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- **PELO, Jaakko**  
**85500 Nivala (FI)**
- **LIMMA, Jouni**  
**92930 Pyhäntä (FI)**

(74) Representative: **Berggren Oy**  
**P.O. Box 16**  
**Eteläinen Rautatiekatu 10A**  
**00101 Helsinki (FI)**

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(71) Applicant: **Lehto Group OYJ**  
**90440 Kempele (FI)**

(72) Inventors:  
• **HUHTALA, Hannu**  
**90440 Kempele (FI)**

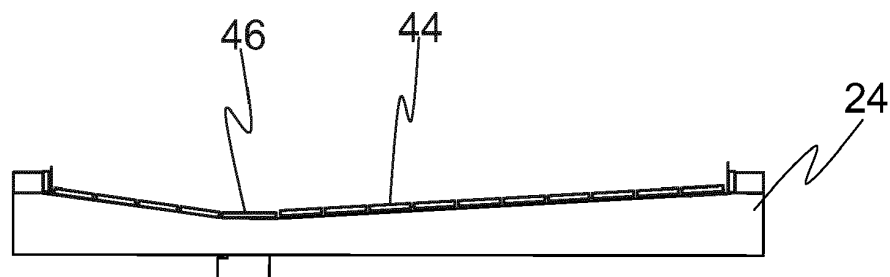
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(54) **METHOD FOR BUILDING A MODULAR UNIT AND A PREFABRICATED FLOOR SLAB**

(57) A method for manufacturing a modular unit comprises first manufacturing a floor slab (24) forming the floor of the modular unit, the floor slab having an upper edge and an upper surface; installing a moisture barrier onto the upper surface of the floor slab; constructing lower parts of walls of the modular unit on the upper surface of the floor slab, the lower parts having an inner face on the side of the interior of the modular unit, the inner face being substantially perpendicular to the plane defined by the upper edge of the floor slab; and installing a flooring (44) on top of the moisture barrier of the floor slab. In the

method, the lower part of the wall is made of a material different from the floor slab, and the flooring of the floor slab is installed after the formation of the lower parts of the walls and before the mounting of the upper parts of the walls. In the method, a prefabricated floor slab is used, which has an upper edge and an upper surface. The upper surface comprises a moisture barrier, a flooring, and the lower parts of walls, wherein on the side of the interior of the floor slab, the lower parts have an inner face which is substantially perpendicular to the plane defined by the upper edge of the floor slab.



**Fig. 2b**

## Description

### Field of the invention

[0001] The invention relates to a method for manufacturing a modular unit, the method comprising manufacturing a floor slab forming the floor of the modular unit, the floor slab having an upper edge and an upper surface; installing a moisture barrier onto the upper surface of the floor slab; constructing lower parts of walls of the modular unit on the upper surface of the floor slab, the lower parts having an inner face on the side of the interior of the modular unit, the inner face being substantially perpendicular to the plane defined by the upper edge of the floor slab; and installing a flooring on top of the moisture barrier of the floor slab. The invention further relates to a prefabricated floor slab for use in the method.

### Prior art

[0002] In house building, modular units are increasingly used, which are prefabricated in a pre-cast concrete manufacturing plant and transported as units ready for installation to the building site. In particular, modular units are used in construction of wet facilities of buildings. The aim is to make the modular units as finished as possible at the pre-cast concrete manufacturing plant, to minimize the amount of work at the site. Thus, in practice, the wall and floor surfaces of modular units for wet facilities are always provided with finished coatings at the pre-cast concrete manufacturing plant.

[0003] Ceramic tiles or natural stone tiles are often used for coating floors and walls of wet facilities, thanks to their durability and aesthetic appeal. In methods of prior art for building modular units, the tiling of a floor is performed in the same way as when building *in situ*. In other words, the floor slab of the modular unit is built first, and the walls and the ceiling of the modular unit are mounted. After that, the floor and the inner surfaces of the walls are tiled. The person grouting the tiles has to work and crawl on all fours within a cramped modular unit. Because of the poor ergonomics and the cramped workspace, particularly the tiling and sealing of the floor is time consuming and burdensome for the worker.

[0004] Finnish utility model FI 11941 describes a prefabricated floor slab whose upper surface is provided with a waterproof floor covering made of acrylic concrete and installed on the slab at a pre-cast concrete manufacturing plant. Although workable as such, this solution has the disadvantage that it focuses solely on acrylic coatings, which significantly limits the possibilities of varying the appearance and potential uses of the floor slab. The edges of the area forming the floor surface of the floor slab are provided with oblique bevelled surfaces which connect the floor surface to the surfaces of the walls to be built on the slab. The oblique bevelled surfaces prevent the wall coating from continuing straight down to the floor surface, which makes it difficult to use, for example, ce-

ramic tiles as the wall coating.

[0005] Document SE 529418 C2 describes a concrete floor slab with a steel C-profile on its edge surface. The profile is used as a casting mould for the floor slab during manufacture. Documents DE 4023300 A1 and WO 2016130068 A2 describe prefabricated floor slabs made of concrete and having an upper surface with an elevated edge. The elevated edge is made upon casting of the prefabricated slab, and it consists of the same material as the prefabricated slab.

[0006] The object of the invention is to provide a method for constructing a modular unit and a prefabricated floor slab for use in the method, for reducing disadvantages relating to the prior art. The objects of the invention are achieved with the method and the floor slab characterized by what is presented in the independent claims. Some advantageous embodiments of the invention are presented in the dependent claims.

