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(54) **PREFABRICATED BATHROOM**

(57) A prefabricated bathroom (1) is disclosed, wherein the walls (4,5) and the ceiling (3) have been manufactured by means of box-shaped elements (6), which are closed on the side facing the bathroom and which are open on the side facing away from the bathroom,

wherein the elements on the side facing the bathroom are being covered with gypsum boards (11). Moreover, a method for the manufacture of such a prefabricated bathroom (1) is disclosed.

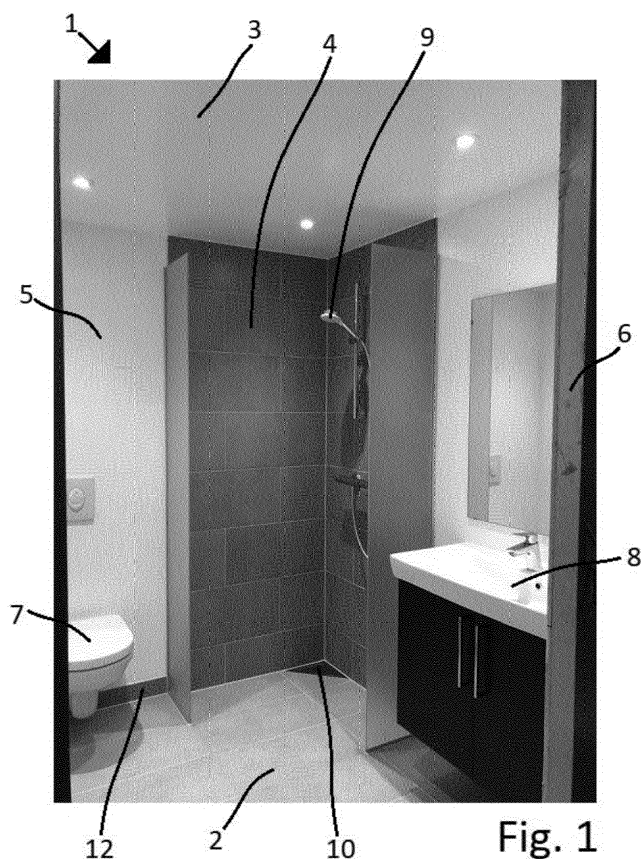


Fig. 1

Description

[0001] The present invention relates to a prefabricated bathroom which has been manufactured by means of box-shaped wall elements, and a method for the manufacture of such a bathroom.

Background of the invention

[0002] In the field of manufacture of prefabricated bathrooms/bath cabins it has been a customary manufacturing method to build walls made of steel cassettes which afterwards are being provided with gypsum boards on the outside and tiles on the inside. The gypsum boards on the outside serves the purpose of stiffening the construction as well as of insulating the bathroom. A bathroom which has been designed in this way is however relatively heavy and the mounting of the inner tile covering is very labor heavy and accordingly expensive to carry out.

Brief description of the invention

[0003] It is an objective of the present invention to provide a bathroom and a method for the manufacture of such a bathroom which overcomes the above-mentioned disadvantages of the prior art within this technical field.

[0004] The prefabricated bathroom according to the invention is suitable for being manufactured at a production site, whereafter the bathroom in almost a completely assembled state can be transported to a building into which the bathroom easily can be arranged. Subsequently, at the site of the building, only sanitary installations and electricity need be coupled to the bathroom.

[0005] The present invention relates to a prefabricated bathroom wherein the walls and the ceiling has been manufactured by means of box-shaped elements, which are closed on the side facing the bathroom and which are open on the side facing away from the bathroom, wherein the elements on the side facing the bathroom are being covered with gypsum boards.

[0006] By applying gypsum boards to the inner surfaces of the bathroom is achieved that these surfaces may be applied with paint. Accordingly, expenses to mounting of tiles can be saved and the weight of the cabin may at the same time be reduced. Using box-shaped elements ensures that all or at least a major part of the installations, inter alia in the form of wires and pipes, may be hidden in walls and ceiling.

[0007] In an embodiment of the invention, the prefabricated bathroom is being provided with a floor, such as a concrete floor.

[0008] In an embodiment of the invention, the floor of the prefabricated bathroom is being covered with a covering, such as tiles or clinker tiles or a covering in the form of a polymer or a composite material, such as vinyl.

[0009] Hereby is achieved a surface of the floor which has an aesthetic appearance, and which moreover is du-

rable and easy to clean.

[0010] In an embodiment of the invention, the prefabricated bathroom comprises a primary bottom frame, wherein the primary bottom frame is configured for supporting the box-shaped elements and optionally also the floor.

[0011] The floor may suitable be manufactured by arranging, within the primary bottom frame, an armament, of e.g. steel, whereafter the inner of the primary bottom frame including this armament, is filled with concrete. After the curing of the concrete a sturdy floor is obtained.

[0012] In an embodiment of the invention, the prefabricated bathroom comprises one or more lifting brackets, such as 2 or more lifting brackets, for example 3 or more lifting brackets, for example 4 or more lifting brackets, such as 5 or more lifting brackets, such as 6 or more lifting brackets.

[0013] Hereby easy transport from the manufacturing site of the bathroom to the site of installation in a building is assured.

[0014] In an embodiment of the invention, the prefabricated bathroom is provided with sanitary installations in the form of one or more of the following types: sink, shower, bathtub, toilet, drain.

[0015] In an embodiment of the invention, the prefabricated bathroom further comprises, in respect of one or more specific types of sanitary installations, a water supply conduit and/or a water drain conduit to/from that specific type of sanitary installation, wherein that water supply conduit and/or water drain conduit extend(s) between that specific type of sanitary installation and that side of one of the box-shaped elements facing away from the interior of the bathroom.

[0016] In these two embodiments it is assured that the prefabricated bathroom will be prefabricated to an optimum degree, which implies that a minimum of installation is required, once the bathroom has been arranged in the desired building.

[0017] In an embodiment of the prefabricated bathroom the gypsum boards comprise fiber gypsum, such as fiber gypsum comprising a compressed composite of gypsum and paper fibers.

[0018] In an embodiment of the prefabricated bathroom according to the invention, the gypsum boards of fiber gypsum comprises a compressed composite of gypsum and paper fibers, wherein the content of paper fibers is 0.5 - 50 % or more, such as 1 - 45 %, for example 2 - 40 %, such as 5 - 35 % for example 10 - 30 %, such as 12 - 25 % or 15 - 20 %.

[0019] These materials have proven beneficial in that these materials can be used as an inner wall of the bathroom without the necessity for doing any filling/fairing prior to painting of these gypsum boards. As the gypsum boards only require painting, optionally including a prior application of felt cloth, a fast and cost-efficient production of a prefabricated bathroom is assured.

