drain de sol (100) selon une quelconque des revendications précédentes, ladite partie arrière (1) comprenant des moyens de montage (200) pour la fixation dudit drain de sol (100) à une surface sensiblement verticale ou horizontale.
 6. Drain de sol (100) selon la revendication 5, lesdits moyens de montage étant des orifices de réception de vis ou de clous.
 7. Drain de sol (100) selon une quelconque des revendications précédentes, comprenant en outre un cadre de rehausse (26) pour supporter ledit caillebotis (12).
 8. Drain de sol (100) selon une quelconque des revendications précédentes, ledit drain de sol (100) comprenant une surface verticale (13) offrant un support latéral pour un revêtement de sol (9, 18).
 9. Drain de sol (100) selon une quelconque des revendications précédentes, ladite partie d'aile (3a) ayant à une extrémité de celle-ci et à distance de ladite première partie (3b) une section courbée vers l'arrière.
 10. Drain de sol (100) selon une quelconque des revendications précédentes, ledit drain de sol (100) comprenant de plus un collecteur relié audit orifice d'écoulement (5) et ayant une sortie (6) pouvant être reliée au tubage d'évacuation.
 11. Drain de sol (100) selon la revendication 10, ledit collecteur comprenant une partie en forme d'entonnoir (50) avec une partie droite et une partie en forme de cuvette (51) avec une partie droite, lesdites parties droites étant disposées concentriquement de telle sorte qu'au moins une partie de la partie droite de la partie en forme d'entonnoir s'étend à l'intérieur d'au moins une partie de la partie droite de la partie en forme de cuvette (51), ladite partie droite et ladite partie en forme de cuvette (51) étant disposées dans une autre cuvette de récupération (6') comprenant ladite sortie (6).
 12. Drain de sol (100) selon la revendication 11, dans lequel le fond de la partie en forme de cuvette (51) a une forme d'élément torique.
 13. Drain de sol (100) selon une quelconque des revendications précédentes 10 à 12, ledit collecteur ayant une cuvette comprenant une partie en forme d'entonnoir et une seconde section (51) qui comprend une partie en forme de cuvette, ladite première section (50) s'étendant au moins partiellement à l'intérieur de ladite seconde section, lesdites première et seconde sections étant disposées à l'intérieur de ladite partie de cuvette de récupération (6') et étant

adaptées pour offrir un écoulement d'eau depuis ladite seconde section (51) et dans ladite partie de cuvette de récupération (6') dans sensiblement deux directions opposées parallèles à l'extension dudit orifice d'écoulement allongé, pour l'évacuation dudit écoulement d'eau à travers ladite sortie (6) de ladite partie de cuvette de récupération (6').

14. Drain de sol (100) selon une quelconque des revendications 10 à 13, dans lequel au moins une des parties de collecteur (50, 51) est fixée de manière détachable à la partie de cuvette de récupération (6').
15. Drain de sol (100) selon une quelconque des revendications 10 à 13, dans lequel le collecteur (16) fait partie intégrante dudit drain de sol (100).
16. Drain de sol (100) selon une quelconque des revendications 1 à 15, dans lequel ladite partie arrière (1) comprend en outre une partie intermédiaire (14) horizontale ou inclinée par rapport à l'horizontale selon un angle inférieur à 15°, ladite partie intermédiaire (14) étant sensiblement au même niveau horizontal que la partie d'aile (3a) de la partie avant, ou légèrement au-dessus.
17. Structure de bâtiment définissant une pièce, la structure comprenant un mur et un sol, chacun comprenant une surface de revêtement étanche en carreaux, feuilles de vinyle ou similaire, ladite structure de bâtiment comprenant en outre un drain de sol (100) selon une quelconque des revendications précédentes 1 à 16, ce drain de sol (100) est disposé dans la structure de sorte que :
 - a) la partie d'aile (3a) du drain de sol (100) est située en dessous de la surface de revêtement étanche du sol, et de sorte que
 - b) au moins une partie de la partie arrière (1) qui s'étend lors de l'utilisation au-dessus du plan défini par la partie d'aile (3a) est recouverte par ladite surface de revêtement dudit mur, étant précisé que
 - c) le drain de sol (100) relie le sol, ledit mur et la partie arrière d'une manière intégrante dans une zone de drain.
18. Structure de bâtiment définissant une pièce, cette structure située dans la zone de drain définit la pièce par une première paroi, deux parois opposées et un sol, chacun ayant une surface de revêtement étanche en carreaux, feuilles de vinyle ou similaire, ladite structure comprenant un drain de sol (100) selon une quelconque des revendications précédentes 3 à 16, ce drain de sol (100) est disposé dans la structure de sorte que :

- a) la partie d'aile (3a) du drain de sol (100) est située en dessous de la surface de revêtement étanche du sol,
- b) au moins une partie desdites parois latérales (2) qui s'étendent lors de l'utilisation au-dessus du plan défini par la partie d'aile est située à l'arrière des surfaces de revêtement étanche de chacune des parois opposées, et de sorte que
- c) au moins une partie de la partie arrière (1) qui s'étend lors de l'utilisation au-dessus du plan défini par la partie d'aile est recouverte par la surface de revêtement étanche de ladite première paroi, étant précisé que
- d) le drain de sol (100) relie le sol, ladite première paroi et lesdites parois opposées d'une manière intégrante dans une zone de drain.

19. Procédé de construction d'une structure de bâtiment selon la revendication 17, dans lequel un drain de sol (100) selon une quelconque des revendications 1 à 16 est fixé dans un sol et à proximité d'un mur, le sol et le mur ayant une surface de revêtement étanche, dans une position fixe avant que la surface de revêtement étanche soit appliquée sur le mur et le sol, le drain de sol (100) étant disposé dans la structure de bâtiment de sorte que

- a) la partie d'aile (3a) du drain de sol (100) est située en dessous de la surface de revêtement étanche du sol, et de sorte que
- b) au moins une partie de la partie arrière (1) qui s'étend lors de l'utilisation au-dessus du plan défini par la partie d'aile (3a) est recouverte par ladite surface de revêtement dudit mur, étant précisé que
- c) le drain de sol (100) relie le sol, ledit mur et la partie arrière (1) d'une manière intégrante dans une zone de drain.

20. Procédé de construction d'une structure de bâtiment selon la revendication 18, dans lequel un drain de sol (100) selon une quelconque des revendications 3 à 16 est fixé à proximité d'une première paroi et de deux parois opposées et dans le sol, la première paroi, les deux parois opposées et le sol ayant une surface de revêtement étanche, dans une position fixe avant que la surface de revêtement étanche soit appliquée sur la première paroi, les deux parois opposées et le sol, le drain de sol (100) étant disposé dans la structure de bâtiment de sorte que :

- a) la partie d'aile (3a) du drain de sol (100) est située en dessous de la surface de revêtement étanche du sol,
- b) au moins une partie de chaque paroi latérale (2) qui s'étend lors de l'utilisation au-dessus du plan défini par la partie d'aile (3a) est située à l'arrière de la surface de revêtement étanche de

la paroi opposée respective, et de sorte que
c) au moins une partie de la partie arrière (1) qui
s'étend lors de l'utilisation au-dessus du plan
défini par la surface supérieure du revêtement
de sol est recouverte par la surface de revête-
ment étanche de ladite première paroi, étant
précisé que

d) le drain de sol (100) relie le sol, la première
paroi et les deux parois opposées d'une manière
intégrante dans une zone de drain.