### Brief summary of the invention

[0007] The invention relates to a method for manufacturing a modular unit. The method comprises fabricating a floor slab forming the floor of a modular unit, the floor slab having an upper edge and an upper surface; installing a moisture barrier onto the upper surface of the floor slab; constructing lower parts of walls of the modular unit on the upper surface of the floor slab, the lower parts having an inner face on the side of the interior of the modular unit, the inner face being substantially perpendicular to the plane defined by the upper edge of the floor slab; and installing a flooring on top of the moisture barrier of the floor slab. In the method, the lower part of the wall is made of a material different from the floor slab, and the flooring of the floor slab is installed after the construction of the lower parts of the walls and before the mounting of the upper parts of the walls. Preferably, the flooring is installed to cover substantially the whole area defined by the inner faces of the lower parts of the walls.

[0008] In a preferred embodiment of the method according to the invention, the flooring is made of natural stone tiles or ceramic tiles, i.e. Dutch tiles, clinker tiles or pressed tiles, which are installed with grout or adhesive on top of the moisture barrier of the floor slab. Preferably, the seams between the natural stone tiles or ceramic tiles are sealed with a joint sealing compound before mounting the upper parts of the walls. The tiling of the floor is thus completed before the mounting of the upper parts of the walls.

[0009] In another preferred embodiment of the method according to the invention, the floor slab is arranged in a substantially vertical position for the time of installation of the flooring. The vertical position of the floor slab refers to a position in which the upper surface of the floor slab is in a position substantially transverse to the horizontal plane. In methods of prior art for building modular units, the floor slab is in a horizontal position during tiling. The tiling and the sealing thus has to be performed on all fours

on the floor. Because of the poor ergonomics, the tiling of the floor is known to be a time consuming and burdensome stage. In a preferred embodiment of the method according to the invention, the floor slab can be arranged in a vertical position for the tiling, whereby the tiling can be performed in an ergonomic standing position in the same way as the tiling of a wall.

**[0010]** In yet another preferred embodiment of the method according to the invention, the floor slab is made of reinforced concrete.

**[0011]** In yet another preferred embodiment of the method according to the invention, the moisture barrier of the floor slab is made of moisture barrier film which is attached to the upper surface of the floor slab. The moisture barrier film can be installed at the bottom of the casting mould for the floor slab before the casting of the floor slab, whereby the moisture barrier film will adhere to the floor slab when the concrete is hardened.

**[0012]** In yet another preferred embodiment of the method according to the invention, the lower part of the walls is made by fastening a batten having a edge surface to the lower surface of the floor slab and fastening a strip of a lining board to the edge surface of the batten. The material of the batten may be wood or metal, and the lining board strip may consist of a board suitable as a surface to be tiled over and not deformable by moisture, such as gypsum board.

**[0013]** In yet another preferred embodiment of the method according to the invention, before installing the flooring, a moisture barrier is installed on the inner face of the lower parts of the walls so that it forms a watertight joint with the moisture barrier of the floor slab. Preferably, the moisture barrier for the lower parts of the walls is formed of a moisture barrier band which is attached to the moisture barrier of the floor slab in an overlapping manner.

**[0014]** In yet another preferred embodiment of the method according to the invention, the upper parts of the walls are mounted on top of the lower parts of the walls, wherein the upper parts comprise an inner face on the side of the interior of the modular unit so that the inner faces of the lower part and the upper part of a single wall of the modular unit are aligned substantially in the same plane. The entire inner face of the walls is thus in the same plane, which makes it possible to begin the tiling of the walls from the joint between the floor and the wall upwards.

**[0015]** In yet another preferred embodiment of the method according to the invention, the upper part of the wall is made by building a wall with a skeleton frame on top of the lower part of the wall. Alternatively, the upper part of the wall can be made by installing a wall element with a skeleton frame on top of the lower part of the wall. Preferably, a moisture barrier is installed on the inner face of the upper parts of the walls to form a watertight joint with the moisture barrier of the lower parts of the walls. The moisture barrier in the upper parts of the walls may be a brushable moisture barrier.

**[0016]** The prefabricated floor slab according to the invention has an upper edge and upper surface. The upper surface comprises a moisture barrier, a flooring and the lower parts of walls, wherein on the side of the interior of the floor slab, the lower parts have an inner face which is substantially perpendicular to the plane defined by the upper edge of the floor slab. The lower part of the wall is made of a material different from the floor slab. Preferably, the floor slab is made of reinforced concrete, and the lower parts of the walls comprise a batten fastened to the lower surface of the floor slab, and a strip of a lining board fastened to the edge surface of the batten. The material of the batten may be wood or metal, and the lining board strip may consist of a board suitable as a surface to be tiled over, such as gypsum board.

**[0017]** In a preferred embodiment of the floor slab according to the invention, the flooring is formed of natural stone tiles or ceramic tiles which are installed with grout or adhesive on top of the moisture barrier of the floor slab.

**[0018]** In a preferred embodiment of the floor slab according to the invention, the inner face of the lower parts of the walls is provided with a moisture barrier forming a watertight joint with the moisture barrier of the floor slab.

**[0019]** An advantage is that the invention significantly accelerates and facilitates the tiling of the floor, whereby savings are achieved in labour costs.

**[0020]** A further advantage is that the invention improves the quality of the floor tiling and reduces reclamations.

### Brief description of the drawings

**[0021]** In the following, the invention will be described in detail. In the description, reference will be made to the appended drawings, in which

Figs. 1a to 1g show, by way of example, a floor slab for a modular unit in different steps of the method for manufacturing the modular unit;

Figs. 2a and 2b show, by way of example, a floor slab for a modular unit provided with lower parts of walls, in different steps of the method for manufacturing the modular unit;

Fig. 2c shows a cross-sectional view of a modular unit made by the method according to the invention, and

Fig. 3 shows, by way of example, a preferred embodiment of a floor slab for a modular unit to be made by the method according to the invention.