[0020] In an embodiment of the invention the bathroom additionally comprises a secondary bottom frame,

wherein said secondary bottom frame extends from one of the box-shaped elements, at a lower part thereof and from the side thereof facing away from the interior of the bathroom, said secondary bottom frame thereby defines a shaft area.

[0021] In this embodiment the secondary bottom frame extends from the primary bottom frame of the prefabricated bathroom at the level thereof.

[0022] As with the primary bottom frame, also the secondary bottom frame may comprise one or more lifting brackets.

[0023] Within the scope of the present invention the term "primary bottom frame" may be construed to mean a bottom frame which essentially is being arranged under the interior of the prefabricated bathroom. Within the scope of the present invention the term "secondary bottom frame" may be construed to mean a bottom frame which in a horizontal plane is arranged in a displaced position in relation to the interior of the prefabricated bathroom.

[0024] In the event that the prefabricated bathroom solely comprises a bottom frame having an extension corresponding to the interior of the bathroom this bottom frame may merely be denoted "bottom frame" without the prefix "primary".

[0025] In an embodiment the secondary bottom frame may have an essentially rectangular shape with an outer width and an outer length, wherein the outer width and the outer length, respectively, independently are having dimensions selected from the range of 40 - 400 cm, such as 50 - 375 cm, for example 75 - 350 cm, such as 100 - 325 cm, for example 125 - 300 cm, such as 150 - 275 cm, such as 175 - 250 cm or 200 - 225 cm.

[0026] Providing the prefabricated bathroom with a secondary bottom frame means that one may define a shaft area immediately on the other side of one of the walls delimiting the interior of the bathroom from its surroundings. Such a shaft area may serve the purpose of making room for the installations for water and sanitary installations which are necessary in order to couple the bathroom to water and sanitary facility installations of a building.

[0027] In an embodiment of the invention the secondary bottom frame of the prefabricated bathroom is being integrated with the primary bottom frame; or the secondary bottom frame is mounted on the primary bottom frame; or the primary bottom frame is mounted on the secondary bottom frame.

[0028] These embodiments represent alternatives of designs of the bottom frame when this comprises a primary bottom frame as well as a secondary bottom frame.

[0029] In an embodiment of the invention the secondary bottom frame of the prefabricated bathroom additionally comprises one or more walls, such as 1, 2 or 3 walls, wherein each of these one or more walls comprises a box-shaped element and wherein each wall is a wall, which is not adjoining the interior of the bathroom.

[0030] In such an embodiment one or more of the walls

of the secondary bottom frame, on the side facing away from the shaft area, may be provided with gypsum boards.

[0031] In these two embodiments the wall or the walls, which is/are being arranged on the secondary bottom frame may make up a wall or walls in the building into which the bathroom is to be installed, in such a way that this wall thereby adjoins another room in the relevant building.

[0032] In an embodiment of the invention the shaft area of the prefabricated bathroom is not being provided with floor or ceiling. Alternatively, the shaft area of the bathroom is being provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of the shaft area is covering the whole horizontal area corresponding to the shaft area. The shaft area of the bathroom may also be provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of the shaft area is covering only a part of the horizontal area corresponding to the shaft area.

[0033] In an embodiment of the prefabricated bathroom of the invention one or more supply conduits and/or drain conduits for water to/from one or more types of sanitary installations is/are being terminated with a termination on that side of that wall of the bathroom facing the shaft area.

[0034] Hereby is assured an easy and fast coupling of the bathroom to the existing water installations in a building, in a situation where the bathroom has been installed in a building.

[0035] In an embodiment of the invention the elements are made up of steel cassettes.

[0036] In an embodiment of the invention the steel cassettes are being made from galvanized steel plates, preferably hot-dip galvanized steel plates.

[0037] In an embodiment of the invention the material thickness of the steel cassettes is between 0.6 mm and 3 mm, preferably between 1 mm and 2 mm.

[0038] Such steel cassettes are beneficial due to a very suitable combination of low weight and high strength, especially after mounting of the gypsum boards.

[0039] In an embodiment of the invention the height of the steel cassettes is between 1.8 m and 2.5 meter, preferably between 2.1 m and 2.3 m.

[0040] In an embodiment of the invention the width of the steel cassettes is between 0.1 m and 0.8 m, preferably between 0.16 m and 0.6 m.

[0041] In an embodiment of the invention the thickness of the steel cassettes is between 3 cm and 7 cm, preferably between 5.5 cm and 6 cm.

[0042] Use of steel cassettes having these dimensions is suitable for constructing bathrooms having a suitable floor area and height position of the ceiling. The steel cassettes may beneficially be assembled by the so-called clinching technique in which a point on the plates are squeezed out at a pressure of 30 kilonewton (kN) or more and thereby creates a permanent joint.

[0043] In an embodiment of the invention the gypsum boards are being fully glued to the elements.

[0044] Within the scope of the present invention the term fully gluing may be interpreted in the way where a gypsum board on the entirety of one of its surfaces is applied with glue, whereafter the elements via this applied glue are glued to the gypsum boards.

[0045] In an embodiment of the invention the thickness of the gypsum boards is between 10 mm and 20 mm.

[0046] In an embodiment of the invention the gypsum boards have been cut in such a way that a single gypsum board will cover the whole of an internal surface in the bathroom, such as a whole side wall or a ceiling.

[0047] The use of fully glued gypsum boards, each covering the whole of an internal surface in the bathroom means that it is possible to apply paint directly onto the gypsum board without any prior filling/fairing.

[0048] In one aspect the invention relates to a method for the manufacture of a bathroom as described above, wherein said method comprises the steps of:

- manufacture of a tile covered floor
- cutting a gypsum board in such a way that it exactly fits so as to cover the whole of an internal surface of a wall in the desired bathroom
- fully gluing the gypsum board, for example by letting it pass a gluing machine
- arranging box-shaped elements with their closed side into the still wet glue
- mounting the wall manufactured in this way onto the finished floor
- repeating the previous four steps until all four walls have been mounted on the floor
- cutting a gypsum board in such a way that it exactly fits so as to cover the internal ceiling of the desired bathroom
- fully gluing the gypsum board, for example by letting it pass through a gluing machine
- arranging box-shaped elements with their closed side into the still wet glue
- mounting the ceiling manufactured in this way onto the previously manufactured walls
- mounting of tiles on selected parts of the internal walls in the bathroom, for example in a shower compartment
- painting of the rest of the parts of the walls and installing sanitary installations.

[0049] In this way it is possible easily and fast to man-

ufacture a prefabricated bathroom having lower weight and implying lower costs, compared to other prior art bathrooms.