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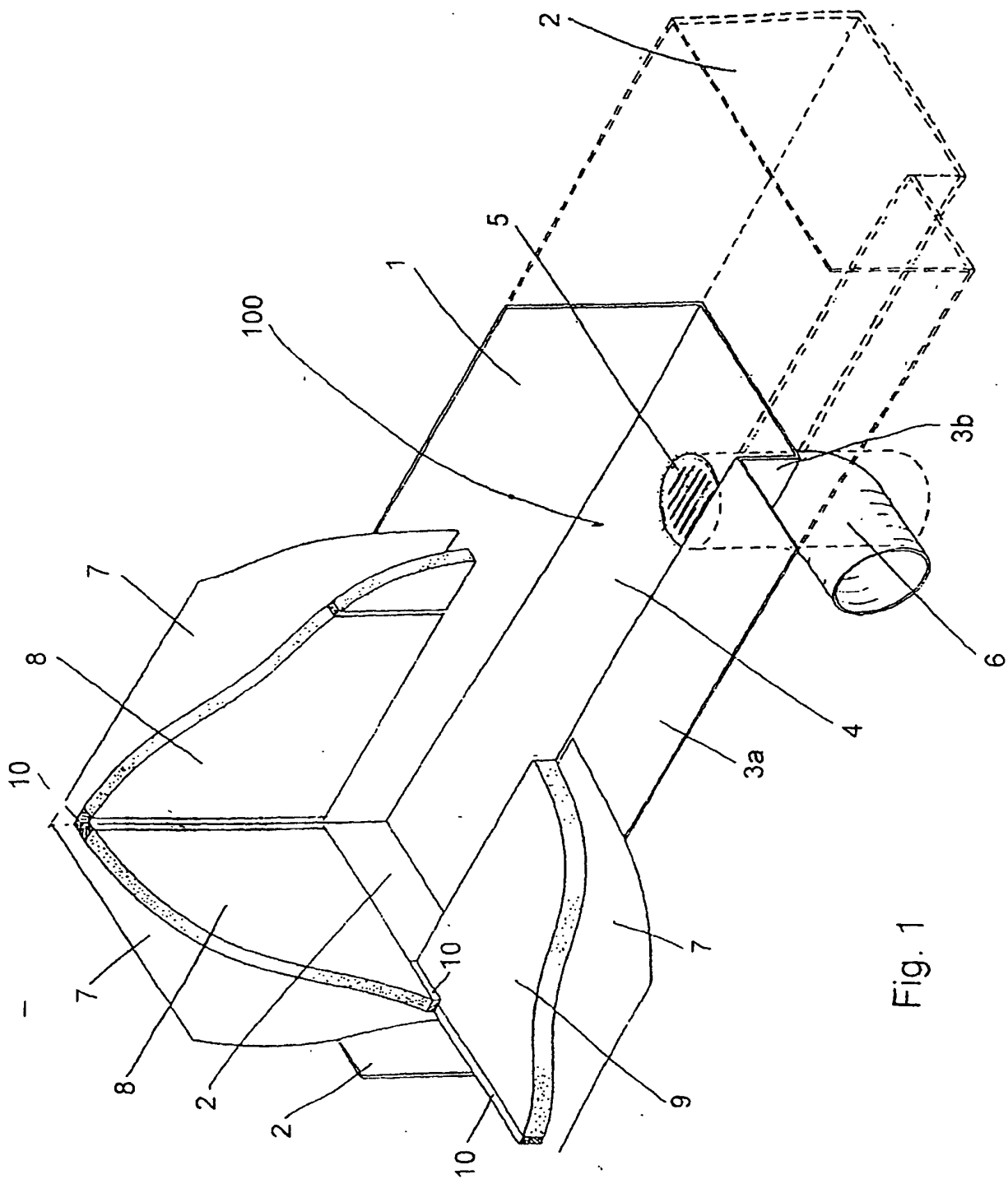