### Detailed description of the invention

**[0022]** Figures 1a to 1g represent, by way of example, a series of figures illustrating different steps of making a floor slab as part of the method for manufacturing a mod-

ular unit according to the invention. The floor slab is made at a pre-cast concrete manufacturing plant by casting fresh concrete into a casting mould 10 for a floor slab. The casting mould has a substantially rectangular mould surface 12 whose edges are encircled by a side wall 14 so that the mould surface and the side wall together constitute a trough-shaped element. During casting of concrete, the casting mould is in the position shown in Fig. 1a, wherein the mould surface constitutes the bottom of the casting mould. The shape of the mould surface is a mirror image of the upper surface of the floor slab to be made by using the casting mould. Modular units to be made by the method are wet facilities, such as bathrooms, so that the floor slabs used in them are equipped with a floor drain, and their upper surface is sloped towards the floor drain. Thus, the whole mould surface is not in the same plane.

**[0023]** Figure 1a shows a casting mould in a cross-sectional view. The casting mould can be made of metal, plywood, wood material, or another suitable material. The casting mould is prior art known as such, so that it will not be described in further detail in this context.

**[0024]** In the method, a piece of moisture barrier film is first applied onto the mould surface 12 of the casting mould 10 so that it will cover substantially the whole mould surface. If the mould surface is so large that it cannot be covered by a single piece of film, a first piece 16 of moisture barrier film can first be installed in the casting mould to cover part of the mould surface (Fig. 1b). After that, a second piece 17 of moisture barrier film is applied onto the mould surface 12 so that an edge section of the second piece is placed on top of an edge section of the first piece, that is, the edge sections of the film pieces are overlapping (Fig. 1c). If desired, the pieces of moisture barrier film can be fastened to the mould surface by double-sided tape to keep them in place during the concrete casting later on. The moisture barrier film is thin flexible fabric-like material which is impermeable to water and approved for use as moisture barrier for construction elements.

**[0025]** After the installation of the piece or pieces of moisture barrier film, the components and fittings to be installed in the floor slab, such as a floor drain 18 and a reinforcement mesh 20, are fastened or supported to the casting mould (Fig. 1d). The floor drain is installed in its planned position in the casting mould so that its opening is fitted tightly against the moisture barrier film. After this, fresh concrete 22 prepared at the concrete manufacturing plant is poured into the casting mould so that the upper surface of the fresh concrete layer becomes flush with the upper edge of the side walls (Fig. 1e). The concrete contains aggregate and cement binder. Typically, the aggregate consists of natural rock material. When two pieces of moisture barrier film are used, fresh concrete is first poured onto the second piece of moisture barrier film in the casting mould so that the fresh concrete flows from the top of the second piece 17 across the seam between the pieces onto the first piece 16. By this

casting method, no fresh concrete can enter between the overlapping sections of the first and second pieces. The fresh concrete layer is consolidated by vibrating, and the upper surface of the concrete pouring is levelled out and ground to be smooth. The fresh concrete is allowed to harden to form a floor slab 24 in the casting mould (Fig. 1f).

**[0026]** After the concrete has hardened to a sufficient extent in the casting mould 10, the floor slab 24 is removed from the casting mould (Fig. 1f). The surface of the floor slab which was facing the mould surface 12 and on which the surface profile of the mould surface was "copied", forms the upper surface 30 of the floor slab. If the moisture barrier was formed of a single piece of moisture barrier film, it has adhered to the upper surface of the floor slab throughout, by means of the cement binder of the concrete. If the moisture barrier was formed of two pieces, those sections of the first and second pieces which were placed in direct contact with the poured fresh concrete have adhered to the upper surface of the floor slab. The edge section of the first piece 16 which was overlapping with the edge section of the second piece 17 in the casting mould, is loose at this stage.

**[0027]** The loose edge section of the first piece 16 is glued to overlap with the edge section of the second piece 17 (Fig. 1g). Brushable liquid moisture barrier is used as the adhesive, which forms a watertight film when cured. Liquid moisture barrier is applied with a brush onto the overlapping sections of the pieces of moisture barrier film, and the overlapping sections are pressed tightly against each other. Yet another layer of moisture barrier is applied with a brush onto the visible joint. When cured, the moisture barrier adheres tightly to both pieces and forms a watertight joint. The pieces of moisture barrier film glued together constitute a uniform moisture barrier 38 on the upper surface of the floor slab.

**[0028]** Figure 2a shows a cross-sectional view of the floor slab 24 of the modular unit at a stage when the lower parts 40 of the walls have been constructed on top of the upper surface 30 of the floor slab. In the method, the formation of the lower parts of the walls is started by installing a batten 32 on the upper surface of the floor slab, in the location of the walls to be built in the modular unit. The batten shown in the figure is a wooden batten with a rectangular cross section, but the batten may also be a U profile formed of thin sheet metal, commonly used particularly in partition wall frames. The batten is fastened to the upper surface of the floor slab, in the intended location of the walls of the modular unit, so that the breast surface of the batten faces the upper surface 30 of the floor slab, and the edge surface of the batten is substantially transverse to the plane defined by the upper edge 25 of the floor slab. The batten is fastened by screws, not shown in the figure, which extend through the breast surfaces of the batten to the floor slab. A strip 34 of a wall lining board for the modular unit is fastened by screws to the edge surface facing the center of the floor slab. The lining board consists of a board which is suitable

as a surface to be tiled over and is not deformable by moisture, such as gypsum board or fibre cement board. The height of the lining board strip is substantially equal to the height of the batten 32. The batten and the strip of lining board fastened to its surface together constitute the lower part 40 of the wall of the modular unit.