[0050] In an embodiment the painting of the inner walls are performed without prior filling/fairing, however, optionally with prior mounting of felt cloth on the wall(s).

[0051] In an embodiment of the method the manufactured bathroom comprises a secondary bottom frame, and the method furthermore comprises, regarding this secondary bottom frame, the following steps:

- cutting a gypsum board in such a way that it exactly fits so as to cover the whole of a wall in the desired bathroom
- fully gluing the gypsum board, for example by letting it pass through a gluing machine
- arranging box-shaped elements with their closed side into the still wet glue
- mounting the wall manufactured in this way onto the secondary bottom frame
- repeating the previous four steps until the desired number of walls have been mounted on the secondary bottom frame.

[0052] In one aspect the invention additionally relates to the use of a prefabricated bathroom according to the present invention as a construction element in the construction of a building.

The drawings

[0053] In the following an embodiment of the invention is described in more detail with reference to the drawings, wherein

- Fig. 1 shows a view into a bathroom according to an embodiment of the invention,
- Fig. 2 shows the same bathroom as seen from the outside,
- Fig. 3 is a schematic drawing of the bathroom without ceiling as seen from above
- Fig. 4a is a schematic drawing of a completed floor to the bathroom, as seen from above,
- Fig. 4b is a schematic drawing of the completed floor, as seen from a first side,
- Fig. 4c is a schematic drawing of a cross-section of the completed floor,
- Fig. 4d is a schematic drawing of the completed floor, as seen from another side,
- Fig. 5 shows a hidden installation in a steel cassette of a bathroom according to an embodiment of the invention,
- Fig. 6 shows another, partly hidden installation in a steel cassette of the bathroom,

- Fig. 7 is a schematic drawing of a joint between floor and wall in a bathroom according to an embodiment of the invention,
- Fig. 8 is a schematic drawing of a joint between two walls of a bathroom according to an embodiment of the invention, and
- Fig. 9 shows in a perspective view an embodiment of a bathroom according to the invention, comprising a primary bottom frame and a secondary bottom frame which defines a shaft area.

Detailed description of the invention

[0054] Fig. 1 show a view into a prefabricated bathroom 1 according to an embodiment of the invention. The bathroom 1 has been assembled by arranging the four walls 4,5 on the previously manufactured tile covered floor 2 having a floor drain 10, whereafter the ceiling 3 has been mounted.

[0055] Subsequently, the manufacture of the bathroom has been finished by painting and mounting of wall tiles 12 and sanitary installations in the form of for example toilet 7, sink 8 and shower 9. As seen, it is only the shower compartment which has tiles mounted on the wall 4. In the rest of the bathroom the walls 5 have been painted, which is considerably faster and less demanding in terms of material consumption, compared to mounting of tiles.

[0056] As it appears from the right side of the door opening, through which the bathroom is viewed, the walls have been made up of steel cassettes 6.

[0057] Fig. 2 shows the same bathroom 1 as viewed from the outside. Here the box-shaped steel cassettes 6, from which the wall 4,5 of the bathroom 1 are made up, are clearly seen. Furthermore, it is seen how the floor 2 is surrounded by a bottom frame in the form of a primary bottom frame 16 having a door opening 14 and lifting brackets 15, and that transportation legs 18, onto which the bottom frame 16 of the bathroom 1 is supported, have been arranged under each corner of the bathroom 1.

[0058] Fig. 3 is a schematic drawing of the bathroom 1 as view from above and without ceiling 3. Here, it is seen how the steel cassettes 6 on the inner side are covered with gypsum boards 11 on top of which, tiles 12 have been mounted at certain places. Moreover, it is seen how the toilet 7 has been partly hidden in the void in that steel cassette into which it is installed.

[0059] Fig. 4a is a schematic drawing of a finished floor 2 to the bathroom 1 as viewed from above. The floor 2 is covered with tiles 12 and the hatching of the floor 2 in the shower compartment denotes that the floor in this area may be sunk in relation to the remainder of the floor 2. This is also shown in Fig. 4c illustrating a cross-section of the floor 2 and the underlying concrete support 19. Fig. 4b and 4c illustrate the bottom frame 16 around the floor 2 as viewed from two different sides.

[0060] Fig. 5 and 6 show how installations such as for example a shower connection 17 and the flush tank of the toilet 7 and supply conduits and drain conduits can

be fully or partly hidden to a user in the voids in the steel cassettes 6 of the bathroom 1. When the bathroom has been installed in a building, the open side of the steel cassettes will be closed off, using gypsum boards 11 or otherwise, so that these installations will be fully hidden.

[0061] In Fig. 7, which illustrates a joint between the floor 2 and a painted wall 5 in a bathroom 1 according to an embodiment of the invention, it is seen how the steel cassettes 6 with the glued-on gypsum board 11 is arranged on top of the bottom frame 16. Moreover, it is illustrated how the transition between the bottom frame 16 and the gypsum board 11 in areas of the bathroom 1, in respect of which the wall is not covered with tiles 4, but has been painted 5, may be covered with a low tile cover along the floor.

[0062] Fig. 8 illustrates a joint between two tile covered walls 4 in a bathroom 1 according to an embodiment of the invention. Here it is clearly seen how the tile cover 12 has been mounted on top of the gypsum board 11, which in turn has been mounted on top of the steel cassettes 6.

[0063] Fig. 9 illustrates in a perspective view an embodiment of a prefabricated bathroom according to the invention comprising a primary bottom frame along with a secondary bottom frame which defines a shaft area, wherein the bathroom is viewed from the outside.

[0064] It is seen in Fig. 9 that the inner of the bathroom 1 is surrounded by ceiling 3 and walls 5,6. The walls 5,6 are supported by a primary bottom frame 16, which also supports a floor (not seen in Fig. 9).

[0065] At the nearest wall 5,6 it is seen that a secondary bottom frame 19 extends from the primary bottom frame 16. This secondary bottom frame defines a shaft area 20.

[0066] It is seen that supply conduits 22 and drain conduits 22 for water to and from various types of sanitary installations 21, being present in the interior of the bathroom, have been led to that side of the wall 4,5 of the bathroom which faces the shaft area 20 and that these supply conduits 22 and drain conduits 22 are terminated by a termination 23.

[0067] The embodiment illustrated in Fig. 9 accordingly represents a bathroom which has been almost optimally prefabricated in the sense that this bathroom is ready for being transported to a construction site, where it by means of the lifting brackets 15 in the bottom frames 16 and 19 may be lifted into the interior of a building, into which the bathroom is to be functional. As all installations in the form of supply conduits 22 and drain conduits 22 for water have been led from the interior of the bathroom to that side of the nearest wall 5,6 facing the shaft area 20, the bathroom 1 can be easily connected to the supply pipes and drain pipes being present in the building.

