



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.06.2022 Bulletin 2022/22

(51) International Patent Classification (IPC):
E04B 7/22 (2006.01) **E04D 3/35** (2006.01)
E04D 13/16 (2006.01) **E04C 2/292** (2006.01)
E04D 13/072 (2006.01)

(21) Application number: **21210273.5**

(22) Date of filing: **24.11.2021**

(52) Cooperative Patent Classification (CPC):
E04B 7/22; E04D 3/352; E04D 13/1693;
E04C 2/292; E04D 13/0722

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **30.11.2020 BE 202005863**

(54) **PANEL AND KIT FOR FORMING A ROOF ON A BEARING STRUCTURE AND A METHOD FOR MAKING A ROOF ON A BEARING STRUCTURE USING A KIT**

(57) Panel (1) for forming a roof (28) on a bearing structure (2) or the like, characterised in that the panel (1) comprises a base plate 3 and possibly a bottom plate 4 and possibly a top plate (5), whereby the panel (1) is made slopingly such that water drains off and the base plate (3) is made from a heat insulating material and whereby the bottom plate (4) and/or the top plate (5) are made from a strong and/or stable material, and whereby

the bottom plate (4) is made rectangularly with three upstanding edges (8a, 8b, 8c) and a free edge (8d) without upstanding edge, whereby the bottom plate (4) in the longitudinal direction (A-A'), which is defined by two parallel upstanding edges (8a,8c), is shorter than the longitudinal (A-A') of the base plate (3) to which it is or can be detachably attached.

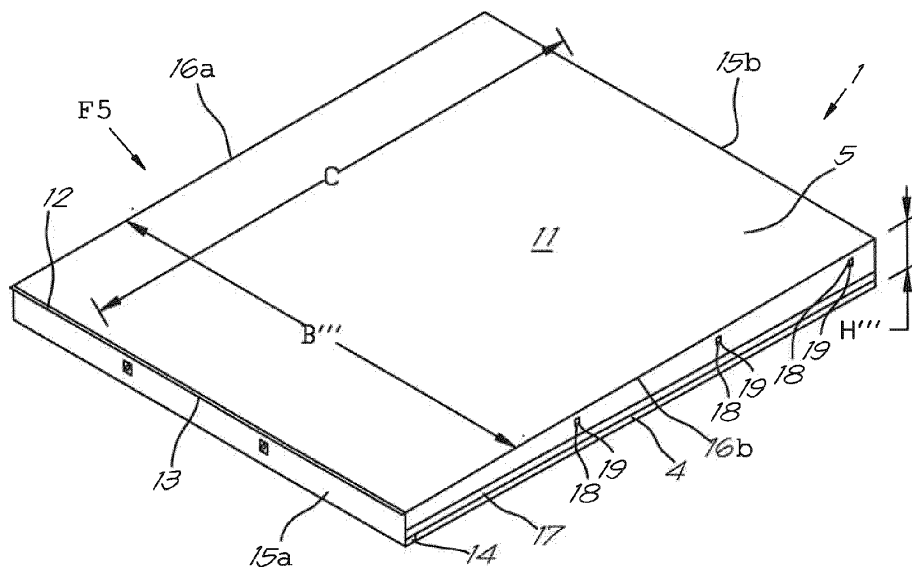


Fig. 4

Description

[0001] The present invention relates to a panel.

[0002] More specifically the invention relates to a panel for forming a roof on a bearing structure or the like.

[0003] Various panels intended for realising a roof on a bearing structure such as a veranda or a carport or the like are already known.

[0004] The known roofs for a bearing structure such as a veranda are made of wooden beams, plasterboard, insulation, "Oriented Strand Boards" (OSB) and Ethylene Propylene Diene Monomer.

[0005] A disadvantage of this is that such construction is also very heavy and it requires a lot of time for making the roof.

[0006] For making a bearing structure with roof, such as a veranda, prior to erecting the veranda, excavation work needs to be carried out whereby a hole is dug, after which a foundation in the form of a thick layer of concrete, about 70 to 80 cm in thickness, is poured in said hole. A disadvantage of this is that the layer of concrete must harden at least 2 to 3 weeks before the bearing structure and the roof can be erected.

[0007] Typically, a concrete slab is applied on top of said concrete foundation with a thickness of 10 to 15cm and on said concrete slab bluestone is applied to prevent water from seeping in.

[0008] Such bluestone is not only heavy, but also very expensive.

[0009] In the event a user wants to replace or change his/her veranda the old veranda needs to be completely demolished and a completely new veranda needs to be erected.

[0010] Additionally, if the foundations are not strong enough or need to be replaced for other reasons, then too the veranda needs to be demolished and the foundations need to be dug out and replaced.

[0011] This is not only very expensive and very time-consuming, but also very strenuous for a person skilled in the art.

[0012] The purpose of the present invention is to provide a solution to one of the aforementioned and other disadvantages.

[0013] To this end the invention aims at a panel for forming a roof on a bearing structure or the like, whereby the panel comprises a base plate and a bottom plate and a top plate, whereby the panel is made slopingly such that the water drains off and the base plate is made from a heat insulating material and whereby the bottom plate or the top plate is made from a strong and/or stable material, and whereby the bottom plate is made rectangularly with three upstanding edges and a free edge without upstanding edge, whereby the bottom plate in the longitudinal direction, which is defined by two parallel upstanding edges, is shorter than the longitudinal of the base plate to which it is or can be detachably attached.

[0014] An advantage of this is that such panel is relatively easy to handle.

[0015] In a preferred embodiment the base plate is made of polyisocyanurate.

[0016] An advantage of this is that the base plate is strongly insulating and fire safe and has a high dimensional stability.

[0017] In addition the panel is relatively light such that it is relatively simple to transport and assemble.

[0018] This offers the advantage that people assembling the panel can move the panel in the correct position without carrying out measurements such that a lot of time can be saved.

[0019] The underside of the panel forms the ceiling of the roof and is preferably made paintable.

[0020] An advantage of this is that the ceiling is simple to finish and can be adapted to the customer's wishes.

[0021] A panel according to the invention is made of relatively affordable material that is freely available on the market, which offers an economic advantage.

[0022] The invention also relates to a kit for forming a roof on a bearing structure or the like, whereby the kit comprises a panel and at least one profile for attaching a panel on or to the bearing structure, whereby the profile is provided with a case with on one side a groove for mounting a positioning slat and an open chamber on the opposite side for mounting cabling.

[0023] On the side facing away from the wall, the profile can be provided with means to mount a cover slat, said cover slat being intended to at least seal the open chamber of the profile.

[0024] Preferably, said positioning slat is provided with one or more positioning pegs on at least one end which fit in the positioning openings of the panel.

[0025] An advantage of this is that the panel can be mounted relatively simply, whereby the panel can be mounted relatively quickly in the correct position.

[0026] Another advantage is that it is clearly visible for a user of the panel how the panel needs to be assembled, thus strongly reducing the risk of incorrect assembly.

[0027] Preferably, the panel is provided with one or more positioning openings and the bearing structure is provided with a positioning peg such that the panel can be mounted directly in the correct position on the bearing structure.

[0028] The aforementioned kit is thus a modular system that can be assembled and disassembled relatively simply, the dimensions of which may vary based on the number of panels.

[0029] The aforementioned kit can be completely assembled in a couple of hours to 1 to 2 working days, whereby only two people are needed to assemble the kit.

[0030] In addition the invention also relates to a method for making a roof on a bearing structure using a kit, whereby the method comprises the following steps:

- mounting the profile against a wall or a bearing structure at the desired height;
- possibly mounting a frame and/or beams and/or partitions and/or the like at a distance from the wall or

- bearing structure;
- mounting a positioning slat in the associated groove in the profile and on the frame and/or beams and/or partitions and/or the like parallel with the profile;
- mounting one panel on the positioning slats with the positioning openings fittingly on the positioning pegs of the positioning slats;
- mounting a next panel against the mounted panel whereby the fasteners of the one panel are fittingly mounted to the other panel;
- mounting extra panels as aforementioned until the positioning slats are covered;
- attaching the gutter by snapping the pegs into the receivers of the panel.

[0031] Such method offers at least the same advantages as the panel and the kit.

[0032] With the intention of better showing the characteristics of the invention, a few preferred embodiments of a panel and a kit according to the invention are described hereinafter by way of an example, without any limiting nature, with reference to the accompanying drawings, wherein:

figure 1 schematically shows a perspective view of a base plate of a panel according to the invention;
 figure 2 schematically shows a perspective view of a bottom plate of a panel according to the invention;
 figure 3 schematically shows a perspective view of a top plate of a panel according to the invention;
 figure 4 schematically shows a perspective view of a panel comprising a base plate, a bottom plate and a top plate according to figures 1 to 3;
 figure 5 shows figure 4 according to arrow F5;
 figure 6 shows the section indicated in figure 5 by F6 on a larger scale.
 figure 7 shows a bottom view according to arrow F7 in figure 5;
 figure 8 shows an alternative of figure 7;
 figure 9 shows a section of figure 4 with a gutter to be mounted;
 figure 10 shows a profile with a positioning slat of a kit according to the invention;
 figure 11 shows an alternative embodiment of figure 10;
 figure 12 shows an alternative embodiment of figure 11;
 figures 13 and 15 show consecutive steps for the method according to the invention;
 figures 14 and 15 show an alternative method according to the invention;
 figure 16 shows a cross-section according to line XVI-XVI in figure 14;
 figure 17 shows a cross-section according to line XVII-XVII in figure 14;
 figure 18 shows a kit according to the invention;
 figures 19 to 21 show an alternative of figure 18.

[0033] A panel 1 according to the invention is intended for forming a roof on a bearing structure 2 or the like, for example as a roof on a veranda or a carport or a pool-house or a garden shed or the like.

5 **[0034]** Such bearing structure 2 can also comprise walls and/or partitions and/or beams and/or a column construction, for example of a carport and/or the like.

[0035] The panel 1 comprises a base plate 3 and a bottom plate 4 and a top plate 5.

10 **[0036]** The base plate 3, as shown in figure 1, is made rectangularly with four side edges 6 and is made of a heat insulating material, for example polyisocyanurate.

[0037] The base plate 3 can be provided with one or more cavities 7, in the case of figure 1 with three cavities 7, which are made in one side edge 6 of the base plate 3.

15 **[0038]** Preferably, such base plate 3 is thinner on one side than on the opposite side such that the water drains off the panel.

20 **[0039]** Thus, the base plate 3 can be 4 cm thick, for example, on one side, whereby the opposite side is 8 cm thick, for example, and whereby the opposite side in this case is intended to abut a wall and/or a partition and/or the like.

25 **[0040]** In other words the thinnest side of the panel is turned away from the aforementioned wall and/or partition and/or the like.

[0041] The bottom plate 4 and/or the top plate 5 are made of a strong and/or stable material, for example metal or an alloy such as steel or the like.

30 **[0042]** The top plate 5 and/or the bottom plate 4 are made sufficiently strongly such that the panel 1 is self-supporting, and thus after assembly on a bearing structure 2 can at least bear its weight.

35 **[0043]** The shape of the bottom plate 4, as shown in figure 2, is preferably rectangular with four edges 8, three of which are folded over upstanding edges 8a, 8b, 8c and a free edge 8d, said free edge 8d not possessing any folded over upstanding edge.