**[0029]** A moisture barrier band 36 is attached to the inner surface of the strip of lining board, that is, the surface facing the center of the floor slab, so that the first edge of the moisture barrier band covers the inner surface of the strip 34 of lining board, and the second edge of the band overlaps the moisture barrier 38 on the upper surface of the floor slab. The moisture barrier band is attached by means of brushable liquid moisture barrier.

**[0030]** A drain flange 28 may be fastened on the moisture barrier 38 at the location of the floor drain 18 opening to the upper surface of the floor slab 24. The drain flange is not a necessary element of the moisture barrier, but the moisture barrier can also be implemented without a separate drain flange. The drain flange is a piece formed of a watertight film for reinforcing the moisture barrier of the floor slab around the floor drain. The drain flange can consist of the same material as the moisture barrier film. The drain flange is attached to the moisture barrier by means of brushable liquid moisture barrier. After the fastening of the drain flange, the moisture barrier 38 of the area to be clad with the flooring of the floor slab is, in practice, finished.

**[0031]** After the liquid moisture barrier used for attaching the drain flange has been sufficiently cured, an opening is made in the drain flange and in the piece of the moisture barrier film underneath it, the opening being aligned with the floor drain 18 and smaller than the opening of the floor drain. A clamping ring is pressed in this opening, for clamping the edges of the drain flange and the moisture barrier tightly against the inner wall of the floor drain. A floor drain cover frame 46 is glued on the floor drain with fixing plaster.

**[0032]** Figure 2b shows a cross-sectional view of a floor slab 24 of a modular unit at a stage where flooring 44 has been installed on the upper surface 30 of the floor slab. In this context, the flooring refers to the uppermost permanently installed structural layer of the floor of the finished modular unit. In Fig. 2b, the flooring to be installed is formed of natural stone tiles or ceramic tiles, such as Dutch tiles, clinker tiles, pressed tiles, or so-called dry-pressed ceramic tiles. The tiles are installed with grout on top of the moisture barrier on the upper surface of the floor slab so that the tiled area covers substantially the whole area delimited by the inner face of the lower parts 40 of the walls. After the installation of the tiles, the gaps between the tiles are seamed with a joint sealing compound. After the joint sealing compound has cured, the upper surface of the floor slab is ready for use.

**[0033]** In the method according to the invention, the floor slab 24 can be propped up in an vertical position for the time of installing the flooring. The vertical position

refers to a position in which the upper surface of the floor slab is in a position substantially transverse to the horizontal plane. Tiling of the floor slab in the vertical position can be performed in the same way as the tiling of walls; in other words, a tile setter can work in an vertical position next to the surface to be tiled, without having to move on all fours on the floor slab.

**[0034]** Figure 2c shows a cross-sectional view of a modular unit at a stage where the upper parts 42 of the walls have been mounted on top of the lower parts 40 of the walls. For mounting the upper parts of the walls, the floor slab 24 is turned to a horizontal position, whereby the upper surface of the floor slab is in a substantially horizontal plane. In the method, the upper parts of the walls are mounted on top of the lower parts 40 so that the inner faces of the upper parts and the inner faces of the lower parts are aligned substantially in the same plane; that is, at least no significant angle or offset is formed at the joint between the upper parts and the lower parts. The upper parts of the walls are conventional walls having a skeleton frame and provided with lining boards 48 on both sides. The lining boards used on at least the interior wall surface of the modular unit are boards suitable as a surface to be tiled over, such as gypsum boards or fibre cement boards. As frame posts for the upper parts of the walls and as horizontal upper and lower beams, it is possible to use wooden battens or profiles of thin sheet metal. The upper parts of the walls can be constructed as wall elements in the size of a single wall of the modular unit, which are mounted and fastened in one piece on top of the lower parts of the walls. The lining board on the outer surface of the upper parts of the prefabricated walls can be arranged to extend over the lower surface of the lower part of the wall frame. Such wall elements can be fastened to the lower guide batten of the lower parts of the walls at the lower edge of the lining board on the outer surface of the element. The fastening of the wall elements to the lower parts of the walls can thus be performed entirely from the outside of the modular unit.

**[0035]** After the mounting of the upper parts of the walls, a ceiling 50 is built on the modular unit, and a wall cladding 52 is installed on the interior surfaces of the walls of the modular unit. The walls of wet facilities are often clad with ceramic tiles or natural stone tiles, whereby a moisture barrier must first be installed on the wall surface to be tiled. The interior surface of the upper parts of prefabricated walls can be provided with a moisture barrier already at the stage of manufacturing of the wall element, that is, before the mounting of the upper parts of the walls. Thus, after the mounting of the upper parts, the moisture barrier of the walls is finished at the joint of the lower parts and the upper parts of the walls, after which the walls are ready to be tiled. In the method according to the invention, the interior faces of the upper parts and the lower parts of the walls are substantially in the same plane, whereby whole tiles can extend across the interface between the upper part and the lower part of the wall, and the tiling of the wall can extend down to

the upper surface of the floor tile.