Fig. 1

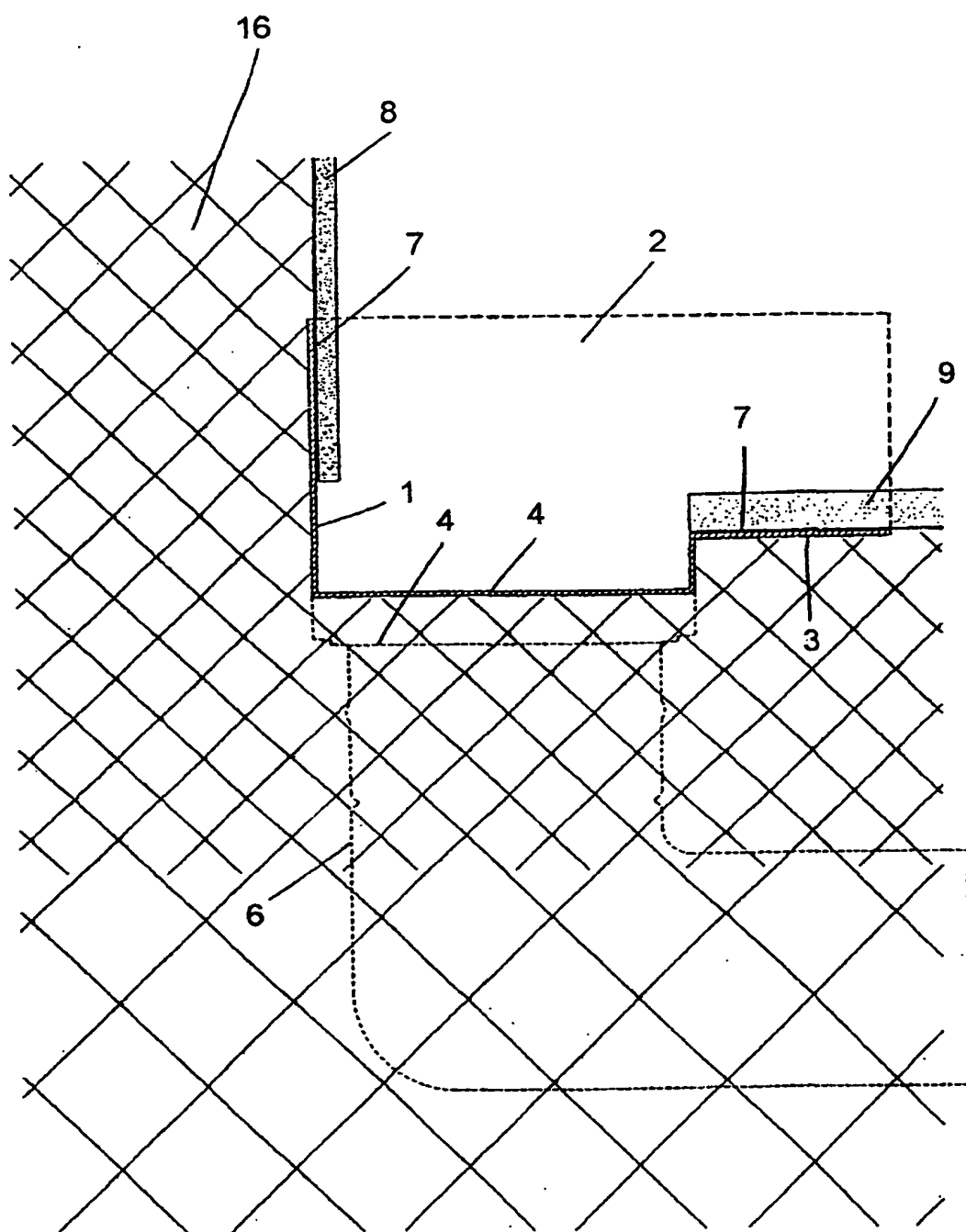


Fig. 1a

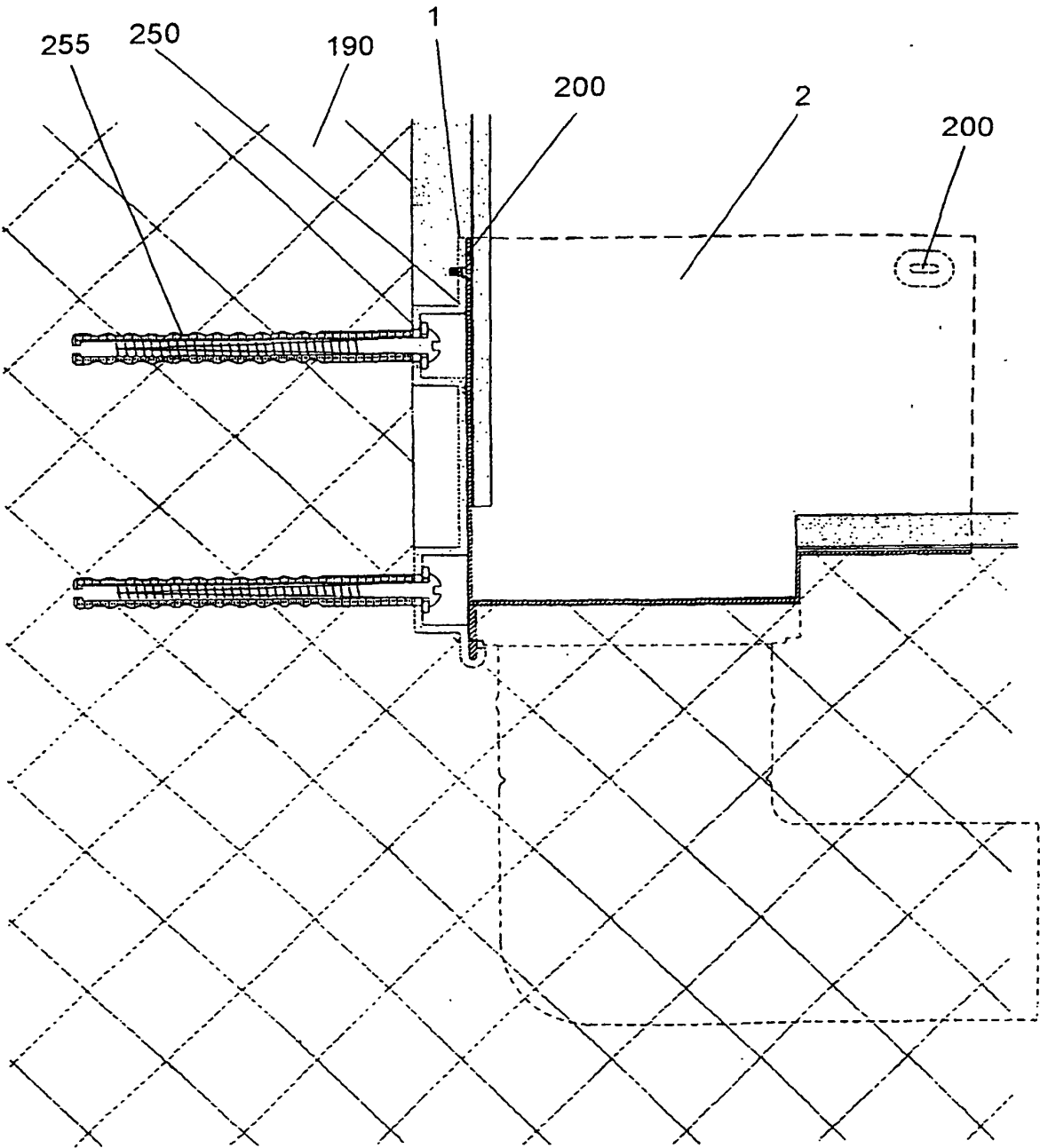


Fig. 1b

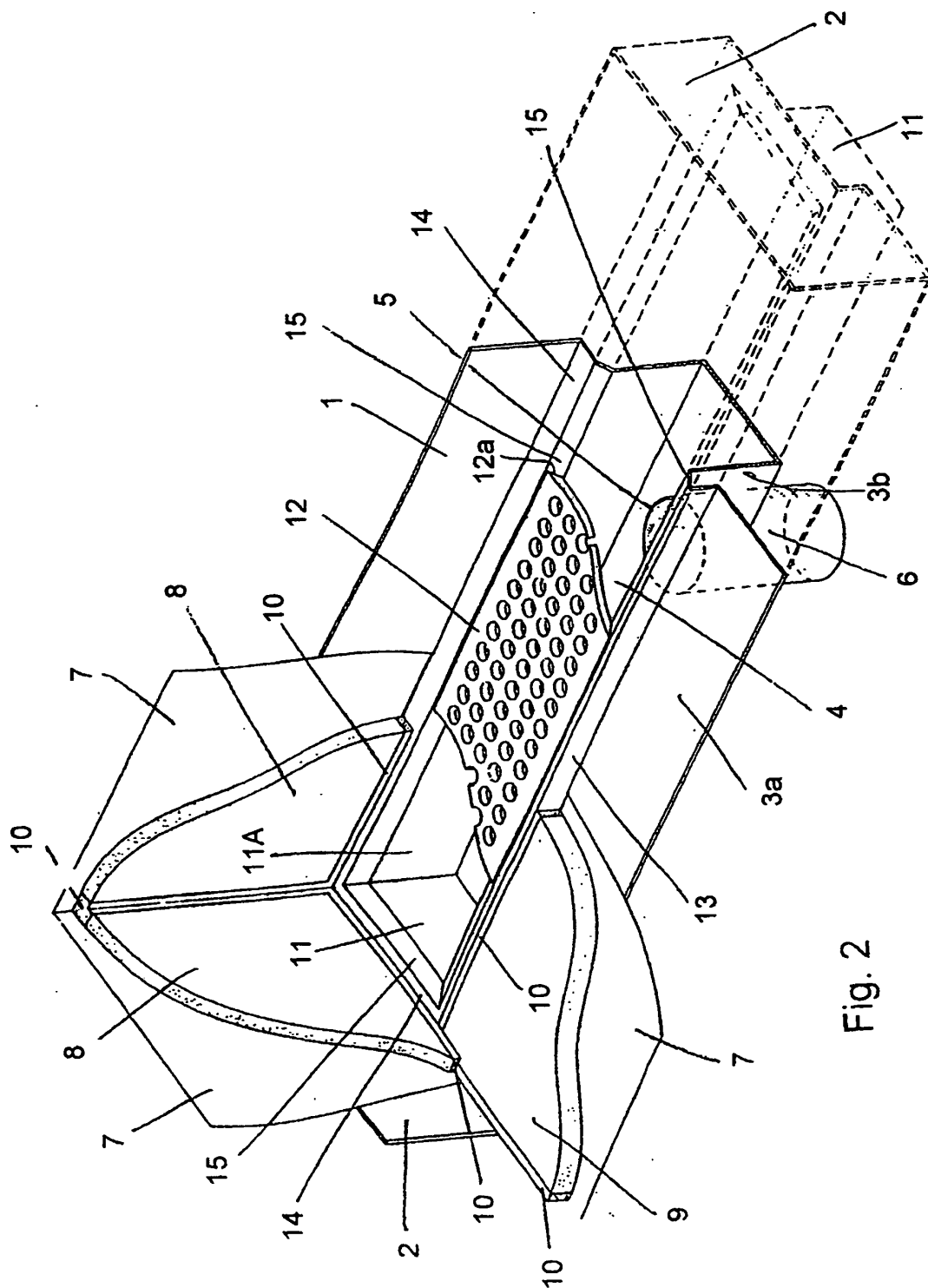


Fig. 2