[0068] The shaft area 20 accordingly may function as an installation room for the bathroom. Moreover, it can be assured that the respective shaft areas 20 in respect of different bathrooms 1 being arranged on top of each other in different floors in a building will define a shaft in the building in such a way that even when the construction of the building has been finished, it is possible to

access the water installations, that is the water supply conduits 22 and the water drain conduits 22 belonging to the bathroom of each floor.

[0069] The shaft area 20 of each bathroom may either be provided without floor and ceiling; or the shaft area 20 of each bathroom may be provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of the shaft area is covering the whole horizontal area corresponding to the shaft area; or the shaft area 20 of each bathroom may be provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of this shaft area is covering only a part of the horizontal area corresponding to the shaft area 20.

[0070] Finally, it is seen in Fig. 9 that a wall 24 comprising a box-shaped element is arranged on the secondary bottom frame 19. This wall 24 is, on that side facing away from the shaft area 20, covered with one or more gypsum boards 11 and hence may function as a wall in the finished building so that this wall will be facing another room in the building.

Reference numerals

[0071]

1. Bathroom
2. Floor
3. Ceiling
4. Wall covered with tiles
5. Painted wall
6. Steel cassette
7. Toilet
8. Sink
9. Shower
10. Floor drain
11. Gypsum board
12. Covering of tiles
13. Sunk tiled floor
14. Door opening
15. Lifting bracket
16. Bottom frame
17. Connection for shower
18. Transportation leg
19. Secondary bottom frame
20. Shaft area
21. Sanitary installation
22. Supply conduit/drain conduit for water
23. Termination of supply conduit/ drain conduit for water
24. Wall

Claims

1. Prefabricated bathroom (1) wherein the walls (4,5) and the ceiling (3) has been manufactured by means of box-shaped elements (6), which are closed on the side facing the bathroom and which are open on the

side facing away from the bathroom, wherein the elements on the side facing the bathroom are being covered with gypsum boards (1).

2. Prefabricated bathroom according to claim 1, wherein the prefabricated bathroom is being provided with a floor (2), such as a concrete floor.
3. Prefabricated bathroom according to claim 1 or 2, wherein the prefabricated bathroom comprises a primary bottom frame (16), wherein the primary bottom frame is configured for supporting the box-shaped elements (6) and optionally also the floor (2).
4. Prefabricated bathroom according to claim 3, wherein the primary bottom frame (16) comprises one or more lifting brackets (15), such as 2 or more lifting brackets, for example 3 or more lifting brackets, for example 4 or more lifting brackets, such as 5 or more lifting brackets, such as 6 or more lifting brackets.
5. Prefabricated bathroom according to any of the preceding claims, wherein the prefabricated bathroom is provided with sanitary installations (21) in the form of one or more of the following types: sink (8), shower (9), bathtub, toilet (7), drain (10).
6. Prefabricated bathroom according to claim 5 further comprising, in respect of one or more specific types of sanitary installations (21), a water supply conduit (22) and/or a water drain conduit (22) to/from that specific type of sanitary installation, wherein that water supply conduit and/or water drain conduit extend(s) between that specific type of sanitary installation (21) and that side of one of the box-shaped elements (6) facing away from the interior of the bathroom.
7. Prefabricated bathroom according to any of the preceding claims, wherein the gypsum boards (11) comprises fiber gypsum, such as fiber gypsum comprising a compressed composite of gypsum and paper fibers; wherein the content of paper fibers optionally is 0.5 - 50 % or more, such as 1 - 45 %, for example 2 - 40 %, such as 5 - 35 % for example 10 - 30 %, such as 12 - 25 % or 15 - 20 %; and/or wherein the thickness of the gypsum boards is between 10 mm and 20 mm.
8. Prefabricated bathroom according to any of the preceding claims, wherein the bathroom additionally comprises a secondary bottom frame (19), wherein said secondary bottom frame extends from one of the box-shaped elements (6), at a lower part thereof and from the side thereof facing away from the interior of the bathroom, said secondary bottom frame (19) thereby defines a shaft area (20), wherein said

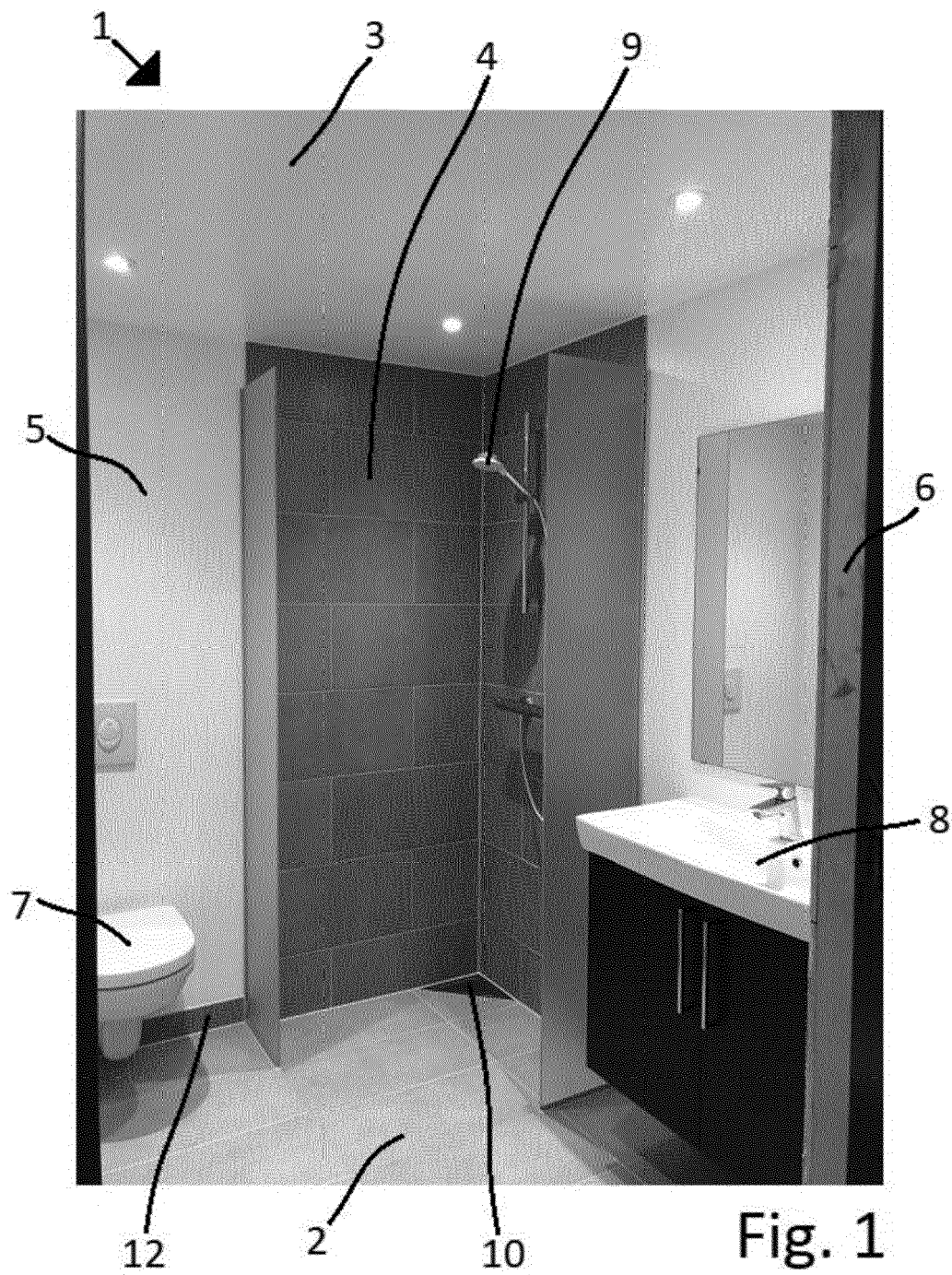
secondary bottom frame (19) extends from the primary bottom frame (16) of the prefabricated bathroom and is being arranged at the level thereof.