[0036] In a diagonal view from above, Fig. 3 shows a floor slab 24 of a modular unit at a stage where the lower parts 40 of the walls have been formed on top of the upper surface of the floor slab 24. The floor slab shown in the figure has a rectangular shape; in other words, it has two shorter sides and two longer sides. The lower parts 40 of the walls have been formed on top of the upper surface of the floor slab so that on the longer sides of the floor slab, the lower parts are right at the edge of the floor slab. On the shorter sides of the floor slab, the first one of the lower parts is right at the edge of the floor slab, and the second one of the lower parts is spaced from the shorter edge. The modular unit to be built on top of the floor slab thus covers only a part of the upper surface of the floor slab. By the method according to the invention for constructing modular units, it is possible to make modular units in which all or some of the walls of the modular unit are arranged at the edges of the floor slab, as well as modular units in which all or some of the walls of the modular unit are spaced from the edges of the floor slab. A door is provided on one wall of the modular unit. At the location of the door, a cutting 56 having the width of the door is formed in the lower part of the walls, to avoid too high a door sill. Outside the area delimited by the walls of the modular unit, the floor slab may be provided with holes 54 for pipelines and/or cables to be passed through the floor slab.

[0037] In the description above, the lower parts of the walls were made of a wooden batten whose inner edge surface was provided with a strip of a lining board. The lower parts of the walls can also be made in another way, for example by designing the casting mould for the floor slab so that the lower parts of the walls are formed on the upper surface of the floor slab in connection with the casting of the floor slab. The lower parts of the walls are thus an integral part of the floor slab made of reinforced concrete. Furthermore, it is possible to make the lower parts of the walls on the upper surface of the floor slab of, for example, concrete masonry blocks or bricks which are fastened to the upper surface of the floor by fast setting grout.

[0038] Some advantageous embodiments of the method and the floor slab according to the invention have been described above. The invention is not limited to the solutions described above, but the inventive idea may be applied in different ways within the scope of the claims.

#### List of reference numerals:

[0039]

- 10 casting mould
- 12 mould surface
- 14 side wall
- 16 first piece
- 17 second piece
- 18 floor drain

- 20 reinforcement mesh
- 22 fresh concrete
- 24 floor slab
- 25 upper edge
- 28 drain flange
- 30 upper surface
- 32 batten
- 34 strip
- 36 moisture barrier band
- 38 moisture barrier
- 40 lower part of a wall
- 42 upper part of a wall
- 44 flooring
- 46 floor drain cover frame
- 48 lining board
- 50 ceiling
- 52 wall cladding
- 54 hole
- 56 cutting

#### Claims

1. A method for manufacturing a modular unit, the method comprising

manufacturing a floor slab (24) forming the floor of the modular unit, the floor slab (24) having an upper edge (25) and an upper surface (30); installing a moisture barrier (38) onto the upper surface (30) of the floor slab (24); constructing lower parts (40) of walls of the modular unit on the upper surface (30) of the floor slab (24), the lower parts (40) having an inner face on the side of the interior of the modular unit, the inner face being substantially perpendicular to the plane defined by the upper edge (25) of the floor slab (24); and

installing a flooring (44) on top of the moisture barrier (38) of the floor slab (24);

**characterized in that** the lower part (40) of the wall is made of a material different from the floor slab (24), and the flooring (44) of the floor slab (24) is installed after the formation of the lower parts (40) of the walls and before the mounting of the upper parts (42) of the walls.

2. The method according to claim 1, **characterized in that** the flooring (44) is installed to cover substantially the whole area delimited by the inner faces of the lower parts (40) of the walls.

3. The method according to claim 1 or 2, **characterized in that** the flooring (44) is made of natural stone tiles or ceramic tiles which are installed with grout or adhesive on top of the moisture barrier (38) of the floor slab (24).

4. The method according to claim 3, **characterized in that** the seams between the natural stone tiles or ceramic tiles are sealed with a joint sealing compound before the upper parts (42) of the walls are mounted. 5
5. The method according to any of the claims 1 to 4, **characterized in that** the floor slab (24) is arranged in a substantially vertical position for the time of installation of the flooring (44). 10
6. The method according to any of the claims 1 to 5, **characterized in that** the floor slab (24) is made of reinforced concrete. 15
7. The method according to any of the claims 1 to 6, **characterized in that** the moisture barrier (38) of the floor slab (24) is made of moisture barrier film which is attached to the upper surface (30) of the floor slab (24). 20
8. The method according to any of the claims 1 to 7, **characterized in that** the lower part (40) of the wall is made by fastening a batten (32) having a edge surface to the upper surface (30) of the floor slab (24), and by fastening a strip of a lining board (34) to the edge surface of the batten (32). 25
9. The method according to any of the claims 1 to 8, **characterized in that** before the installation of the flooring (44), a moisture barrier is installed on the inner face of the lower parts (40) of the walls to form a watertight joint with the moisture barrier (38) of the floor slab (24); preferably, the moisture barrier is formed of a moisture barrier band (36) which is attached to the water barrier (38) of the floor slab (24) in an overlapping manner. 30 35
10. The method according to any of the claims 1 to 9, **characterized in that** the upper parts (42) of the walls are mounted on top of the lower parts (40) of the walls, the upper parts (42) comprising an inner face on the side of the interior of the modular unit so that the inner faces of the lower part (40) and the upper part (42) of a single wall of the modular unit are placed substantially in the same plane. 40 45
11. The method according to claim 10, **characterized in that** the upper part (42) of the wall is made by building a wall having a skeleton frame on top of the lower part (40) of the wall, or by installing a wall element having a skeleton frame on top of the lower part (40) of the wall. 50
12. The method according to claim 10 or 11, **characterized in that** a moisture barrier is installed on the inner face of the upper parts (42) of the walls to form a watertight joint with the moisture barrier of the lower parts (40) of the walls. 55
13. A prefabricated floor slab (24), which floor slab has an upper edge (25) and an upper surface (30), the upper surface (30) being provided with a moisture barrier (38), a flooring (44) and lower parts (40) of walls, the lower parts (40) having an inner face on the side of the interior of the floor slab (24), the inner face being substantially transverse to the plane defined by the upper edge (25) of the floor slab (24), **characterized in that** the lower part (40) of the wall is made of a material different from the floor slab (24).
14. The floor slab (24) according to claim 13, **characterized in that** the flooring (44) is made of natural stone tiles or ceramic tiles installed with grout or adhesive on top of the moisture barrier (38) of the floor slab (24).
15. The floor slab (24) according to claim 13 or 14, **characterized in that** the inner face of the lower parts (40) of the walls is provided with a moisture barrier which forms a watertight joint with the moisture barrier (38) of the floor slab (24).