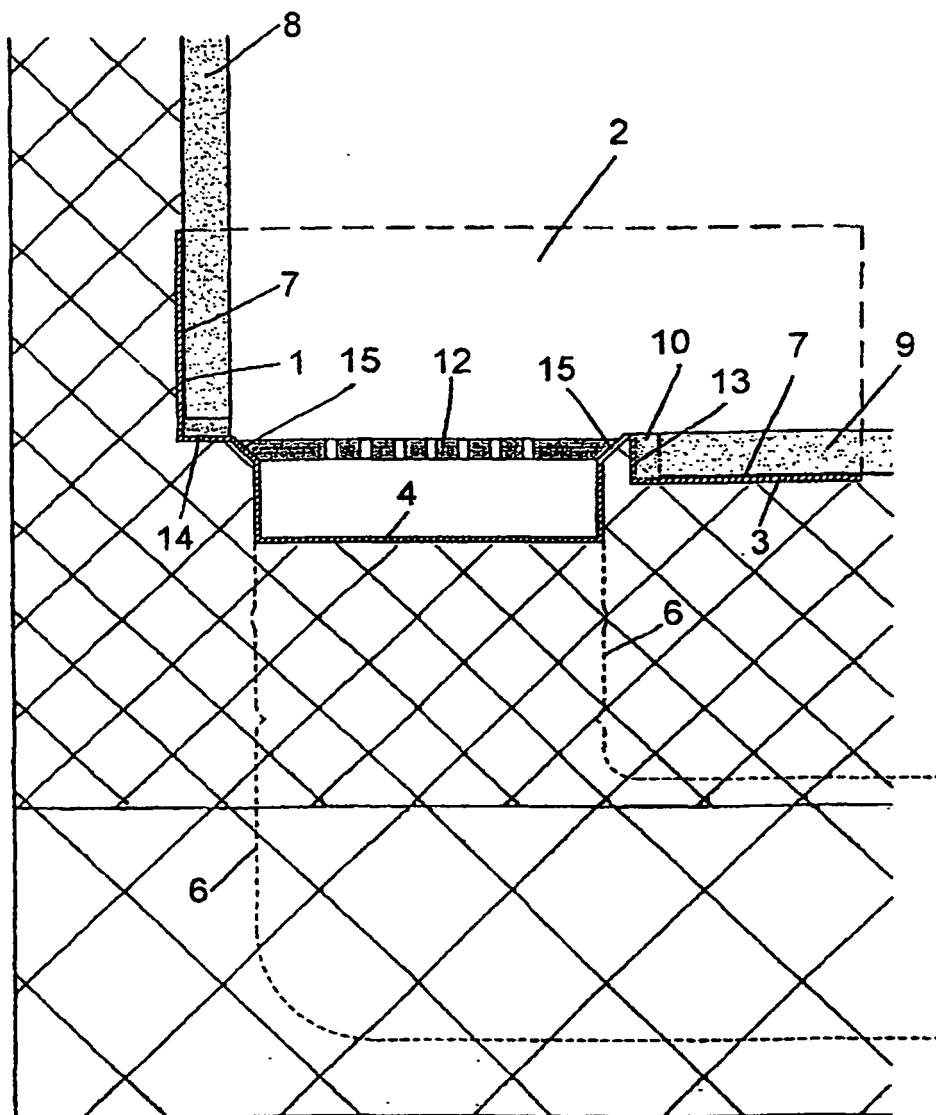


Fig. 2a

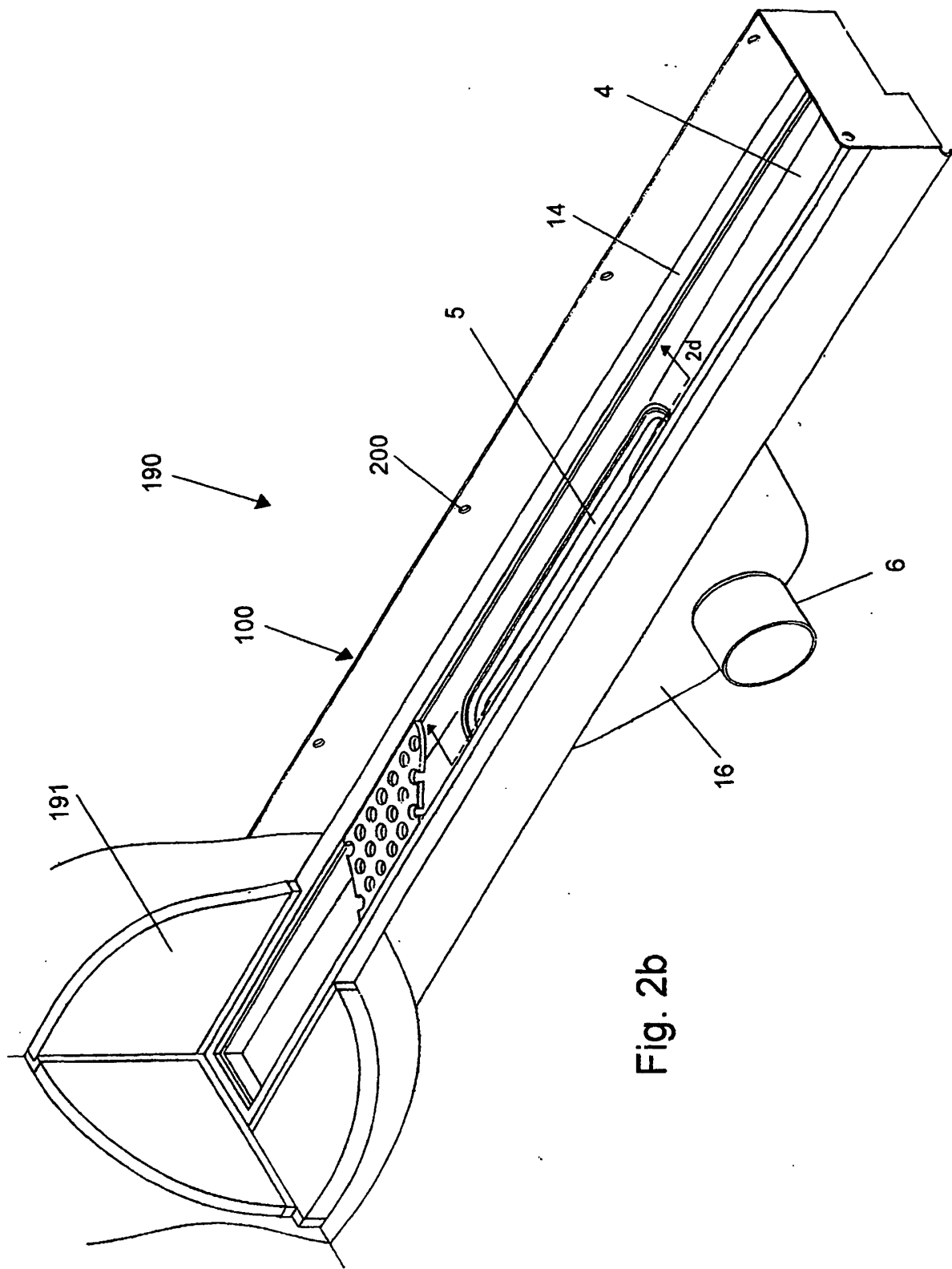


Fig. 2b

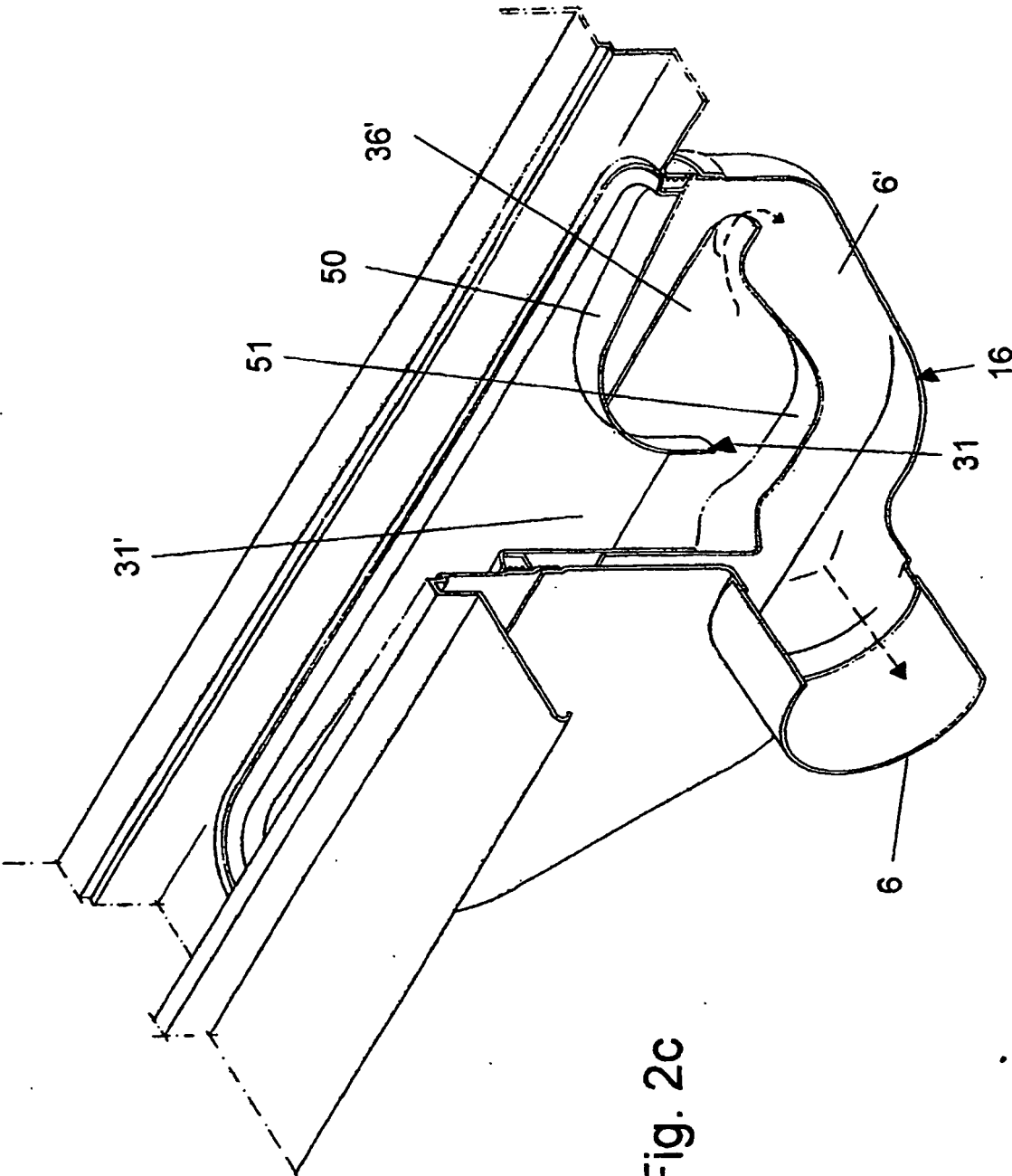


Fig. 2c