40 **[0044]** Preferably, the bottom plate 4, which is at right angles with the free edge 8d, is shorter in a longitudinal direction A-A' than the corresponding longitudinal A-A" of the base plate 3 to which it is or can be attached.

45 **[0045]** Preferably, the top plate 5, as shown in figure 3, is made rectangularly with four folded over upstanding edges 9a, 9b, 9c, 9d, at least one upstanding edge 9 of which is provided with one or more cavities 10, said one or more cavities 10 corresponding with the cavities 7 in the base plate 3.

50 **[0046]** Preferably, in a preferred embodiment the top plate 5 is provided along one or two edges 12 on one side 11, preferably the outward facing side 11 when the top plate 5 is mounted on a bearing structure, with a protruding slat 13 which extends in the extension of said side 11.

55 **[0047]** Preferably, one of the upstanding edges 9a, 9b, 9c, 9d of the top plate 5 is folded over to form a turn up 14, whereby the cross-section of said edge is U-shaped.

[0048] The top plate 5 and/or the bottom plate 4 are

made such that their breadth B, B' corresponds with the breadth B" of the base plate 3.

[0049] In the case of figure 4, the panel 1 is made rectangularly with two ends 15a, 15b which are located at a distance C from each other, said distance C being the length of the panel 1 and with two sides 16a, 16b which are located at a breadth B''' from each other.

[0050] The breadth B''' of the panel in this case corresponds or practically corresponds with the breadth B, B' and B" of the bottom plate 4, the top plate 5 and the base plate 3.

[0051] The sides 16a, 16b and the ends 15a, 15b of the panel 1 are in this case formed by the folded over upstanding edges 8a, 8b, 8c and 9a, 9b, 9c, 9d of the base plate 4 and the top plate 5.

[0052] The heights H, H' of the upstanding edges 8a, 8b, 8c and 9a, 9b, 9c, 9d of the bottom plate 4 and of the top plate 5 together are shorter than the height H''' of the sides 16a, 16b and the height H''' of the end 15b of the panel 1, such that between the upstanding edges 8a, 8b, 8c and 9a, 9b, 9c, 9d of the bottom plate 4 and of the top plate 5 a gap is created, said gap forming a thermal break 17 in the panel 1.

[0053] Said thermal break 17, as shown in figures 4 and 5, can extend in both sides 16a and 16b and one end 15b of the panel 1.

[0054] This, however, is not necessary, thus it is also possible that the thermal break 17 extends around the whole or almost the whole contour of the panel 1.

[0055] The panel 1 is made slopingly, whereby the panel 1 is made thicker at one end 15b than at the other end 15a of the panel 1, such that the water drains off.

[0056] Preferably, this is realised by making the base plate 3 slopingly, whereby the height H" of the base plate 3 is different at two parallel edges.

[0057] The panel 1 can be provided with fasteners 18 to attach two or more panels 1 to each other.

[0058] Preferably, the fasteners 18 of a panel 1 are complementary to the fasteners 18 of an adjacent panel 1, such that upon attaching the panels 1 to each other the fasteners 18 of the one panel 1 can be attached to the complementary fasteners 18 of the other panel 1.

[0059] The aforementioned complementary fasteners 18 can be formed by matching cavities 19 and/or protrusions 20 and/or the like in the panel 1, as shown in figure 6.

[0060] Such cavities 19 in the panel 1 can be formed by the aforementioned cavities 7 of the base plate 3 and cavities 10 in the top plate 5 and/or in the bottom plate 4.

[0061] As shown in figure 7 the panel 1 in mounted condition can be provided with grooves 41 on one side 21, preferably the side 21 facing down, at its ends 22 and at a distance thereof.

[0062] In the case of figure 7 the panel 1 is provided with two grooves 41, one groove 41 at each end 22a, 22b of the panel 1 to mount the panel 1 to the bearing structure 2.

[0063] However, it is also possible that the panel 1 in

mounted condition on one side 21, preferably the side 21 facing down, is provided with one or more layers of glue 23 at its ends 22 for attaching one or more panels 1 on a bearing structure 2 or the like.

[0064] In the example shown in figure 8 the panel 1 on the side facing down 21 is provided with two layers of glue 23, one at each end 22a, 22b of the panel 1 and at a distance thereof.

[0065] In a preferred embodiment the layers of glue 23 contain tape.

[0066] The panel 1 can be provided on one side 21 with two or more positioning openings 24, which are located at two opposite facing edges 22a, 22b of the panel 1.

[0067] Preferably, the positioning openings 24 and the aforementioned layers of glue 23 are on the same side 21 of the panel 1.

[0068] The underside 21 of an assembled panel 1 forms the ceiling, said ceiling preferably being formed by the bottom plate 4.

[0069] Preferably, the underside 21 of the panel 1, in this case the underside 21 of the bottom plate 4, is made paintable.

[0070] The panel 1 can be provided with fasteners for attaching a removable gutter 26, as shown in figure 8, for collecting rainwater, said fasteners comprising one or more receivers 25 which can be snapped into one or more sides 16a, 16b and/or one or more ends 15a, 15b of the panel 1. It is clear that a panel 1 can be provided with fasteners 25 at one end 15a and/or one side 16a or 16b for attaching a gutter 26 and/or with cavities 19 at one side 16a or 16b.

[0071] However, it is also possible that the panel 1 is provided with fasteners 25 at one end 15a for attaching a gutter 26 and/or with cavities 19 at one side 16a or 16b and/or with protrusions 20 at one side 16a or 16b that fit in the matching cavities 19.

[0072] Preferably, the gutter 26 is provided with pegs 27, said pegs 27 fitting in the snappable receivers 25 of the panel 1, such that the gutter 26 can be attached to the panel 1.

[0073] In addition, the panel 1 can also be provided with climate control, for example air conditioning.

[0074] The panel 1 can be provided with solar cells or solar panels or solar foil or the like to produce power.

[0075] The invention also relates to a kit for forming a roof 28 on a bearing structure 2 or the like.

[0076] Such kit comprises at least one panel 1 as described above and at least one profile 29 for attaching at least one panel 1 on or to the bearing structure 2.

[0077] To this end, the profile 29 as shown in figure 10 can be provided with a case 30 with on one side 31 a groove for mounting a positioning slat 32, said aforementioned side 31 preferably being the upward facing side 31 in mounted condition of the profile 29.

[0078] The opposite side 33 of the groove may comprise an open chamber 34 for mounting cabling and/or pipes and/or the like, for example.

[0079] Preferably, the profile 29 is provided with means 36 to mount a cover slat 37 on the side facing away from the bearing structure 2.

[0080] In the example of figure 9, the aforementioned means 36 comprise a hinge element 38, said hinge element 38 being mounted in this case near the side of the open chamber 34.

[0081] The aforementioned cover slat 37 is intended to be mounted against the hinge element 38 in such a way that the hinge element 38 preferably seals at least the open chamber 34 of the profile 29, as shown in figure 11.

[0082] In the example of figure 11 both the open chamber 34 and the side 35 of the profile 29 facing away from the bearing structure 2 are sealed by the cover slat 37 whereby the cover slat 37 forms a finish for the side 35 of the profile 29 facing away from the bearing structure 2.

[0083] To this end the cover slat 37 possesses an L-shaped cross-section.

[0084] In the case of figures 9 and 10 the aforementioned positioning slat 32 is designed as a long slat which can be slid in the groove provided for this purpose and at one end is provided with a positioning peg 39, over which the positioning opening 24 of the panel 1 can be fittingly mounted.

[0085] The positioning slats 32 can be provided with one or more rails 42, as shown in figure 12, over which the aforementioned grooves 41 of the panel 1 are or can be mounted such that the panel 1 can slide over the positioning slats.

[0086] Preferably, said rails 42 are located on the side of the positioning slat 32 on which the panel 1 is or can be mounted.

[0087] In a preferred embodiment the kit also comprises one or more floor panels 43 which serve as foundation to form a floor 44 as shown in figure 18.

[0088] In the example shown in figure 18, the floor panels 43 are provided with a floor plate 45 from concreteplex and a frame 46, whereby the floor panels 44 in this case are mounted with their floor plate 45 on four or more supporting columns 47 which are anchored in the ground.

[0089] Preferably, the aforementioned frame 46 is made of steel, such that such frame 46 is relatively light and relatively simple to mount.

[0090] Consequently, not only are fewer persons skilled in the art needed for installing it, but installing such kit and floor 44 is also less strenuous for persons skilled in the art.

[0091] The floor 44 can be formed by one floor panel 43 which is attached on four supporting columns 47 for example.

[0092] In addition it is also possible that the floor 44 is formed by several floor panels 43, for example by three floor panels 43, whereby each floor panel 43 is preferably attached to four or more supporting columns 47.

[0093] In this case the floor panels 43 can be attached to each other by means of complementary fasteners which also allow the floor panels 43 to be simply detached

without needing a screwdriver or drill.

[0094] Such fasteners can be snap-fasteners whereby, for example, the frames 46 of the floor panels 43 can be snapped into each other.

[0095] In the example shown the bearing structure 2 is mounted on said floor panels 43.

[0096] Preferably, the kit is also provided with one or more top panels 48 which are or can be mounted to the floor panel 43.

[0097] Preferably, said top panels 48 in mounted condition are located on the side of the frame 46 opposite to the side on which the floor plate 45 is attached to the frame 46.

[0098] Such top panels 48 can for example be OSB.

[0099] A floor can be mounted on said top panels 48 or for finishing a veranda or a carport or a poolhouse or the like for example.

[0100] In addition, preferably the kit is also provided with floor insulation 49 which is or can be mounted between the top panel 48 and the floor plate 45 of the floor panel 43.

[0101] The frame 46 can hereby be provided with one or more openings and the floor insulation is or can be applied in such openings such that the thickness D of the floor plate 45 to the top panel remains limited to the thickness of the frame 46, contrary to when the floor insulation 49 is applied on top of the frame 46 and/or protrudes from it.

[0102] Such floor insulation 49 ensures that less energy and heat are unnecessarily lost and consequently is environmentally friendly.

[0103] As shown in figure 20, the kit is preferably also provided with one or more sill elements 50 which have been or are mounted on the top panels 48 to form a sill.

[0104] Preferably, such sill elements 50 are made of composite, more specifically from resin and/or granite and/or quartz.

[0105] An advantage of said sill elements 50 is that they are watertight and frost and alkali resistant.

[0106] Additionally, such sill elements 50 require relatively little maintenance to prevent dirt and/or green deposits.

[0107] In the event that the bearing structure 2 relates to a veranda or a poolhouse, the windows and/or partitions of the bearing structure 2 can be mounted on the sill elements 50 with their underside, as demonstrated in figure 20.

[0108] To this end the sill elements 50 as well as the windows 51 and/or partitions are preferably provided with complementary fasteners 52 which detachably attach the windows 51 and/or partitions to the sill elements 50.

[0109] In this way the sill elements 50 can, for example, be provided with one or more recesses 53 and the windows 51 and/or partitions can be provided with complementary snap fasteners 54 to attach the windows 51 and/or partitions to the sill elements 50 by securely snapping the snap-fasteners 54 in the recesses 53.

[0110] In the event that the bearing structure 2 com-

prises a column construction 55, the columns 56 of the column construction 56 which are mounted perpendicularly relative to the floor 44 can be anchored in the floor 44, shown in figure 21.

[0111] Preferably, anchoring the columns 56 is realised by using a support column 57 which is anchored in the floor 44 and/or the ground, over which the column 56 of the column construction 55 can be slid.