9. Prefabricated bathroom according to claim 8, wherein said secondary bottom frame additionally comprises one or more walls (24), such as 1, 2 or 3 walls (24), wherein each of these one or more walls comprises a box-shaped element (6) and wherein each wall (24) is a wall, which is not adjoining the interior of the bathroom. 5
10. Prefabricated bathroom according to claim 9, wherein one or more of the walls (24) of the secondary bottom frame, on that side facing away from the shaft area, is being covered with one or more gypsum boards (11). 10
11. Prefabricated bathroom according to any of the claims 8 - 10, wherein the shaft area (20) of the bathroom is not being provided with floor or ceiling; or wherein the shaft area (20) of the bathroom is being provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of the shaft area is covering the whole horizontal area corresponding to the shaft area; or wherein the shaft area (20) of the bathroom is being provided with a floor and/or a ceiling, wherein the floor and/or the ceiling of the shaft area is covering only a part of the horizontal area corresponding to the shaft area (20). 15
12. Prefabricated bathroom according to any of the claims 8 - 11, wherein one or more supply conduits (22) and/or drain conduits (22) for water to/from one or more types of sanitary installations (21) is/are being terminated with a termination (23) on that side of the walls (4,5) of the bathroom facing the shaft area (20). 20
13. Prefabricated bathroom according to any of the preceding claims, wherein the gypsum boards are fully glued to the elements. 25
14. Prefabricated bathroom according to any of the preceding claims, wherein the gypsum boards have been cut in such a way that a single gypsum board covers the whole of an internal surface in the bathroom, for example the whole of a wall (4,5) or of a ceiling (3). 30
15. A method for the manufacture of a bathroom (1) according to any of the preceding claims, wherein said method comprises the steps of: 35
 - manufacture of a tile covered floor (2) 40
 - cutting a gypsum board (11) in such a way that it exactly fits so as to cover the whole of an internal surface of a wall (4,5) in the desired bath-

room

- fully gluing the gypsum board, for example by letting it pass through a gluing machine
- arranging box-shaped elements (6) with their closed side into the still wet glue
- mounting the wall manufactured in this way onto the finished floor
- repeating the previous four steps until all four walls have been mounted on the floor
- cutting a gypsum board (11) in such a way that it exactly fits so as to cover the internal ceiling (3) of the desired bathroom
- fully gluing the gypsum board, for example by letting it pass through a gluing machine
- arranging box-shaped elements with their closed side into the still wet glue
- mounting the ceiling manufactured in this way onto the previously manufactured walls
- optionally mounting of tiles on selected parts of the internal walls (4) in the bathroom, for example in a shower compartment
- painting of the rest of the parts of the walls (5) and installation of sanitary installations (21, 7 - 10).

16. A method according to claim 15, wherein the painting of the internal walls are taking place without any previous filling/fairing, however optionally with prior mounting of felt cloth on the wall(s).