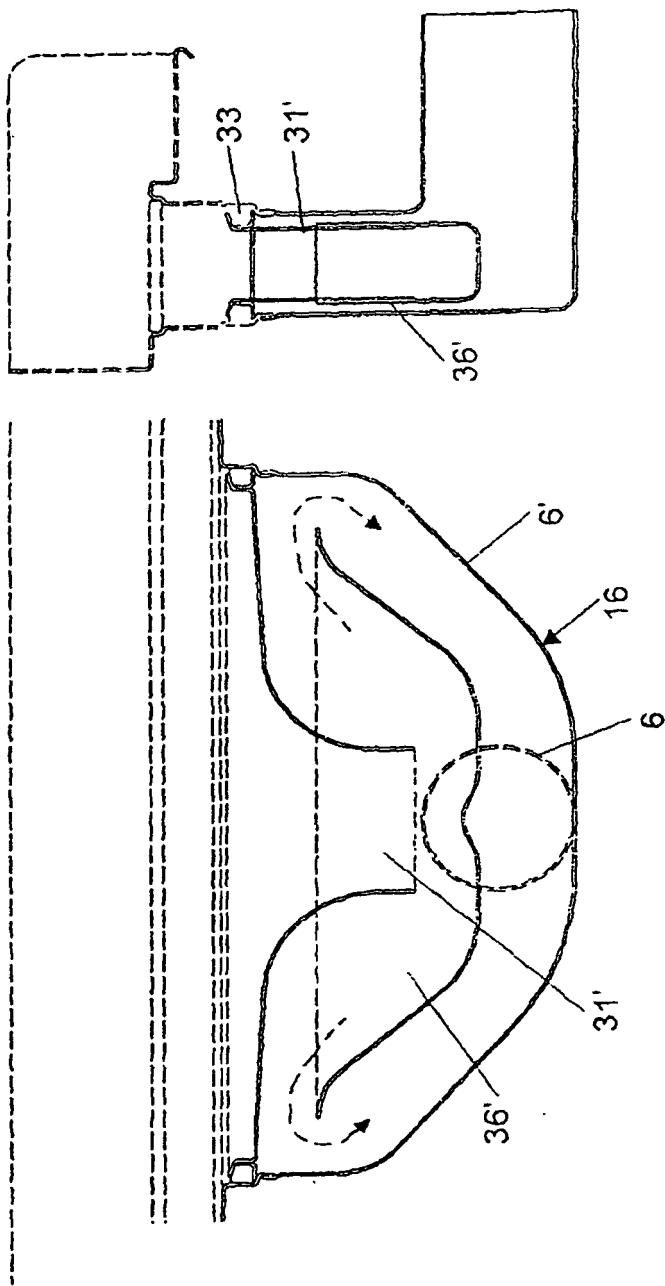


Fig. 2d

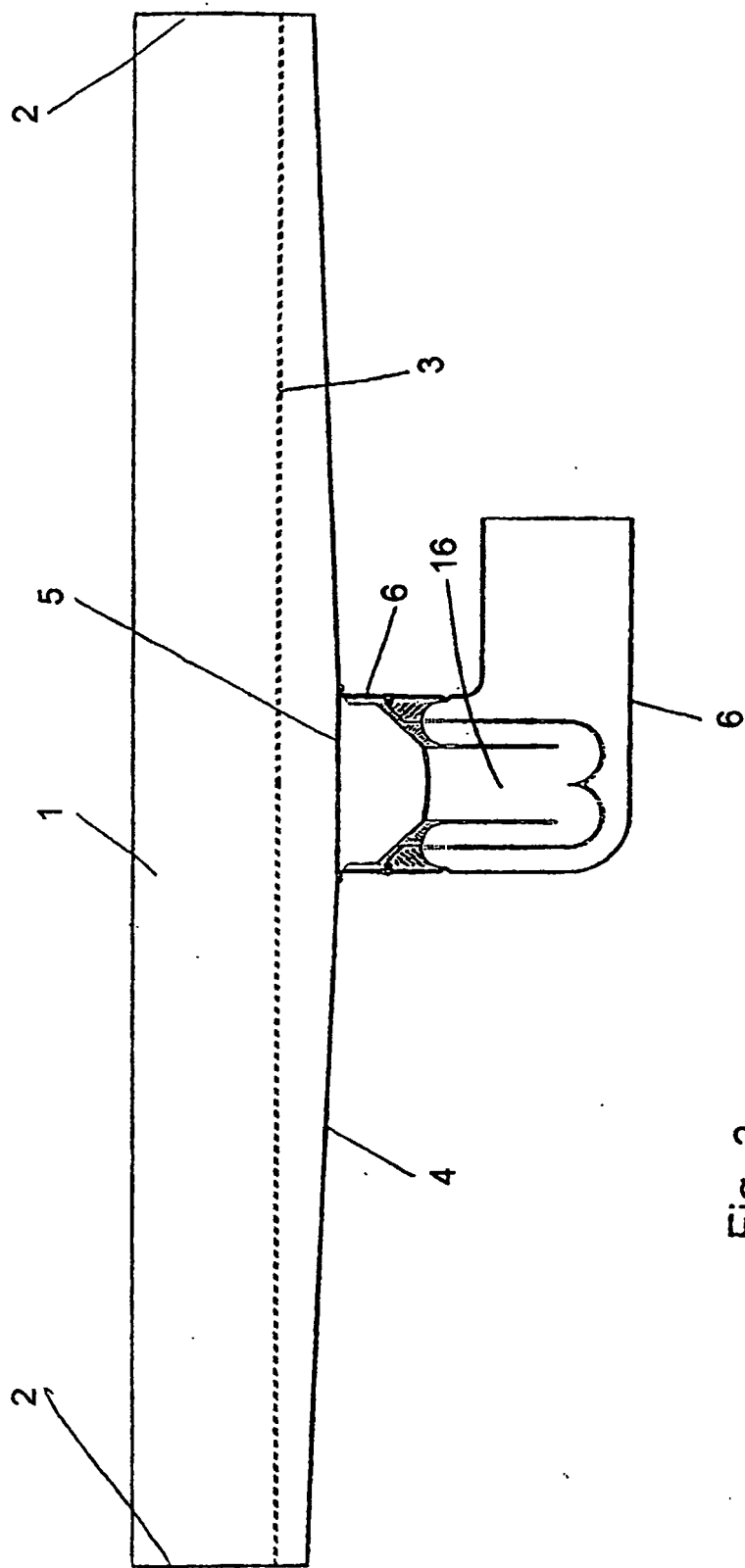


Fig. 3

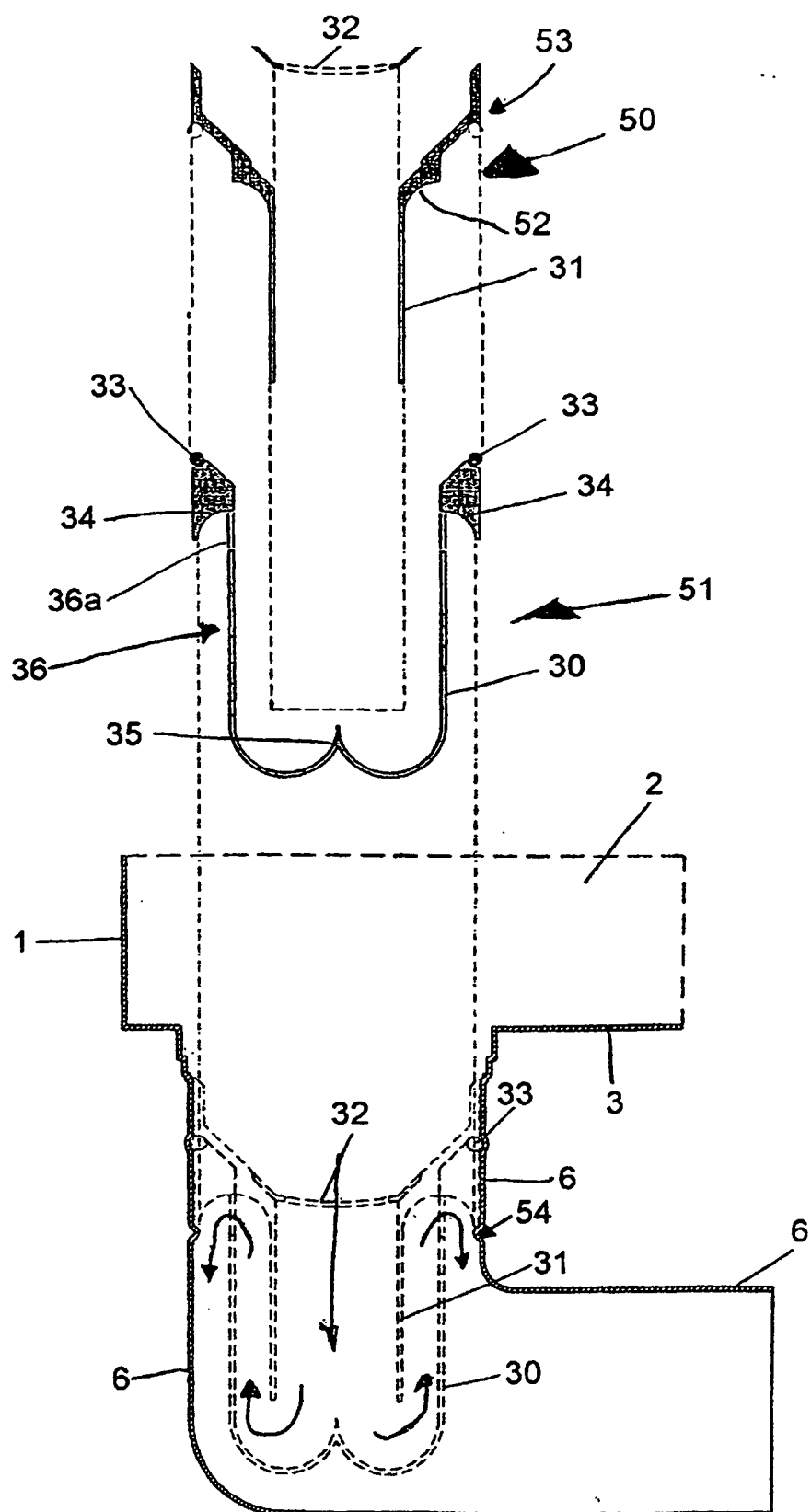


Fig. 3a