[0112] Preferably, the column 56 of the column construction 55 is attached by means of detachable complementary connections to the relevant support column 57.

[0113] Such connections can for example be slid connections 58, shown in figure 20, which can be slid in the columns 56 and the support columns 57.

[0114] The columns 56 of the column construction 55 are preferably attached to the support columns 57, such that the columns 56 of the column construction 55 is connected to the relevant support column 57 over which the columns 55 of the column construction 55 are slid.

[0115] This is to ensure the stability and/or carrying capacity and/of support of the windows 51 and/or partitions and roof which are connected to the column construction 55.

[0116] It is also possible to attach the columns 56 of the column construction 55 to the support columns 57 by means of screws.

[0117] The bearing structure 2 can also relate to a column construction 55 and windows 51 and/or partitions, whereby the windows 51 and/or partitions can be mounted between two or more columns 56 of the column construction 55, as demonstrated in figure 21.

[0118] Preferably, the windows are mounted between two columns 56 of the column construction 55 and the windows 51 are attached to the relevant columns 56 with its adjoining side by means of complementary fasteners.

[0119] In the example shown in figure 21 such fasteners comprise snap-fasteners, in this case in the form of a spring snap 58 in the sides 59a and 59b of the window 51 and a complementary receiver 60 in the relevant column 56, whereby the spring snaps 58 into the receiver 60 of the column 55 in mounted condition of the window 51.

[0120] In other words, in attached condition of the window 51, the spring 58 protrudes from the side 59a of 59b of the window 51, in the direction of the relevant column 56, whereby the spring 58 is caught in the receiver 60 of the relevant column 56.

[0121] The form and the mechanism of said fasteners 52 are not restricted to the aforementioned embodiments.

[0122] Such fasteners 52 may comprise different forms and mechanisms whereby complementary fasteners detachably attach the window 51 and the relevant columns 56 to each other without having to use screws and/or nails and/or the like.

[0123] In the event that the bearing structure 2 is partly mounted against a wall or a house the columns 56 of the bearing structure 2 which are mounted perpendicularly

relative to the floor 44 and/or the ground can also be detachably attached to the wall or house and this both in the case of a veranda, a carport, a poolhouse and the like.

[0124] By using said complementary fasteners 52 for attaching the panels 1, 44 and by using the kit, a modular system is realised that can be simply assembled and disassembled.

[0125] Even better, in case of a move or sale the assembled kit is relatively simple to disassemble and take with you.

[0126] In a preferred embodiment of the kit the components of the kit that are or have been connected to each other and/or are or have been attached to each other or are by means of screwless and/or non-penetrating fasteners such that no extra equipment is needed for assembling the kit.

[0127] Consequently the components of the kit can also be assembled relatively simply and quickly.

[0128] The invention also relates to a method, as shown in figures 13 and 15, for making a roof 28 on a bearing structure 2 using a kit as described above.

[0129] As shown in figures 13 and 15 the method may comprise the following steps:

- mounting the profile 29 against a wall 40 or a bearing structure 2 at the desired height;
- possibly mounting a frame and/or beams and/or partitions and/or the like at a distance from the wall 40 or bearing structure 2;
- mounting a positioning slat 32 in the associated groove in the profile 29 and on the frame and/or beams and/or partitions and/or the like parallel with the profile 29;
- mounting one panel 1 on the positioning slats 32 with the positioning openings 24 fittingly on the positioning pegs 39 of the positioning slats 32;
- mounting a next panel 1 against the mounted panel 1 whereby the fasteners 18 of the one panel 1 are fittingly mounted to the other panel 1;
- mounting extra panels 1 as aforementioned until the positioning slats 32 are covered;
- attaching the gutter 26 by snapping the pegs 27 into the receivers 25 of the panel 1.

[0130] When mounting the panels 1 on the positioning slats 32 care is taken that the panels 1 are attached to the associated positioning slats 32 with their layer of glue 23.

[0131] As shown in figures 14 and 15, an alternative method may comprise the following steps:

- mounting the profile 29 against a wall 40 or a bearing structure 32 at the desired height;
- possibly mounting a frame and/or beams and/or partitions and/or the like at a distance from the wall 40 or bearing structure 2;
- mounting a positioning slat 32 in the associated groove in the profile 29 and on the frame and/or

beams and/or partitions and/or the like parallel with the profile 29;

- mounting one panel 1 on the positioning slats 32 with its grooves 41 fittingly on the rails 42 of the positioning slats 32 such that the panel 1 can slide over the positioning slats 32;
- mounting a next panel 1 against the mounted panel 1 whereby the fasteners 18 of the one panel 1 are fittingly mounted to the other panel 1;
- mounting extra panels 1 as aforementioned until the positioning slats 32 are covered;
- attaching the gutter 26 by snapping the pegs 27 into the receivers 25 of the panel.

[0132] When mounting the panels 1 on the positioning slats 32, care is taken that the panels 1 are fittingly mounted by means of their grooves 41 on the associated rails 42 such that the panels 1 can slide over or on the positioning slats 32, as shown in figures 16 and 17.

[0133] The present invention is by no means limited to the embodiments described as an example and shown in the drawings, but a panel and a kit according to the invention can be realised in all kinds of forms and dimensions without departing from the scope of the invention.

Claims

1. Panel (1) for forming a roof (28) on a bearing structure (2) or the like, **characterised in that** the panel (1) comprises a base plate (3) and a bottom plate (4) and a top plate (5), whereby the panel (1) is made slopingly such that the water drains off and the base plate (3) is made from a heat insulating material and whereby the bottom plate (4) and/or the top plate (5) is made from a strong and/or stable material, and whereby the bottom plate (4) is made rectangularly with three upstanding edges (8a, 8b, 8c) and a free edge (8d) without upstanding edge, whereby the bottom plate (4) in the longitudinal direction (A-A'), which is defined by two parallel upstanding edges (8a, 8c), is shorter than the longitudinal (A-A') of the base plate (3) to which it is or can be detachably attached.
2. Panel according to claim 1, **characterised in that** the panel (1) is provided with fasteners (18) to detachably attach two or more panels (1) to each other.
3. Panel according to claim 2, **characterised in that** the fasteners (18) of the panel (1) are complementary to the fasteners (18) of an adjacent panel (1), such that when attaching the panels (1) the fasteners (18) of the panel (1) can be detachably attached to the complementary fasteners (18) of the other panel (1).
4. Panel according to any one of the previous claims,

characterised in that the top plate (5) comprises four upstanding edges (9a, 9b, 9c, 9d), at least one upstanding edge (9a, 9b, 9c, 9d) of which is provided with one or more cavities (10), said one or more cavities (10) corresponding with cavities (7) in the base plate (3).

5. Panel according to claim 4, **characterised in that** one of the upstanding edges (9a, 9b, 9c, 9d) of the top plate (5) is folded over to form a turn up (14), such that the cross-section of said edge is U-shaped.
6. Panel according to any one of the previous claims, **characterised in that** in mounted condition, the panel (1) is provided on one side (21) with one or more layers of glue (23) on two or more edges (22a, 22b) for attaching one or more panels (1) on a bearing structure (2) or the like.
7. Panel according to any one of the previous claims, **characterised in that** the panel (1) is provided on one side (21) with two or more positioning openings (24), which are located on two opposite facing edges (22a, 22b) of the panel (1).
8. Panel according to any one of the previous claims, **characterised in that** the panel (1) is provided on one side (21) with two or more grooves (41), said grooves (41) being located at a distance from each other on two opposite facing edges (22a, 22b) of the panel (1).
9. Panel according to any one of the previous claims, **characterised in that** the panel (1) is provided with one or more of following elements:
 - a recess and a window that is mounted in the recess;
 - climate control;
 - one or more solar cells or solar panels or solar foil or the like for producing power.
10. Kit for forming a roof on a bearing structure or the like, **characterised in that** the kit comprises a panel (1) according to any one of the previous claims and at least one profile (29) for attaching a panel (1) on or to the bearing structure (2), whereby the profile (29) is provided with a case (30) with on one side (31) a groove for mounting a positioning slat (32) and on the opposite side (33) an open chamber (34) for mounting cabling or pipes or the like.
11. Kit according to claim 10, **characterised in that** the kit comprises one or more floor panels (43) that serve as foundation for forming a floor (44) on which the bearing structure (2) is or can be mounted, said floor panels (43) being provided with a floor plate (45) from concreteplex and a frame (46), whereby the

floor panels (43) with their floor plate (45) have been or are mounted on four or more supporting columns (49) that are anchored in the ground.

12. Kit according to claim 10 or 11, **characterised in that** the kit is provided with a top panel (48) which is or can be attached to the floor panel (43), more specifically to the side of the frame (46) opposite the side to which the floor plate (45) is attached to the frame (46). 5 10
13. Kit according to claim 12, **characterised in that** the kit is provided with floor insulation (49) which is or can be applied between the top panel (48) and the floor plate (45) of the floor panel (43). 15
14. Kit according to any one of the previous claims 10 to 13, **characterised in that** the kit is provided with one or more sill elements (50) which are or can be detachably attached on the top panel (48) by means of detachable connections. 20
15. Kit according to any one of the previous claims 10 to 14, **characterised in that** the positioning slat (32) is provided with at least one rail (42) which fits in a groove (41) of the panel (1). 25
16. Kit according to any one of the previous claims 10 to 15, **characterised in that** the positioning slat (32) is provided with one or more positioning pegs (39) at least at one end which fit in the positioning openings (24) of the panel (1). 30
17. Method for making a roof (28) on a bearing structure (2) using a kit according to any one of the previous claims 10 to 16, **characterised in that** use comprises the following steps: 35
 - mounting the profile (29) against a wall (40) or a bearing structure (32) at the desired height; 40
 - mounting a frame and/or beams and/or partitions and/or the like at a distance from the wall (40) or bearing structure (2);
 - mounting a positioning slat (32) in the associated groove in the profile (29) and on the frame and/or beams and/or partitions and/or the like parallel with the profile (29); 45
 - mounting one panel (1) on the positioning slats (32) with the positioning openings (24) fittingly on the positioning pegs (39) of the positioning slats (32); 50
 - mounting a next panel (1) against the mounted panel (1) whereby the fasteners (18) of the one panel (1) are fittingly mounted to the other panel (1); 55
 - mounting extra panels (1) as aforementioned until the positioning slats (32) are covered;
 - attaching the gutter (26) by snapping the pegs

(27) into the receivers (25 of the panel (1).

18. Methodology according to claim 17, **characterised in that** when mounting the panels (1) on the positioning slats (32) the layer of glue (23) ensures a connection between the layer of glue (23) and the positioning slats (32).