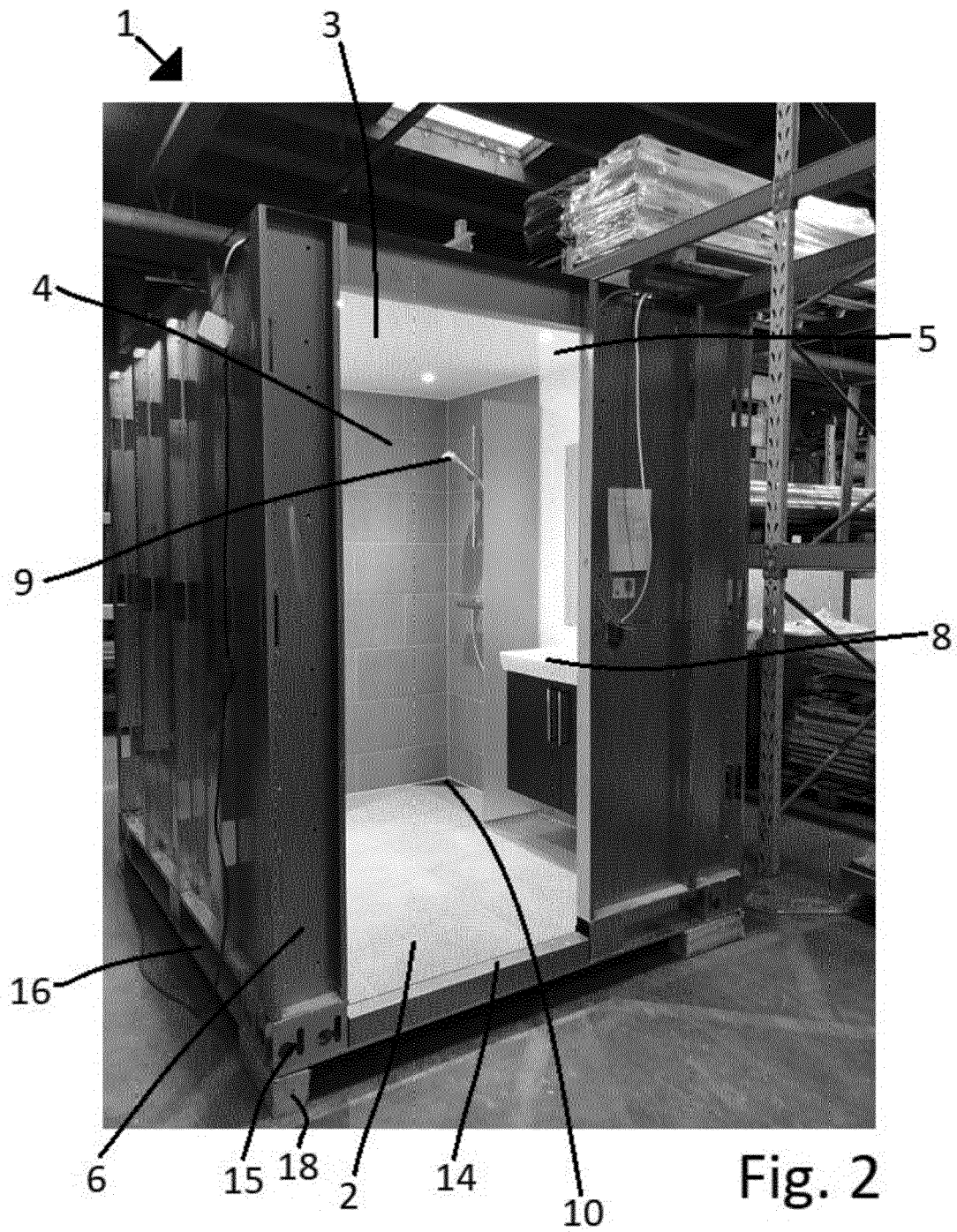


Fig. 2

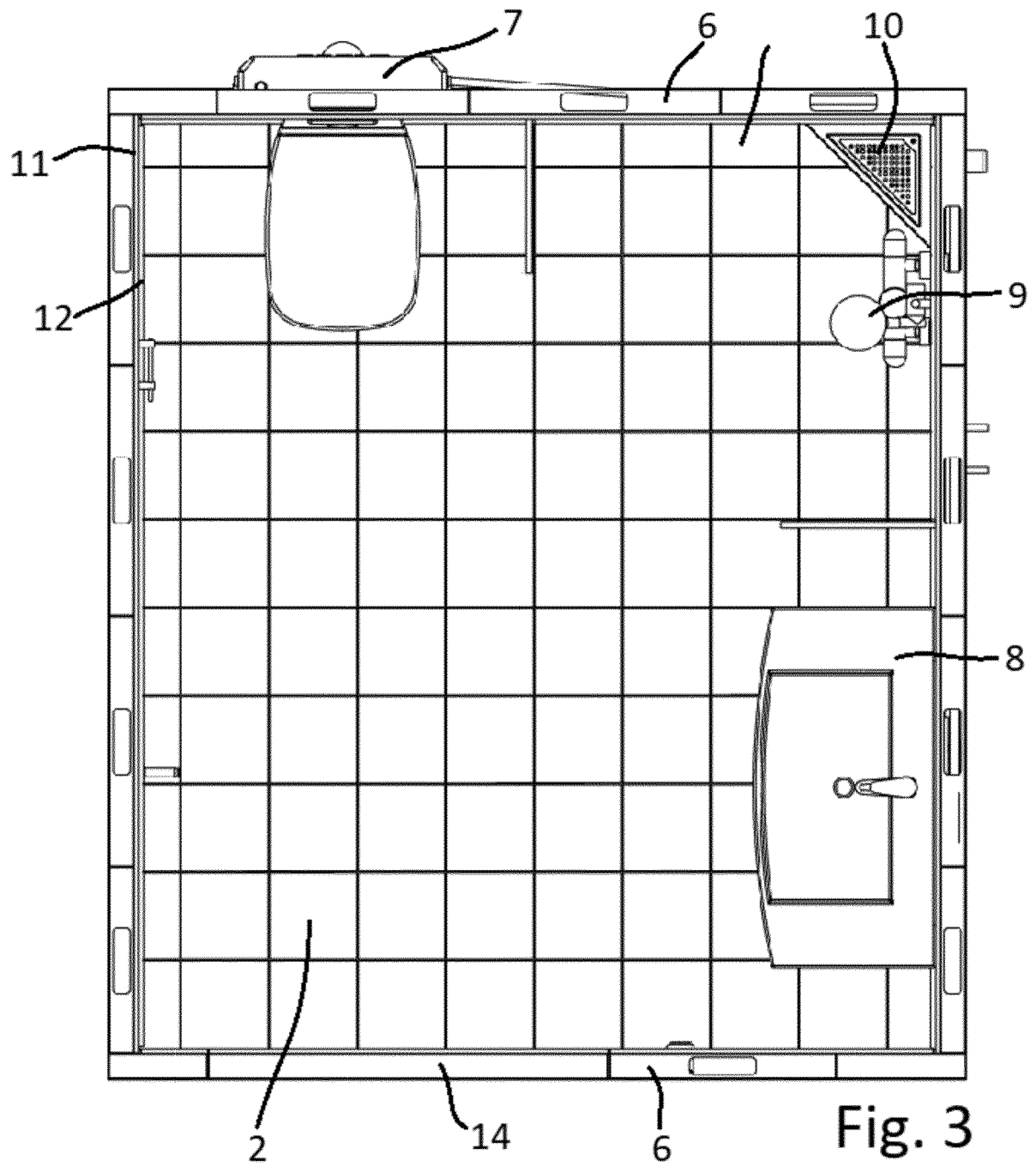