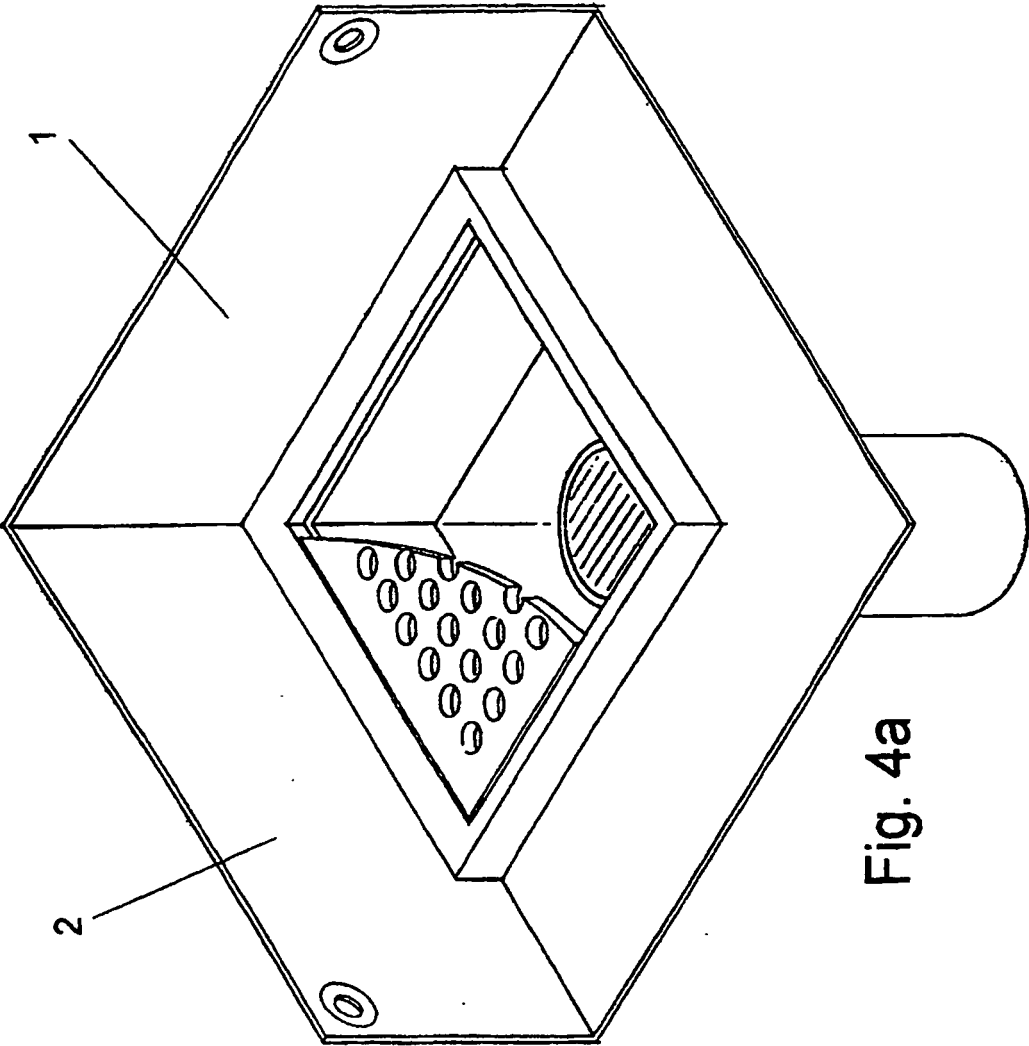


Fig. 4a

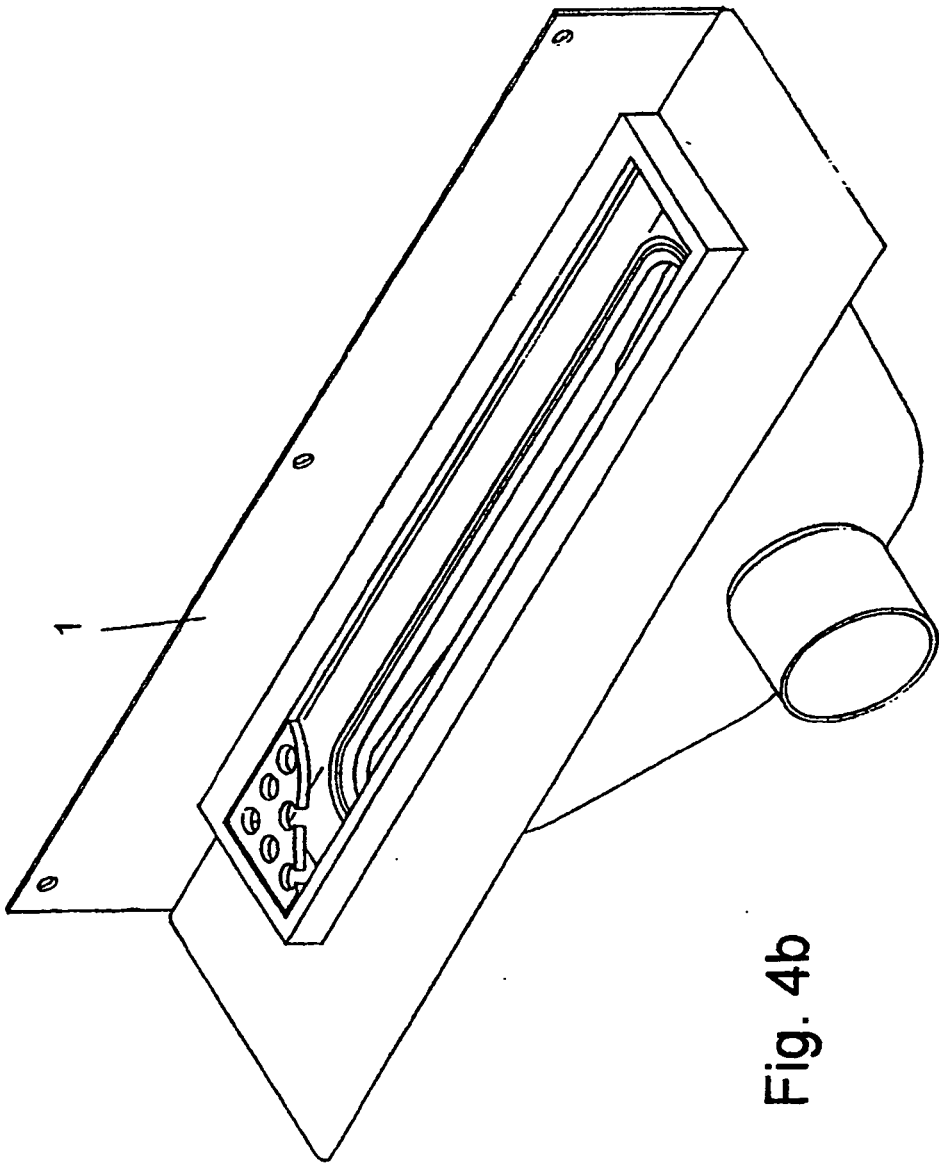


Fig. 4b

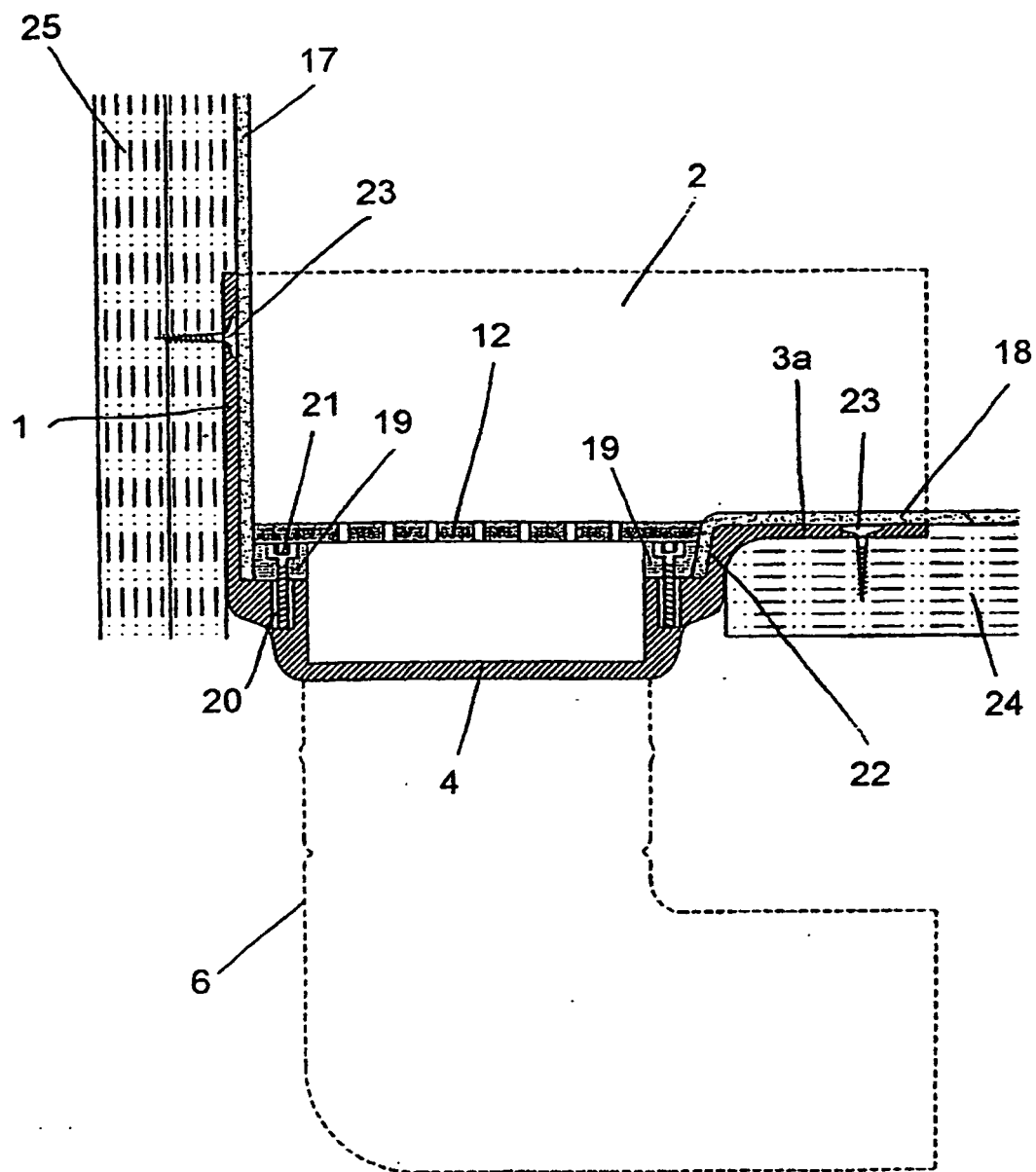


Fig. 5

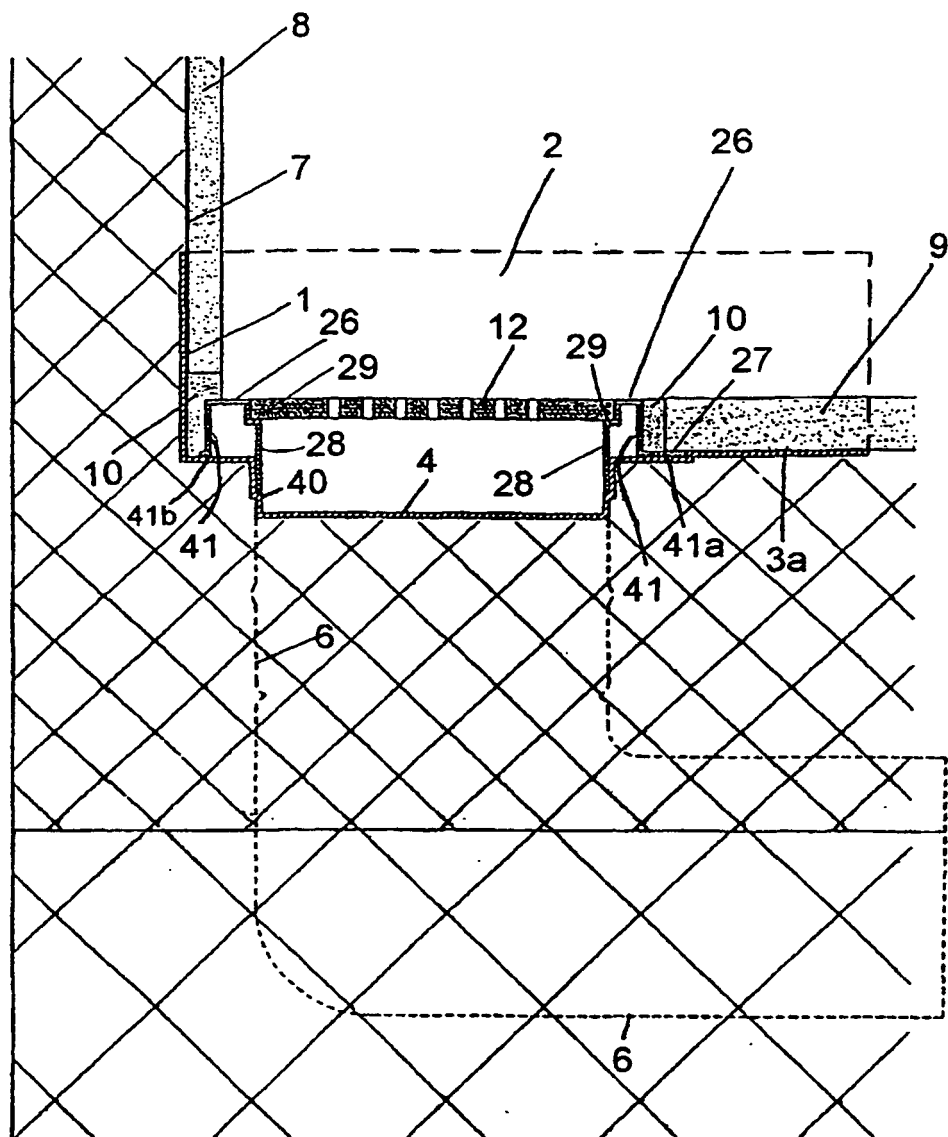