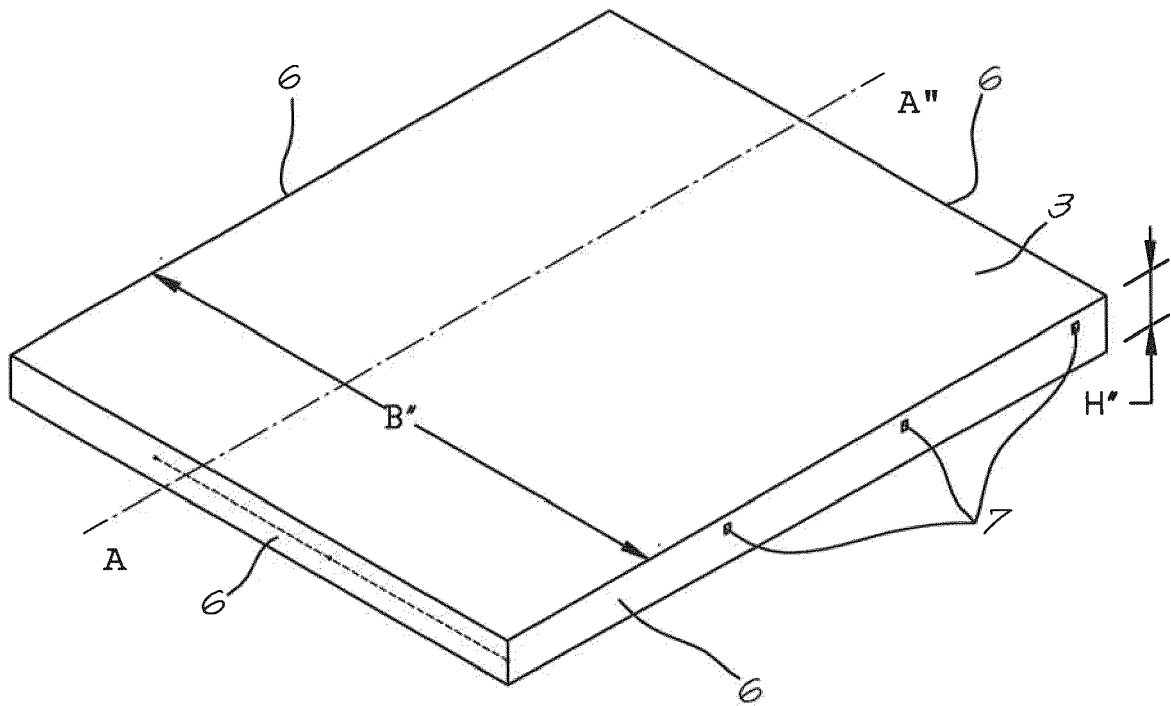


Fig. 1

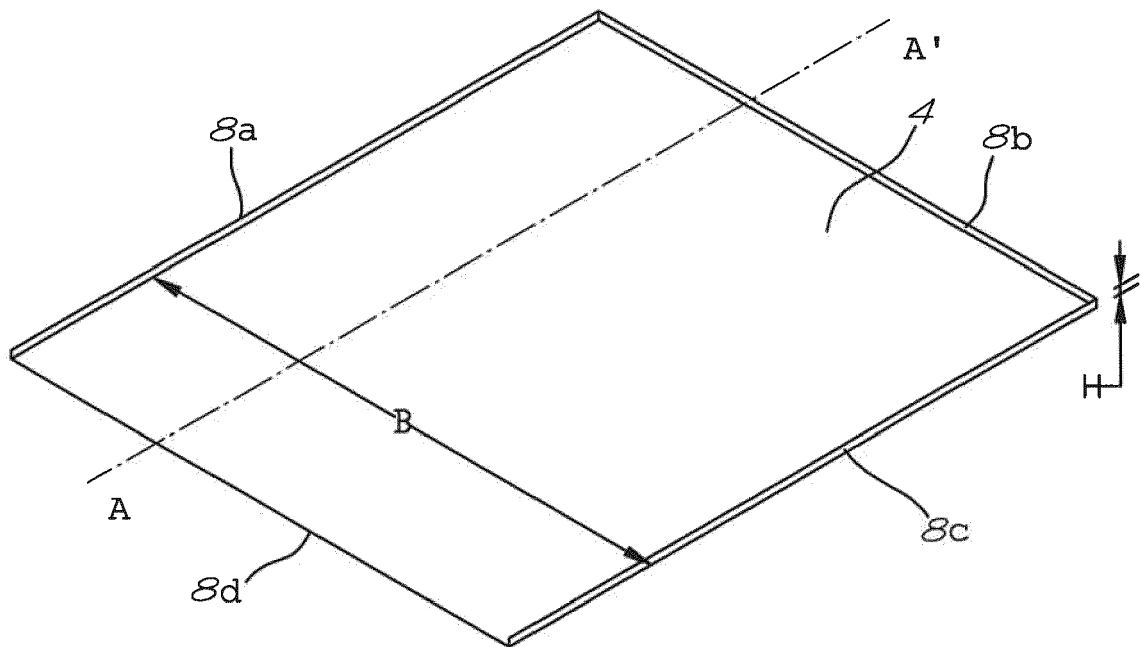
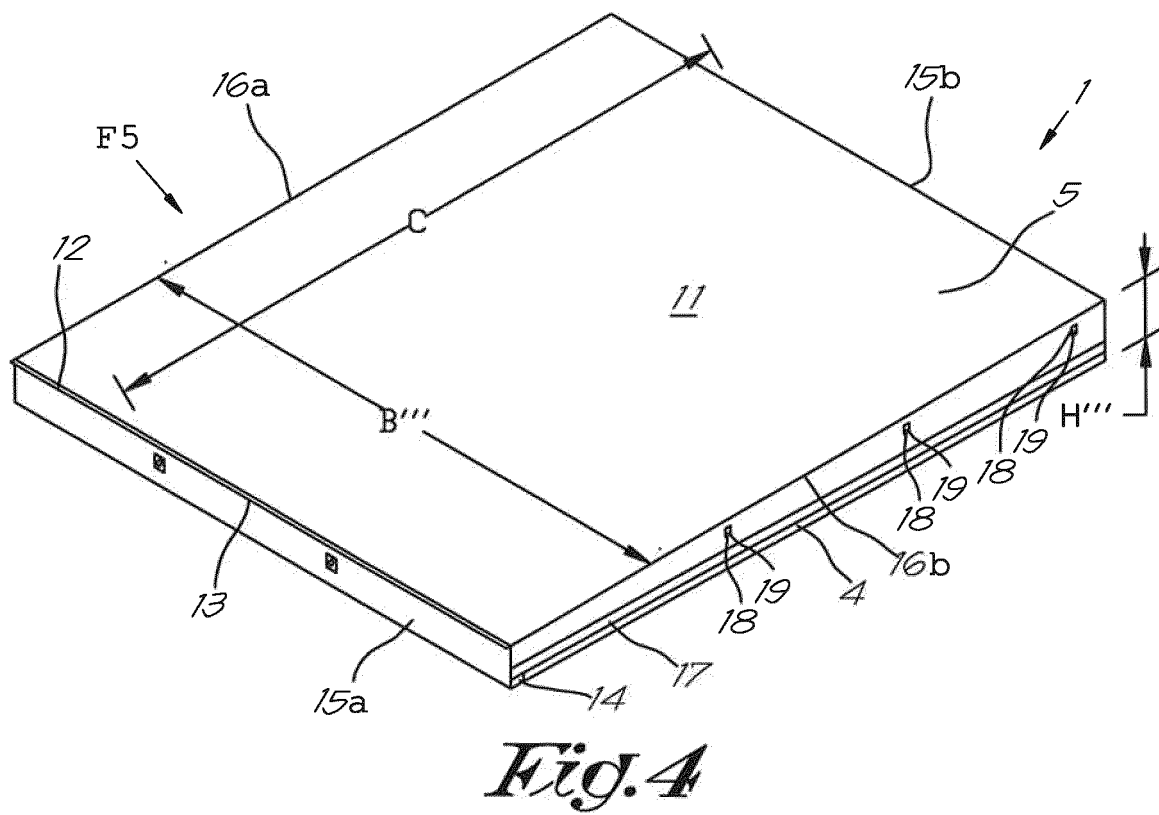
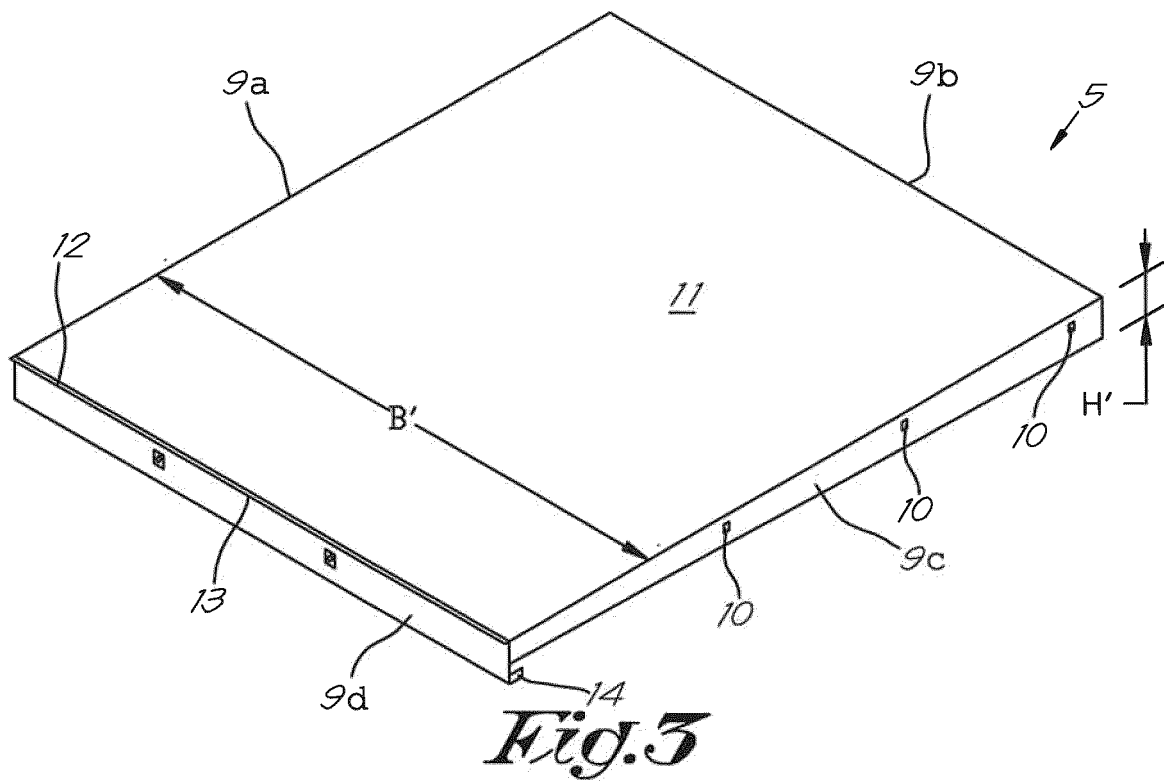