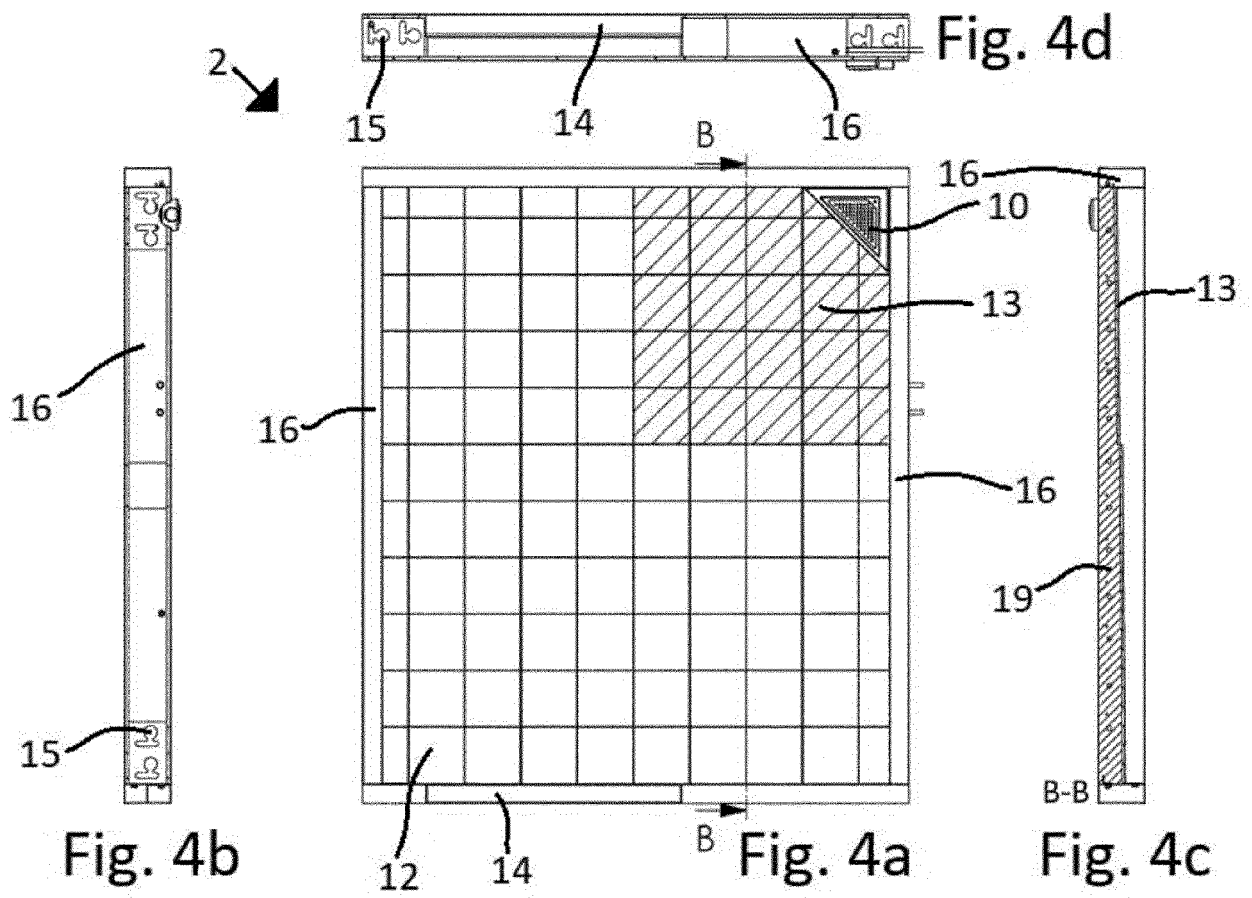
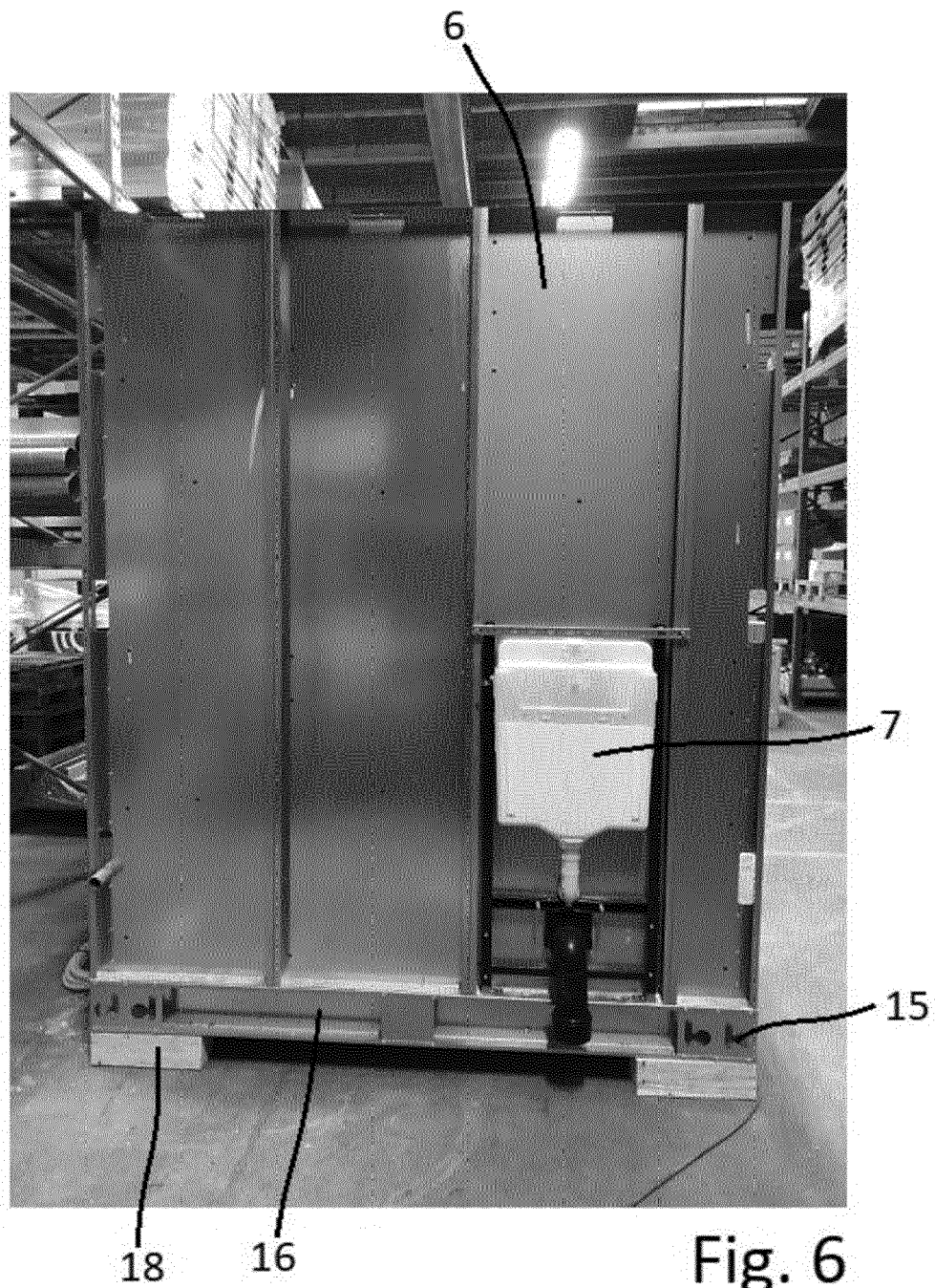