Fig. 6

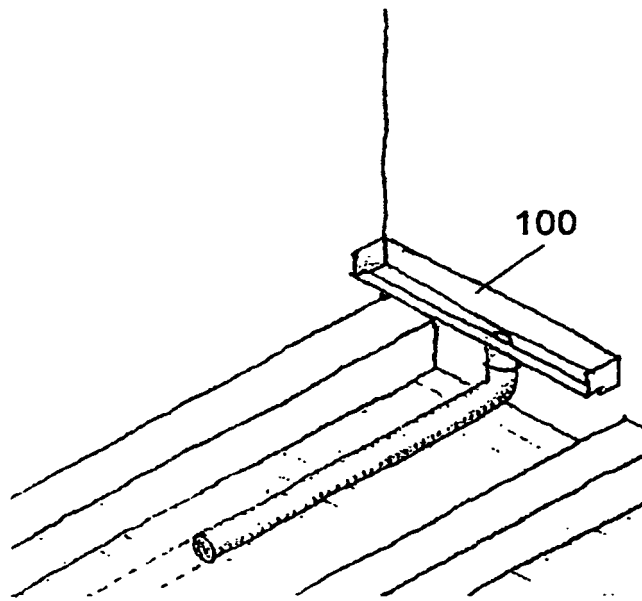


Fig. 7a

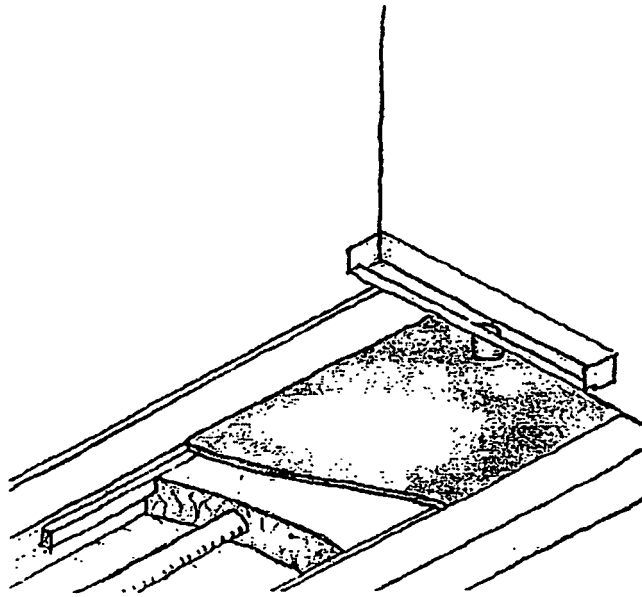


Fig. 7b

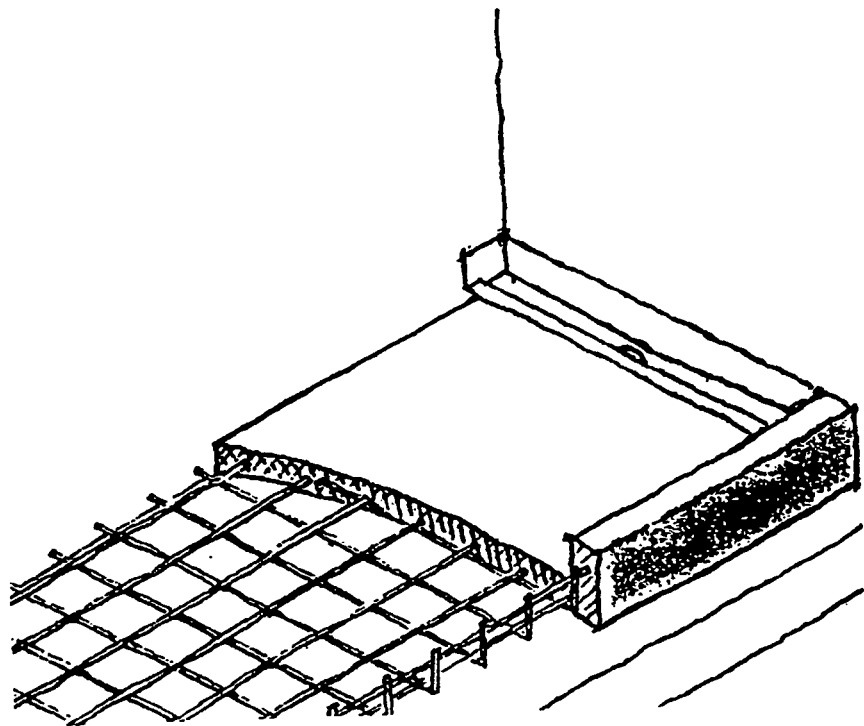