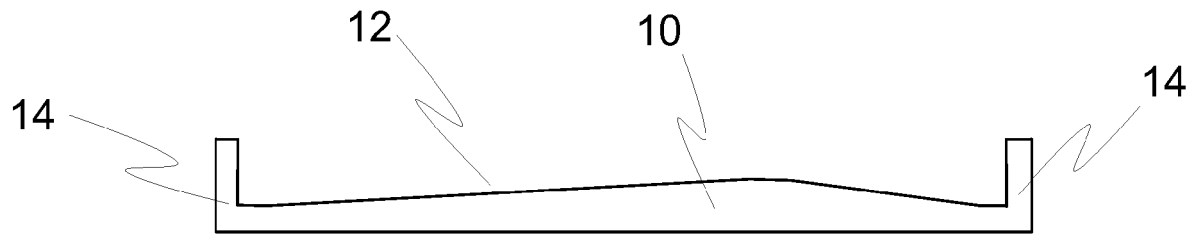


Fig. 1a

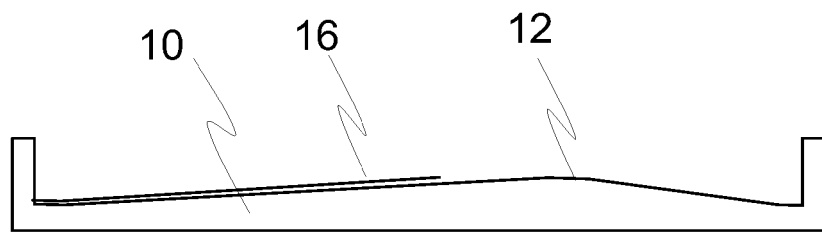


Fig. 1b

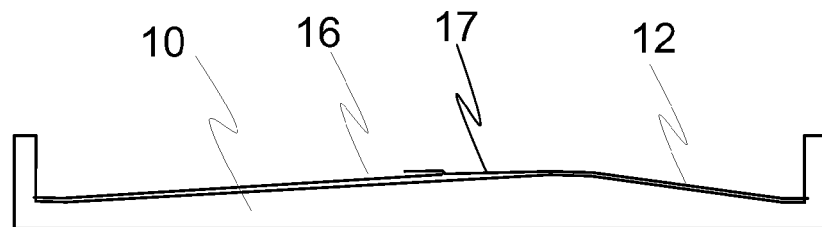


Fig. 1c

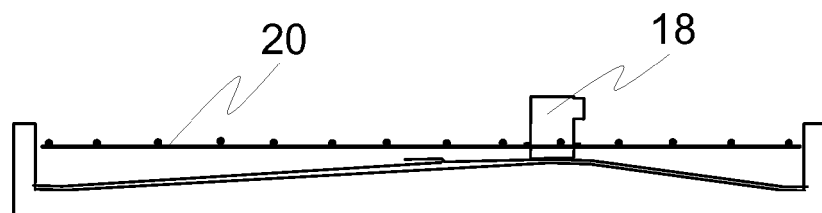


Fig. 1d



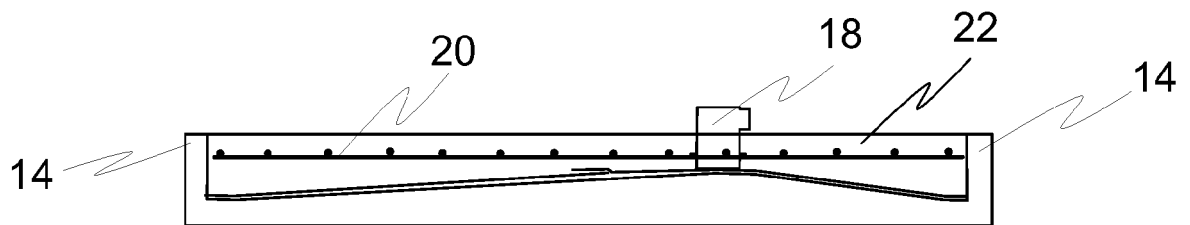


Fig. 1e