Fig. 2



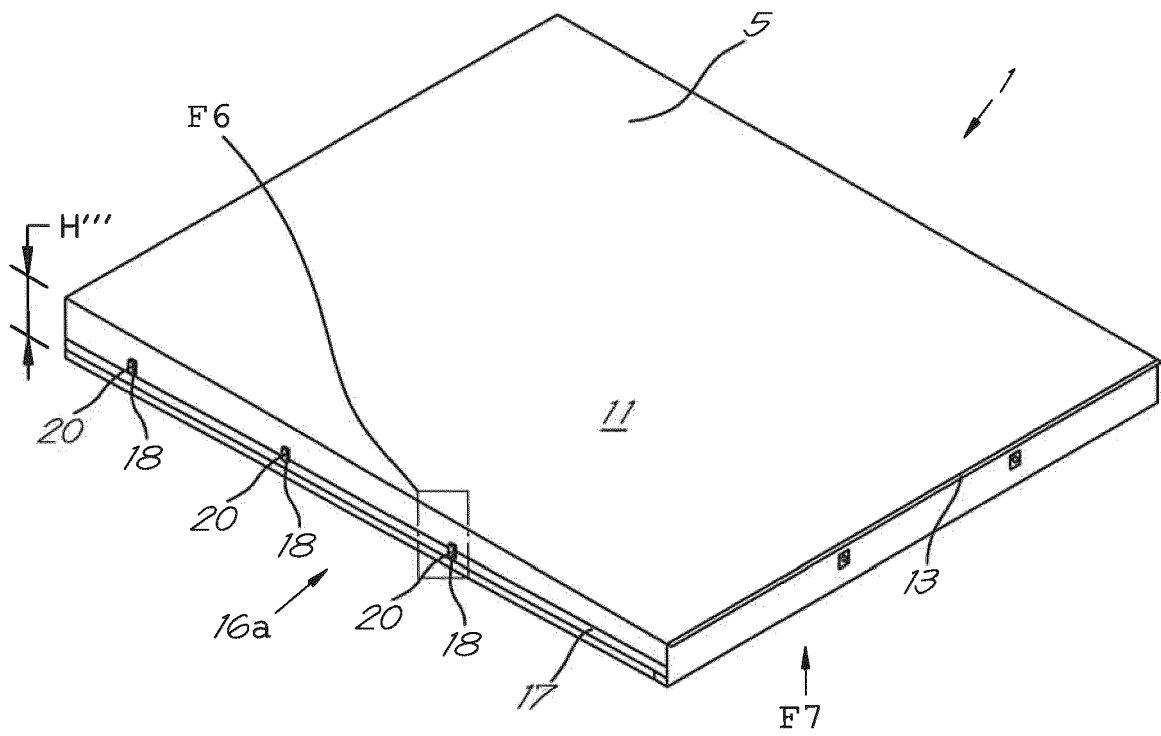


Fig. 5

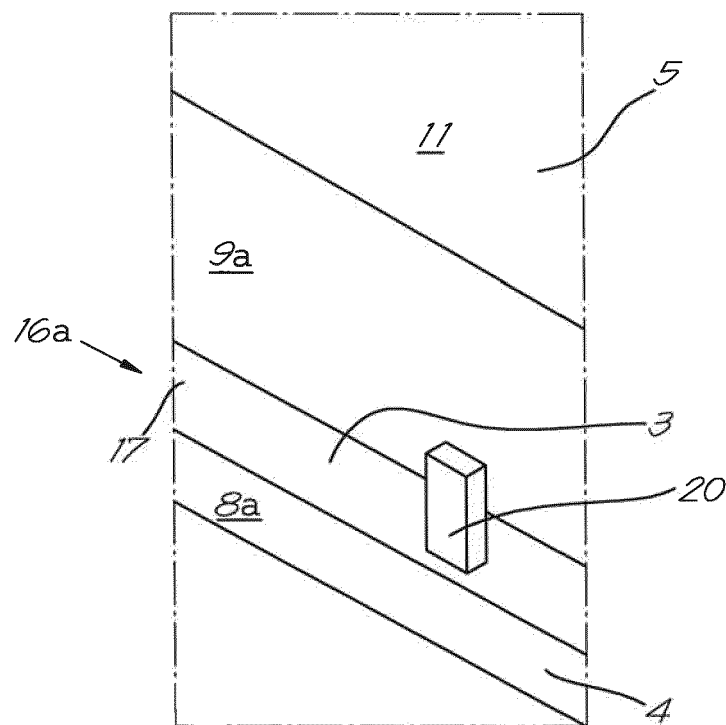


Fig. 6

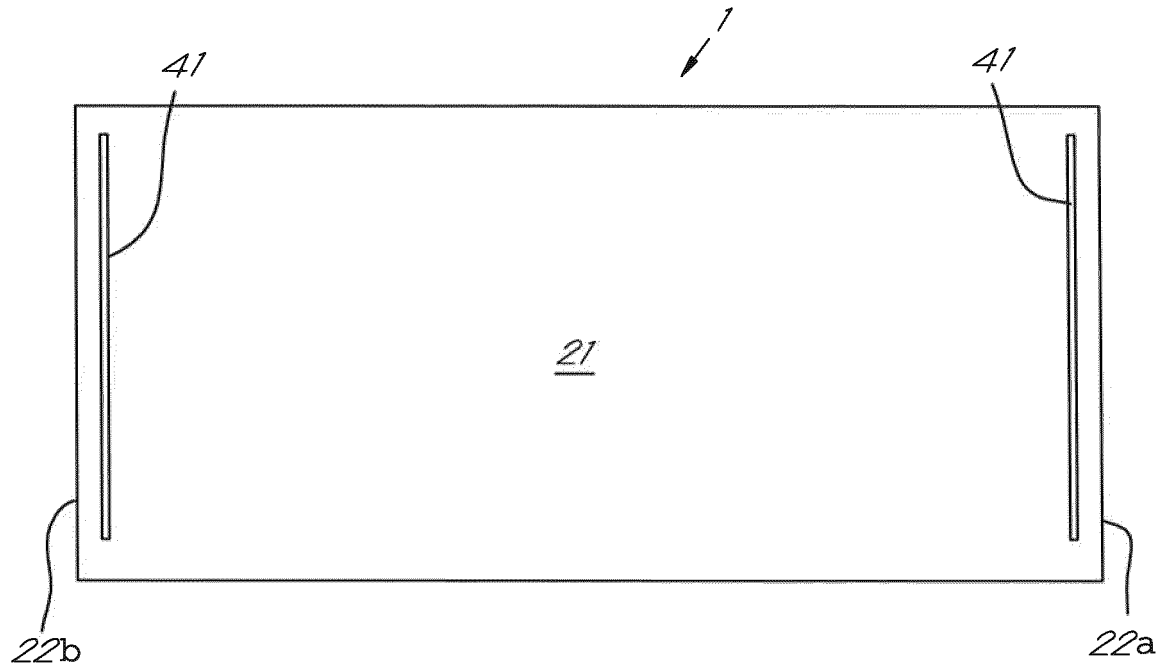


Fig. 7

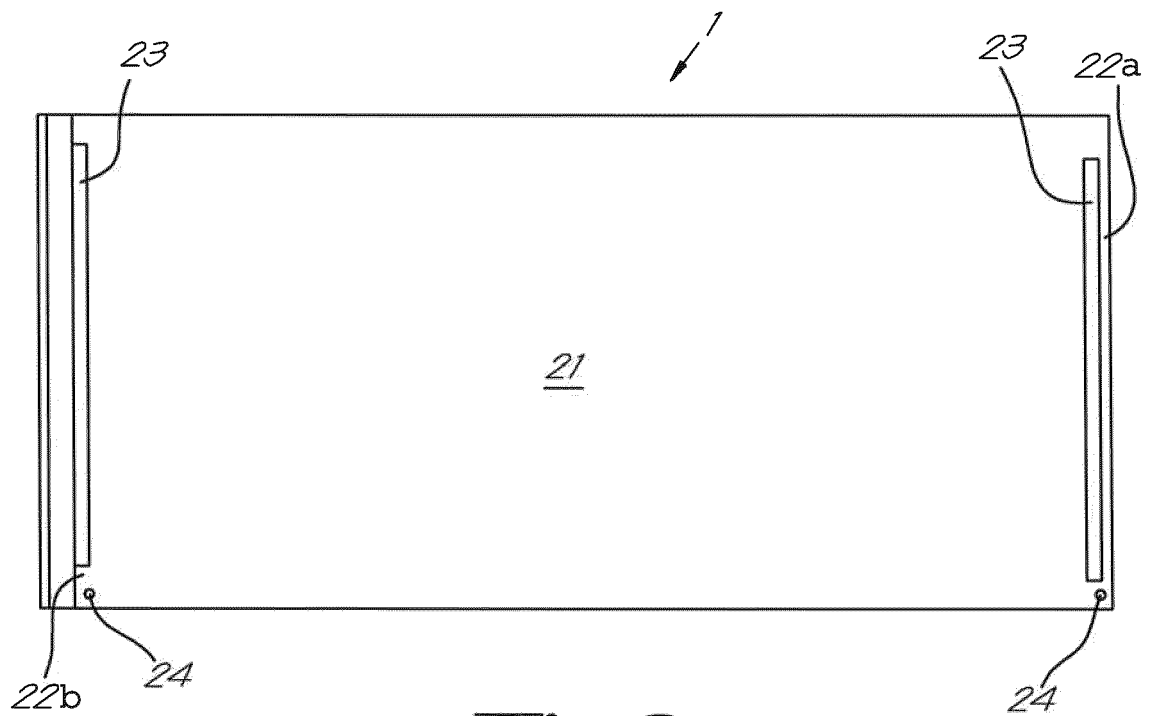


Fig. 8

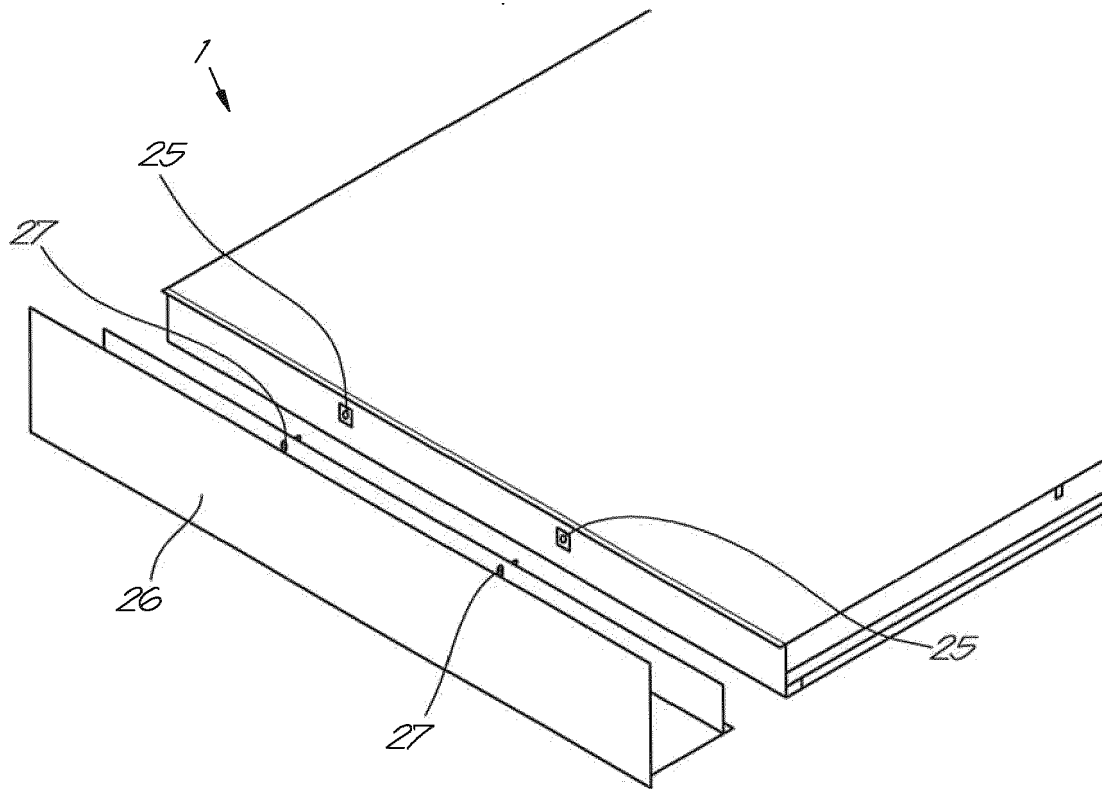


Fig. 9

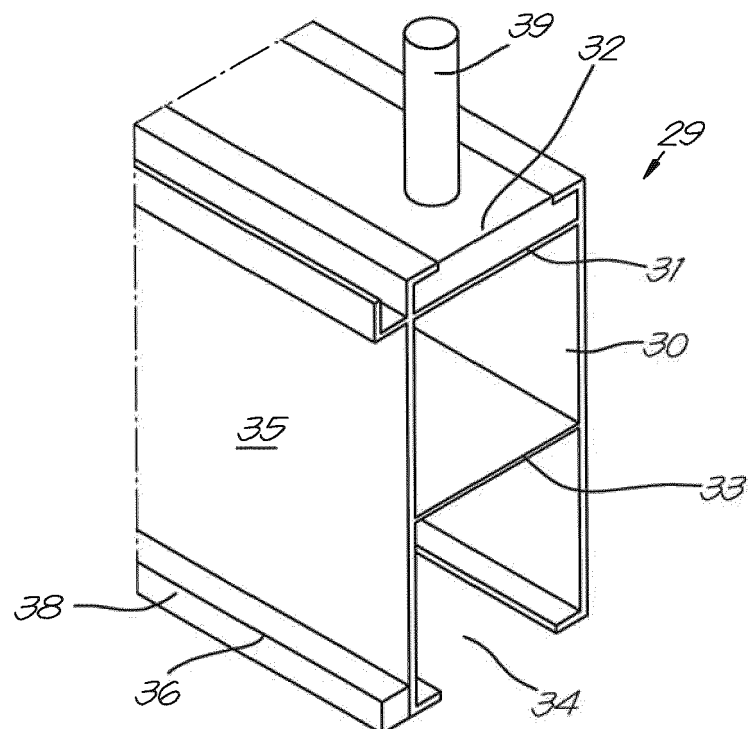


Fig. 10

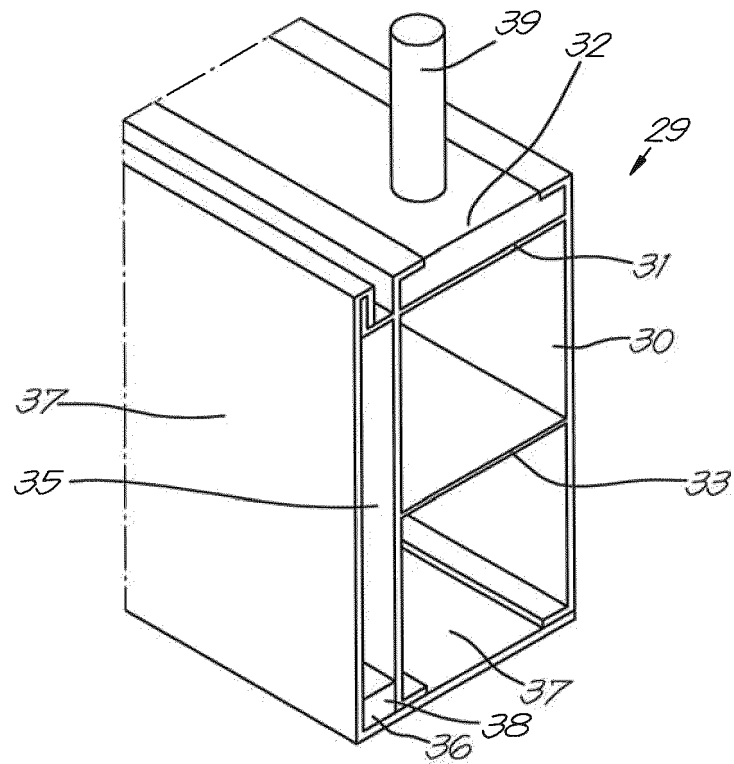


Fig. 11

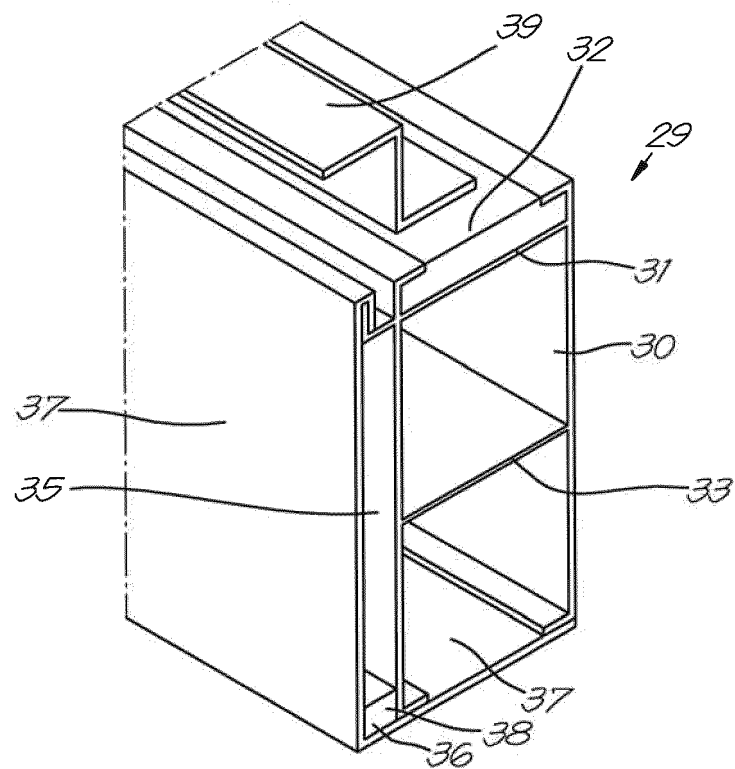


Fig. 12

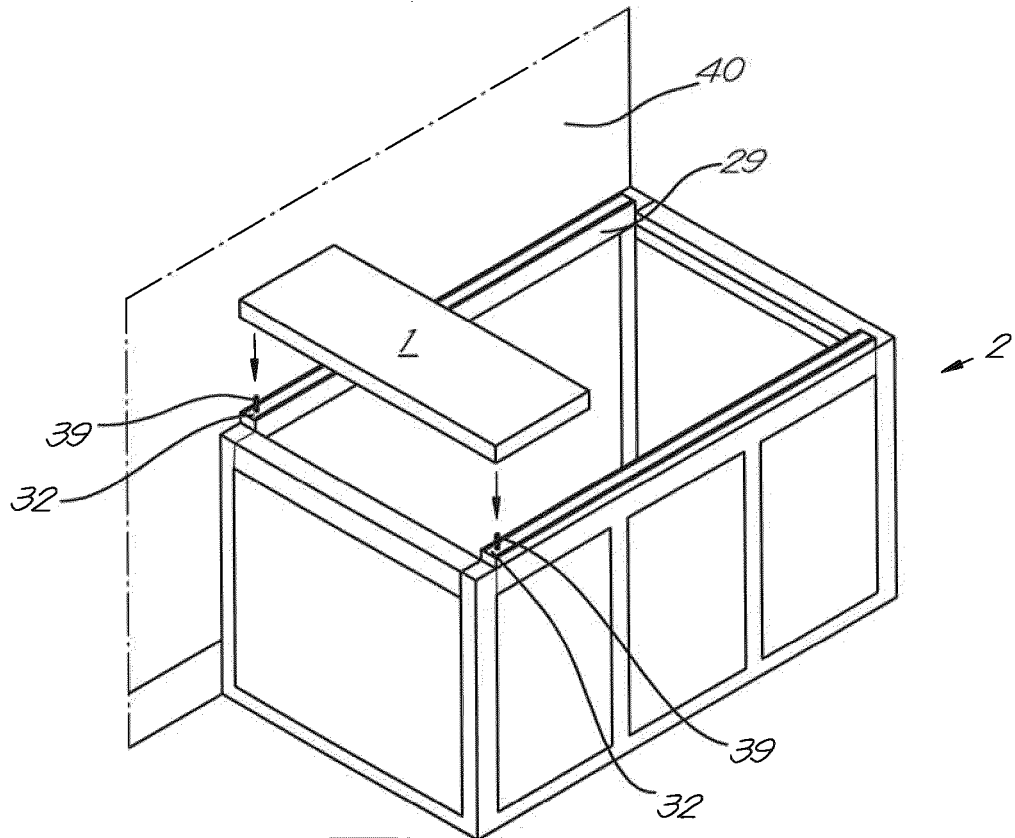


Fig. 13

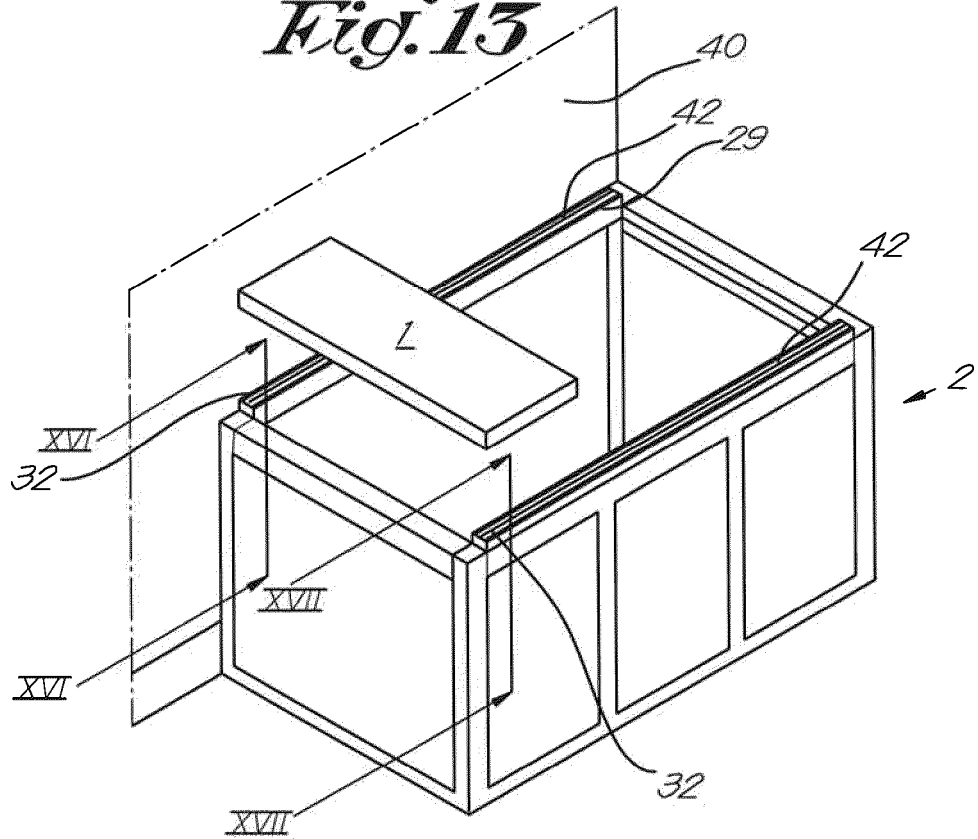