Fig. 7c

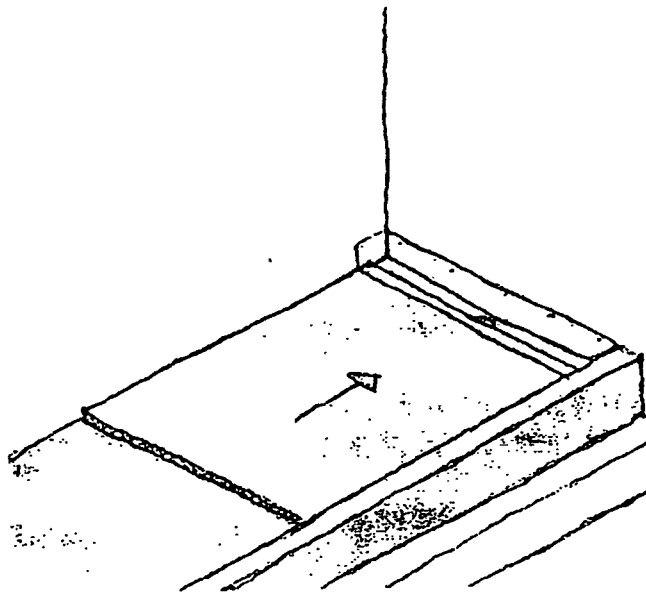


Fig. 7d

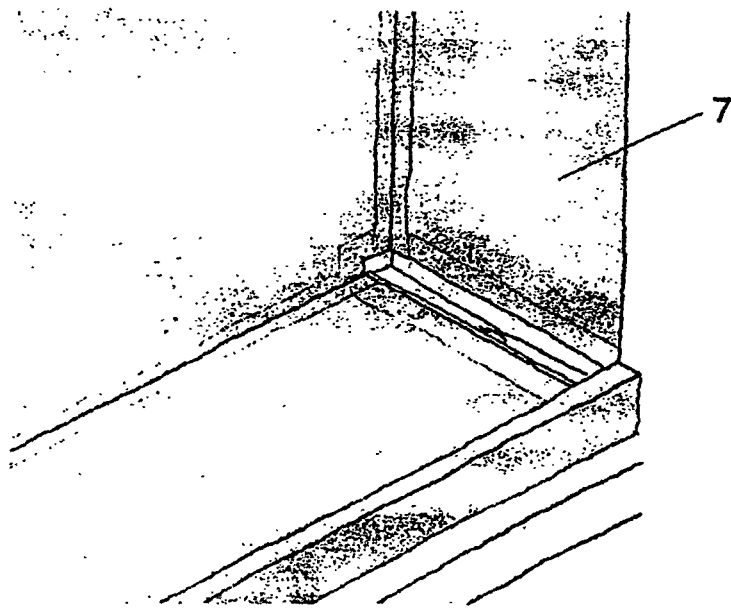


Fig. 7e

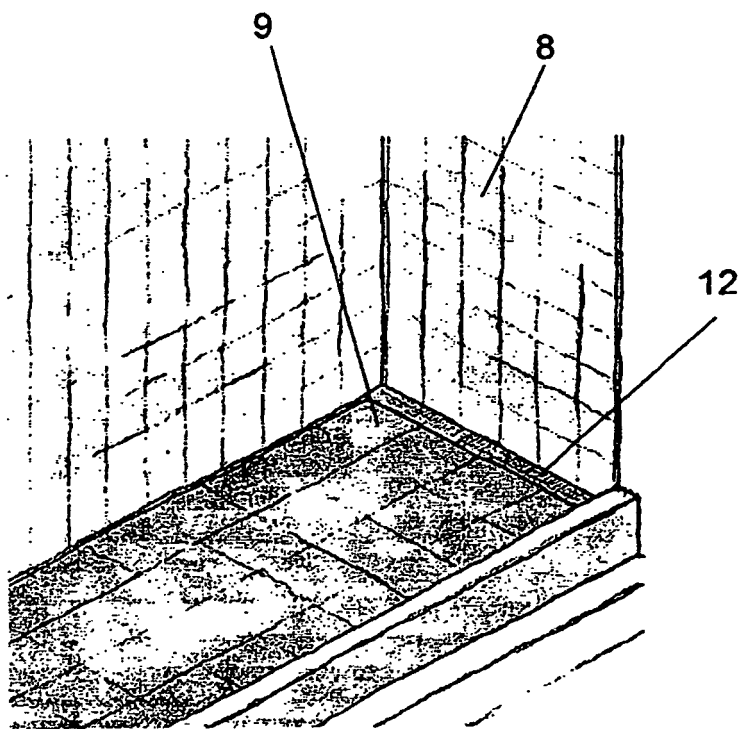


Fig. 7f