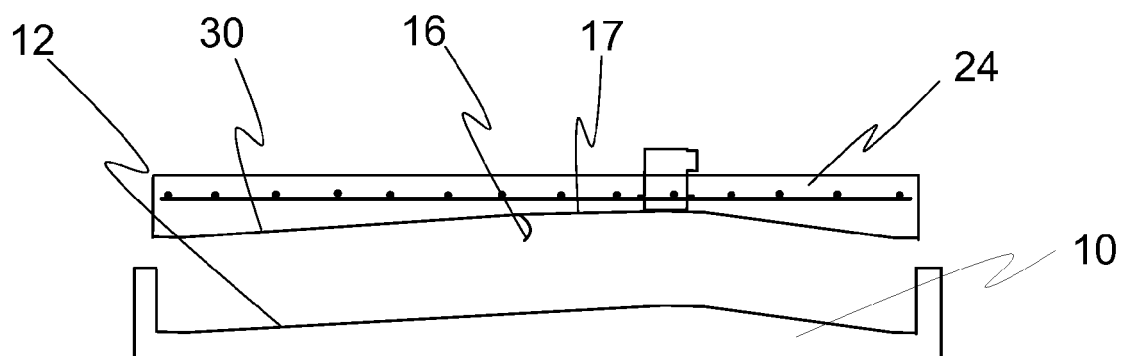


Fig. 1f

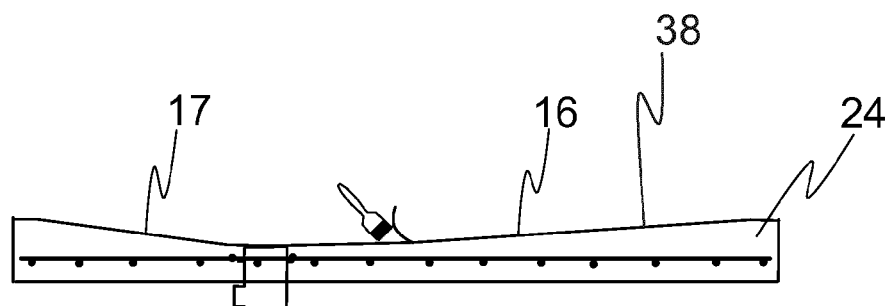


Fig. 1g

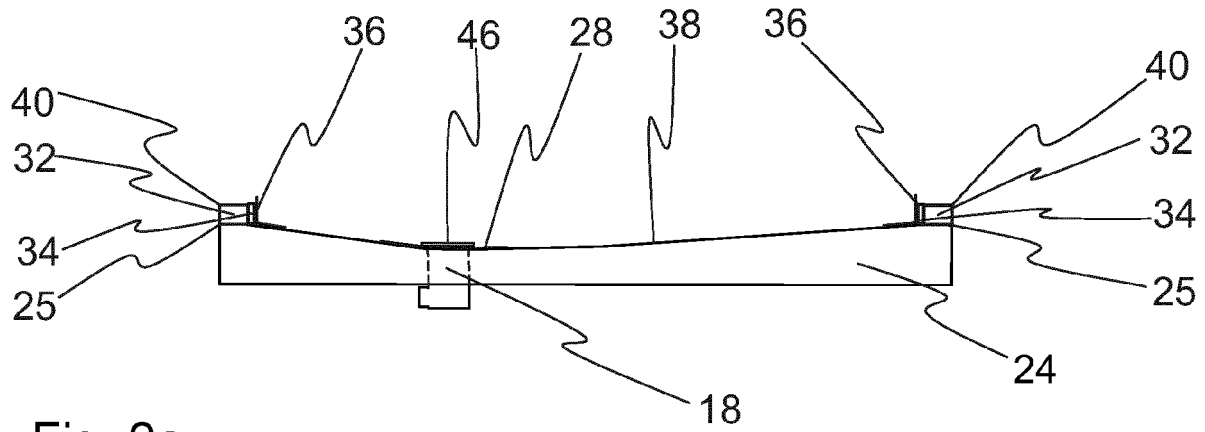


Fig. 2a

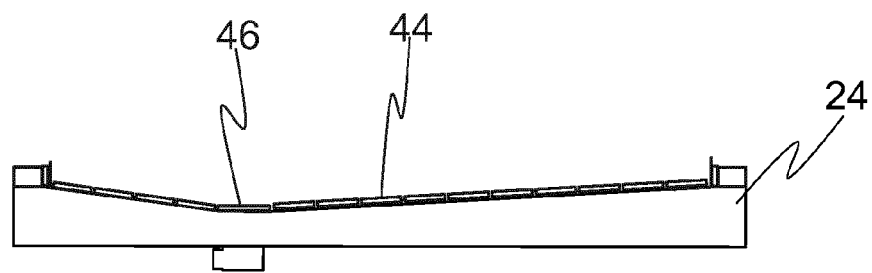


Fig. 2b

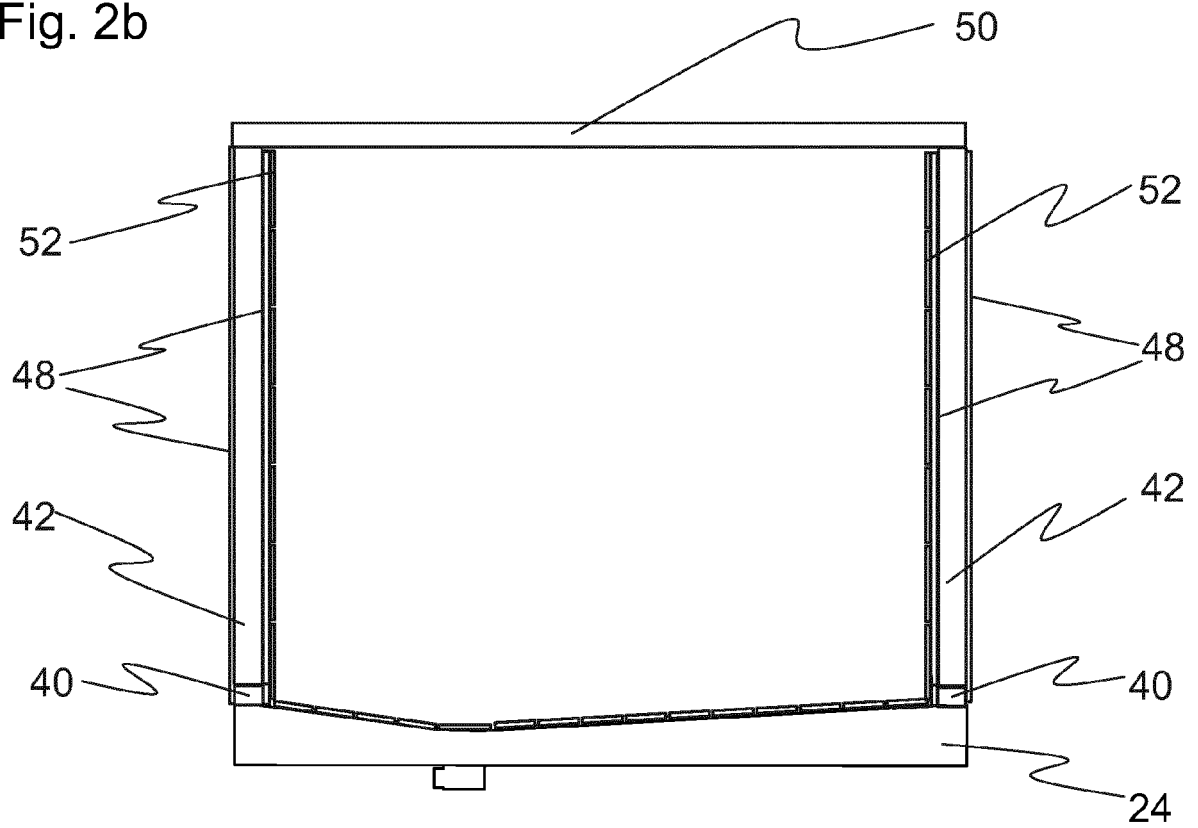