Fig. 3







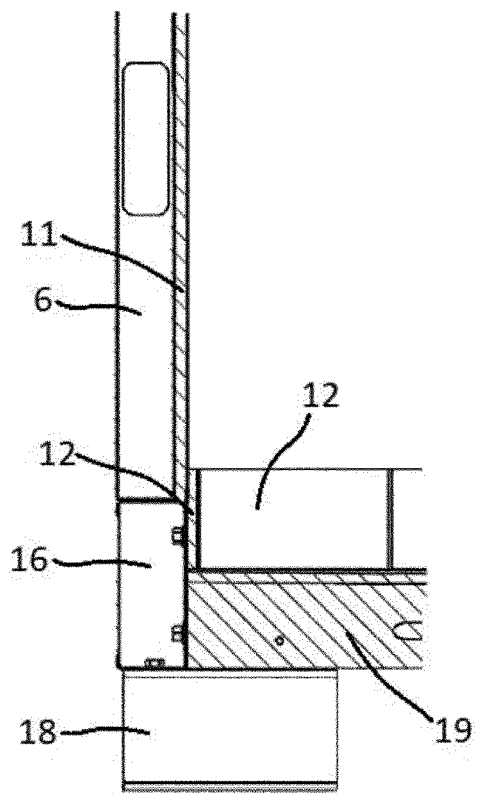


Fig. 7

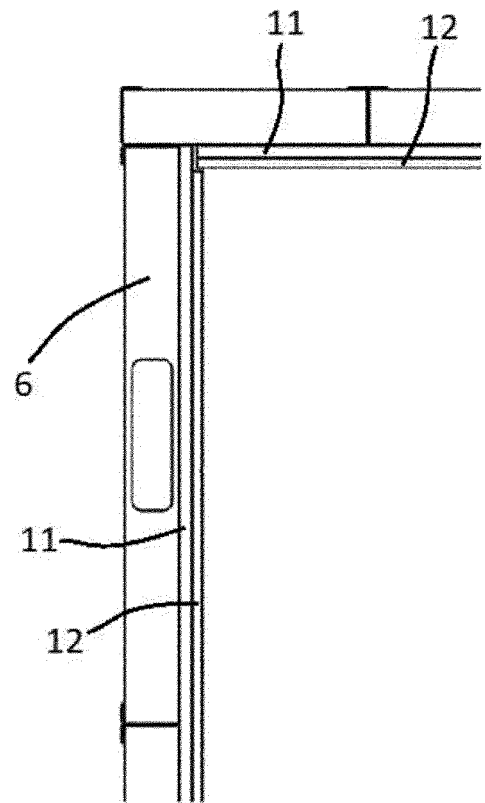
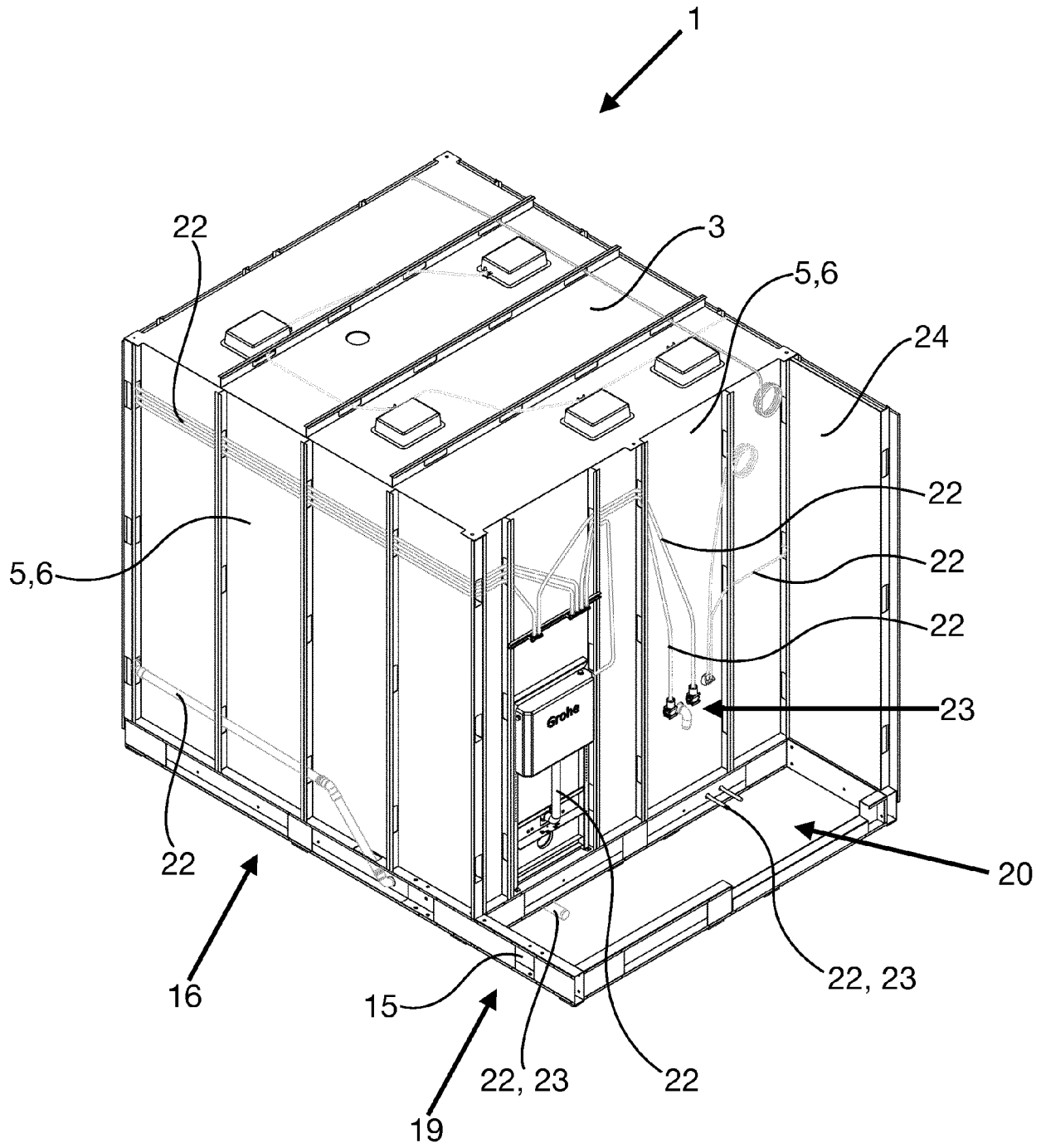


Fig. 8





EUROPEAN SEARCH REPORT

 Application Number
 EP 19 15 6402

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2013/086849 A1 (CLOUSER JONATHAN [US] ET AL) 11 April 2013 (2013-04-11) * paragraph [0007] - paragraph [0045]; figures 1-11 *	1-16	INV. E04B1/348
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			TECHNICAL FIELDS SEARCHED (IPC)
			E04B E04C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 June 2019	Examiner Dieterle, Sibille
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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