Fig. 14

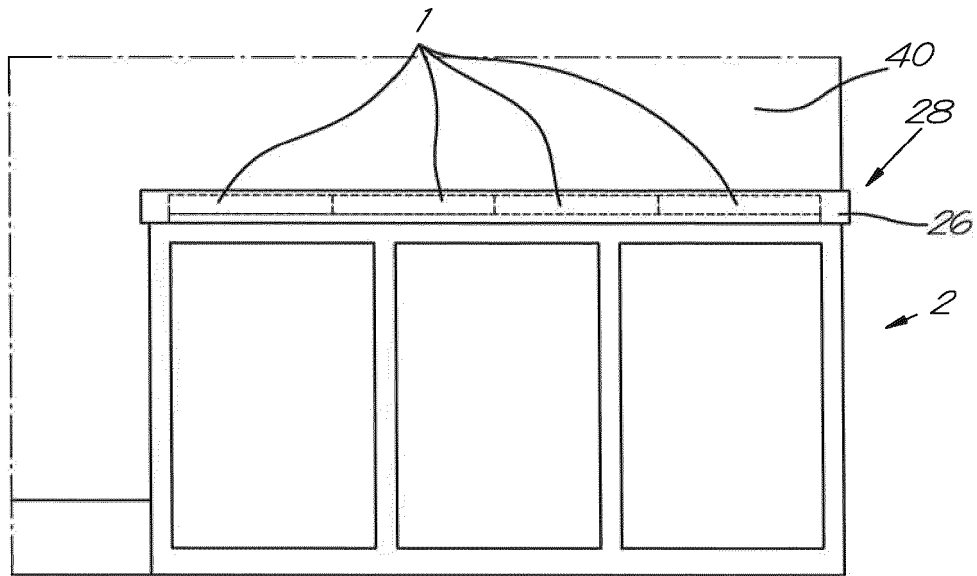


Fig. 15

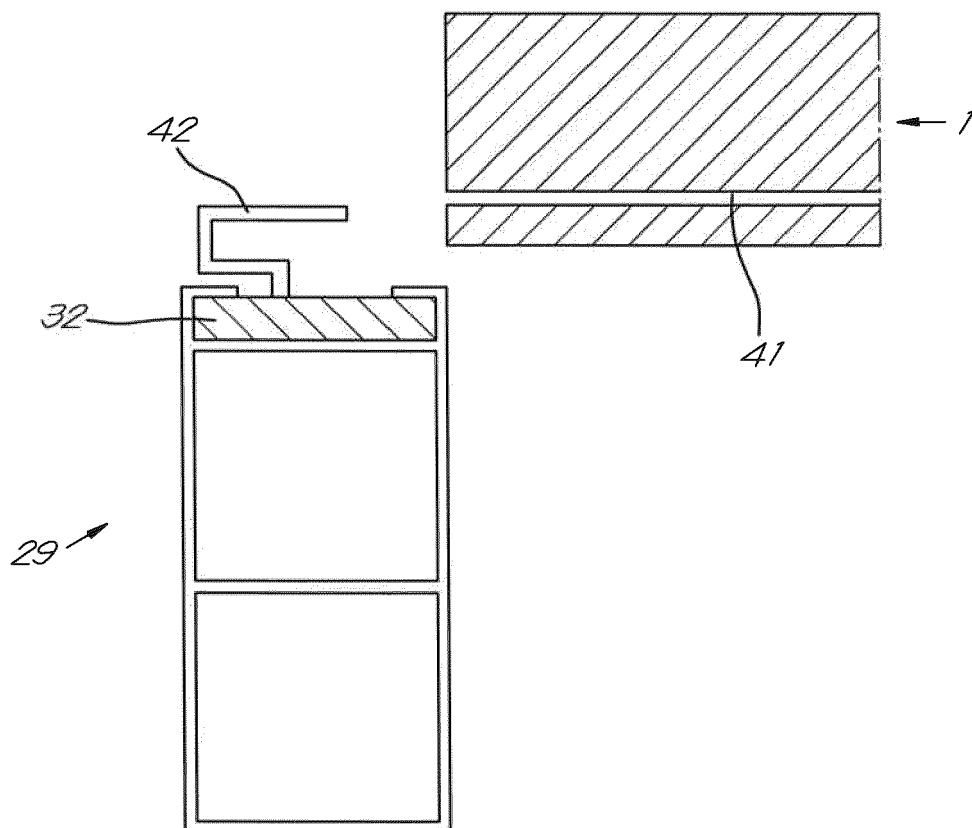


Fig. 16

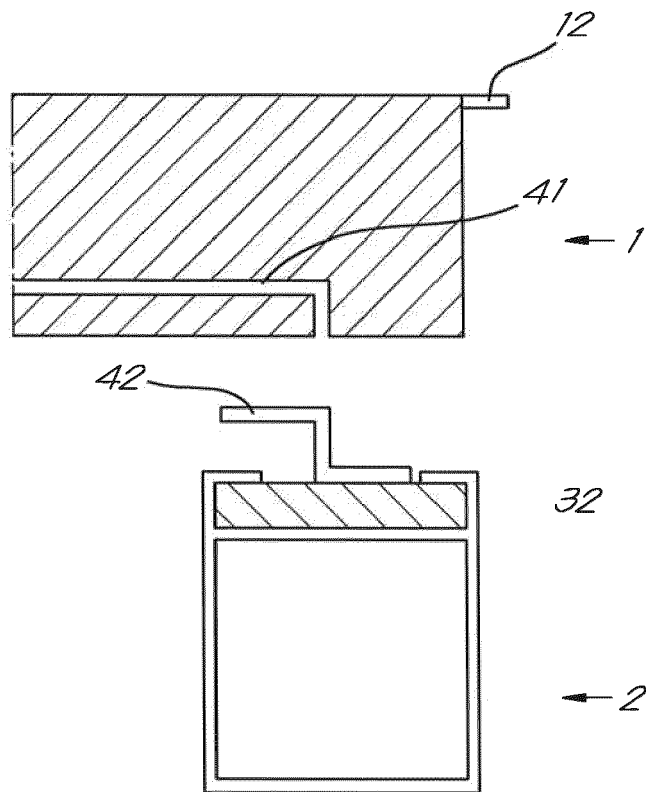


Fig. 17

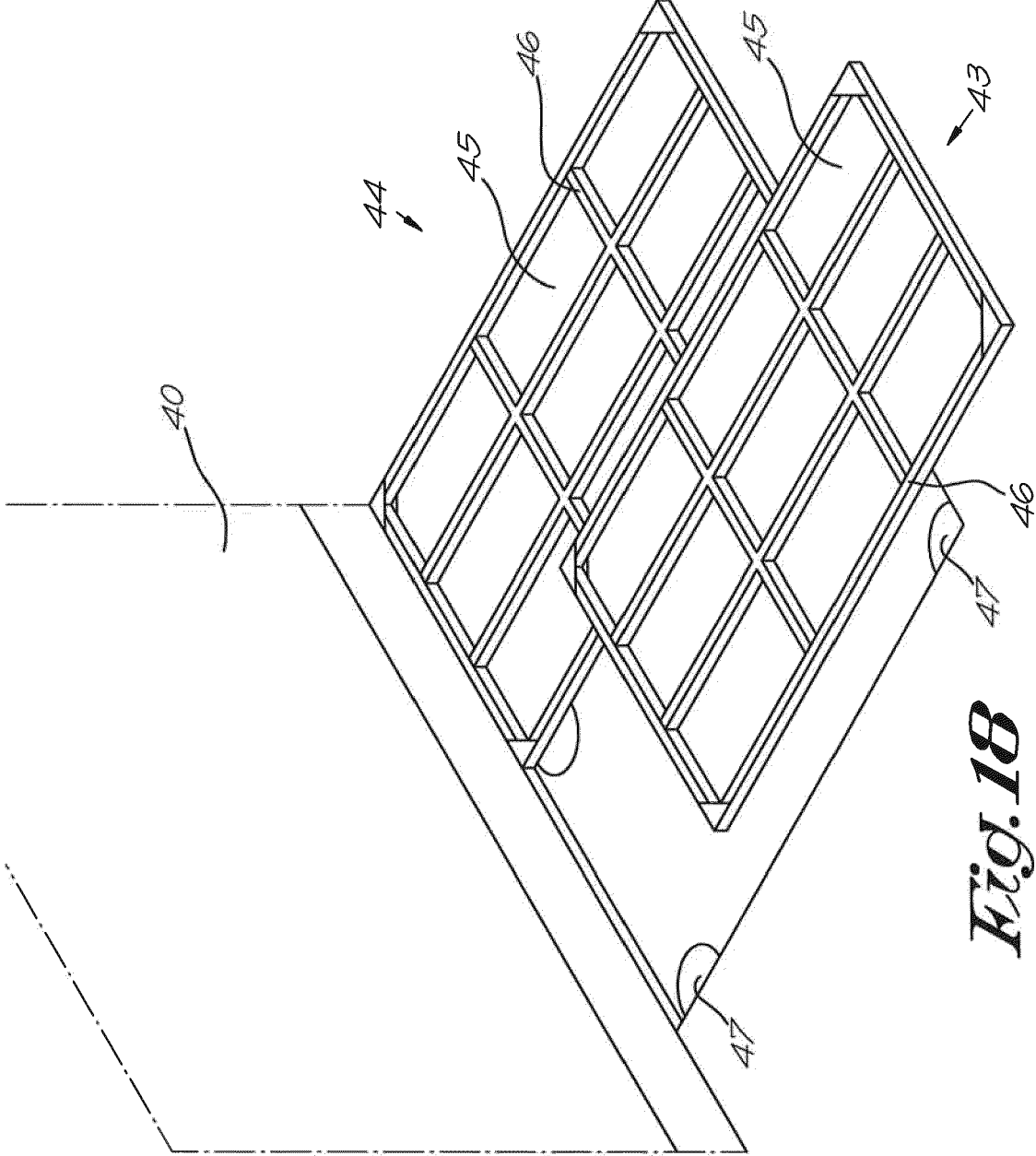


Fig. 18

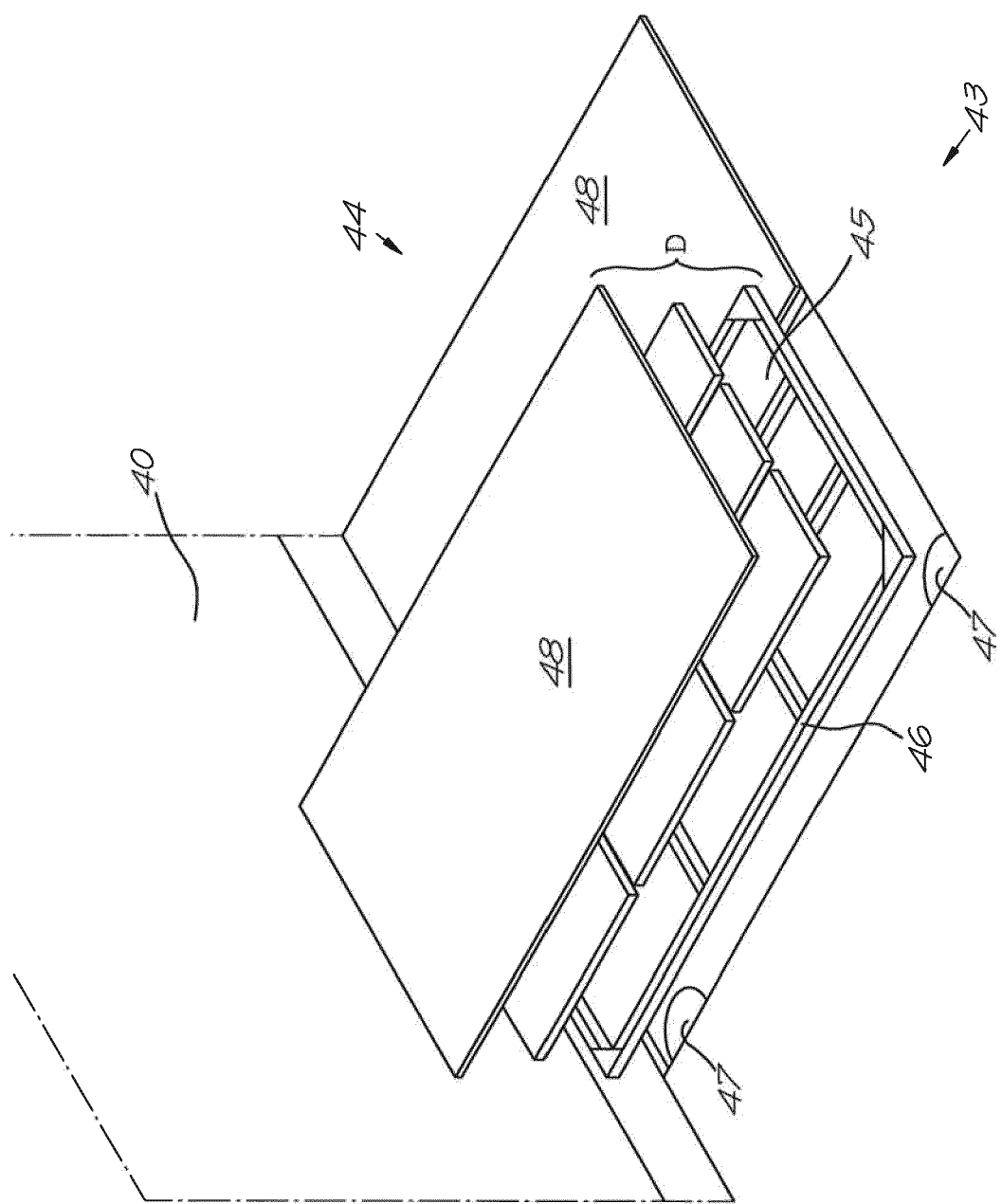


Fig. 19

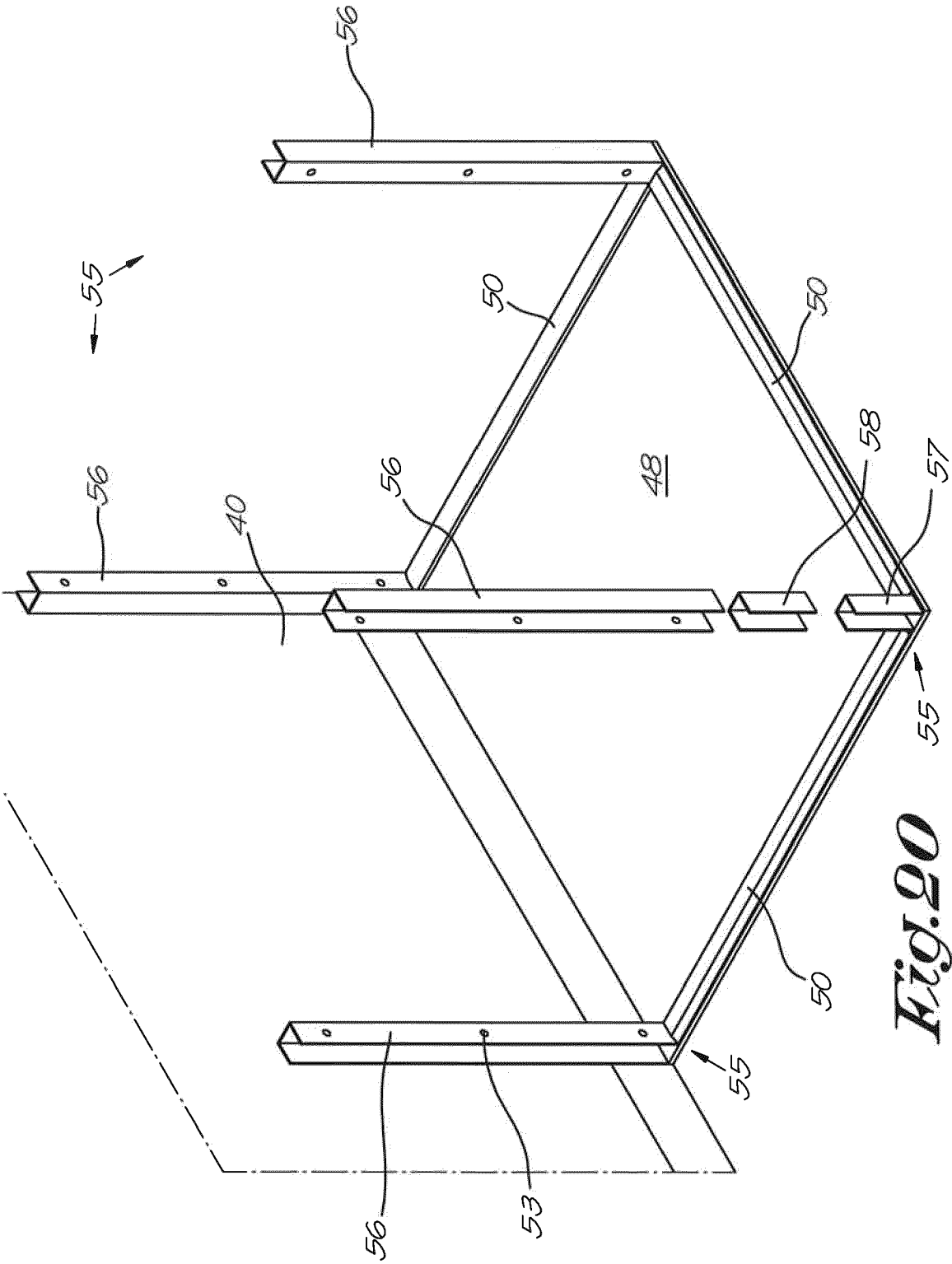
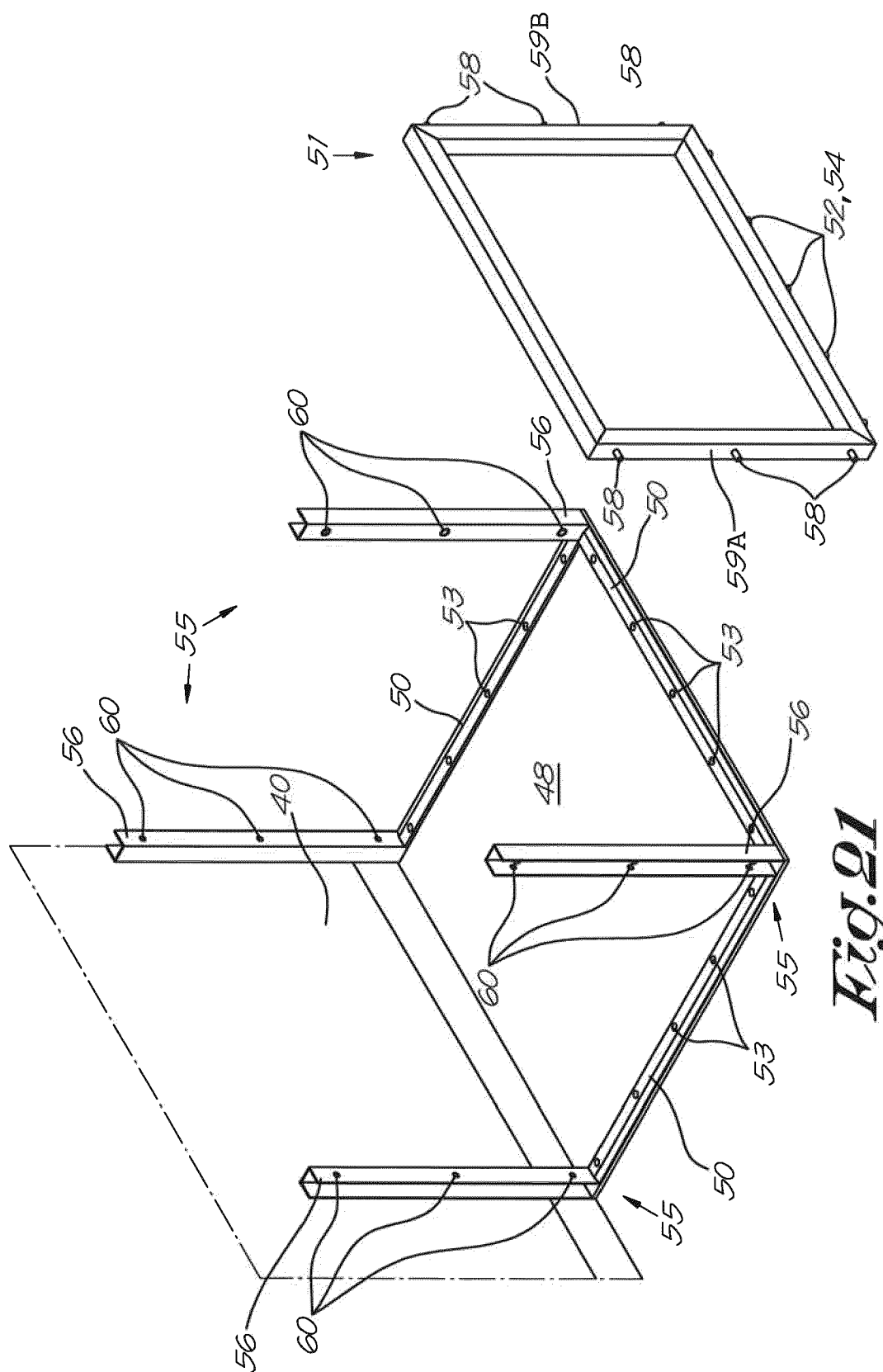


Fig. 20





EUROPEAN SEARCH REPORT

Application Number

EP 21 21 0273

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FR 2 996 237 A1 (ADVANTOP [FR]) 4 April 2014 (2014-04-04) * figures 1-2, 6 *	1-18	INV. E04B7/22 E04D3/35 E04D13/16 E04C2/292
A	US 5 457 917 A (PALMERSTEN MICHAEL J [US]) 17 October 1995 (1995-10-17) * column 4, lines 33-65; figures 2, 3, 7, 8 *	1-18	ADD. E04D13/072
A	FR 3 073 873 A1 (AV COMPOSITES [FR]) 24 May 2019 (2019-05-24) * claims 1, 8; figures 1-7, 9 *	1-18	
A	FR 3 077 587 A1 (COSY [FR]) 9 August 2019 (2019-08-09) * figures 3-5 *	10-18	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04B E04D E04C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 March 2022	Examiner Leroux, Corentine
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 21 21 0273

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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28-03-2022

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2996237 A1	04-04-2014	ES 2530902 A2	06-03-2015
		FR 2996237 A1	04-04-2014

US 5457917 A	17-10-1995	NONE	

FR 3073873 A1	24-05-2019	NONE	

FR 3077587 A1	09-08-2019	NONE	

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82