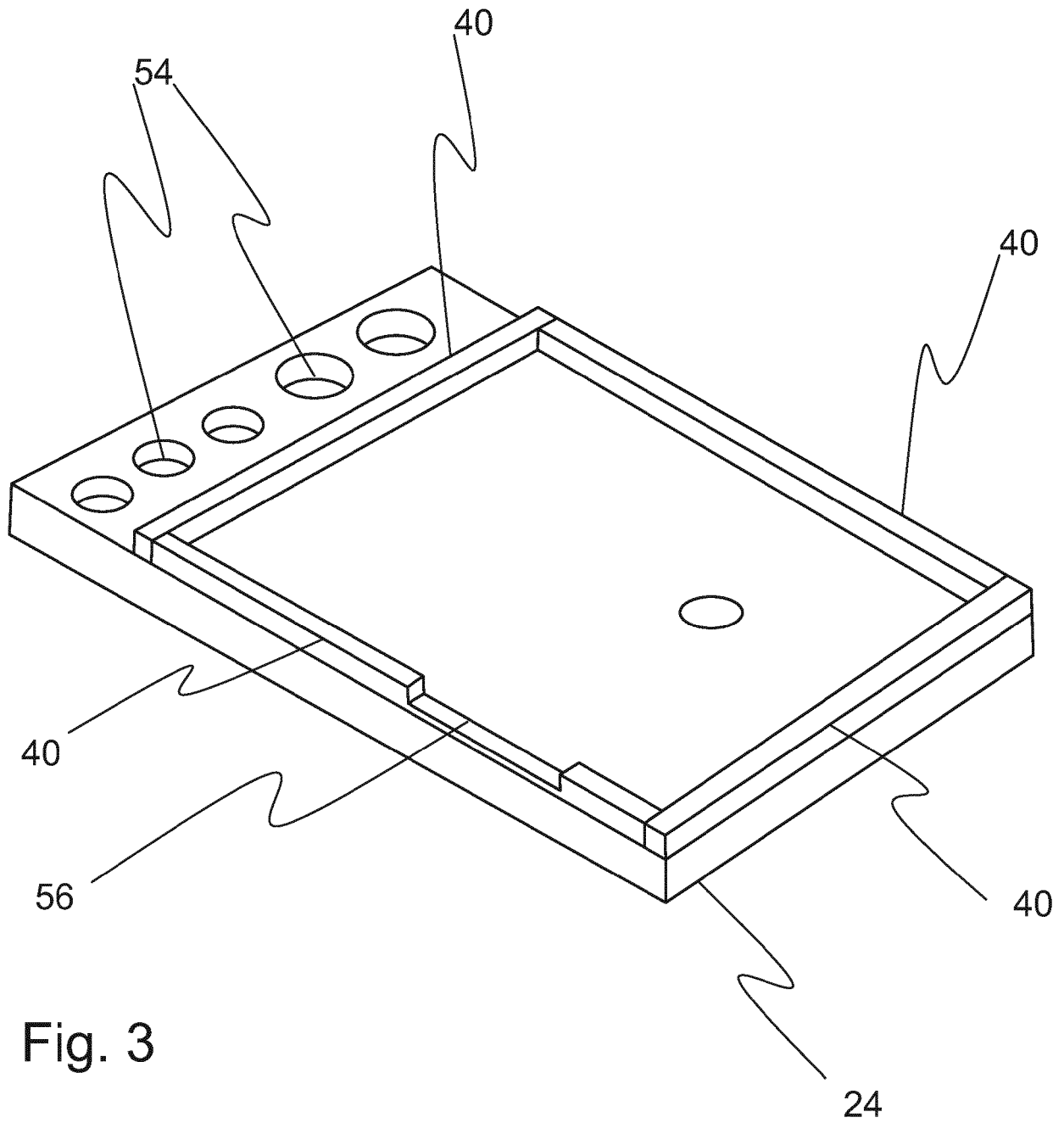


Fig. 2c





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The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>13 July 2022</b>	Examiner <b>López-García, G</b>
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