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(54) **DEVICE AND METHOD FOR MOUNTING AN ITEM TO A VERTICAL SURFACE**

(57) The present disclosure provides a device for mounting a cabinet to a wall. The device comprises an elongate wall rail (17), arranged to extend substantially horizontally and having a vertically upwardly operative support (171), and an elongate cabinet rail (16), arranged to extend substantially horizontally and having a vertically downwardly operative support (161). The device further comprises a recess (172a, 172b) formed in one of the supports (161, 171), and a protrusion (168a, 168b) formed in the other one of the supports (171, 161). The protrusion (168a, 168b) is configured to engage the recess (172a, 172b) when the support of the cabinet rail (161) is brought into engagement with the support of the wall rail (171). A method of mounting a cabinet on a wall is also disclosed.

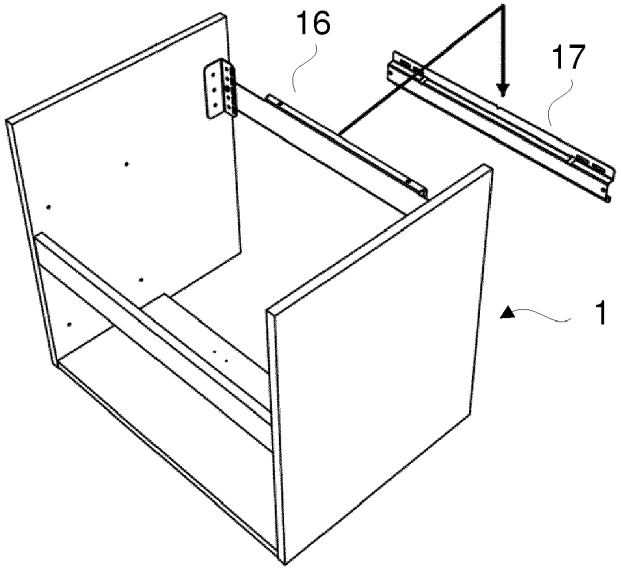

Fig 2d

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Description

Technical field

[0001] The present disclosure relates to a device and method for mounting items to a vertical surface. The device and method find particular application in the mounting of cabinets or other items on a vertical surface, such as a wall.

Background

[0002] There are many instances where it is desirable to mount e.g. a cabinet on a wall. Some examples include bathroom furnishings, including commodes with or without washstands, cupboards and the like. Similar needs may be found in kitchen furnishings and wall-mounted shelf systems. All such items to be mounted on a wall will herein be referred to as a "cabinet".

[0003] When a cabinet is to be mounted on a wall which may be exposed to water, special consideration must be given to the fact that any waterproofing provided in or on the wall should be kept as intact as possible.

[0004] Moreover, it is desirable to make it possible for a single person to mount the cabinet.

[0005] It is also desirable provide for the mounting of the cabinet to be perfectly horizontal.

[0006] It is moreover desirable, especially in the context of mounting of cabinets or washstands, to provide for a standardized height to an upper surface of the cabinet, as well as a standardized distance between sole plate and nogging. A challenge here is that different furnishings may have different distances from mount to upper surface. Hence, it may be a challenge in installing noggings that will match desired mounting heights of e. g. a cabinet and a washstand. It may also be a challenge to find a suitable pre-installed nogging when a new cabinet is to be installed, e.g. in connection with a renovation project.

[0007] While there are many different solutions available today, there is still a need for a system which to a greater degree meets the desires outlined above.

Summary

[0008] An object of the present disclosure is to provide a device and method for mounting a cabinet on a wall that meet as many as possible of the above listed desires.

[0009] The invention is defined by the appended independent claims, with embodiments being set forth in the appended dependent claims, in the following description and in the drawings.

[0010] According to a first aspect, there is provided a device for mounting a cabinet to a wall, comprising an elongate wall rail, arranged to extend substantially horizontally and having a vertically upwardly operative support, and an elongate cabinet rail, arranged to extend substantially horizontally and having a vertically downwardly operative support. The device comprises a recess formed in one of the supports, and a protrusion formed in the other one of the supports. The protrusion is configured to engage the recess when the support of the cabinet rail is brought into engagement with the support of the wall rail.

[0011] The wall rail is the rail, which is connected to the wall to which the cabinet is to be mounted.

[0012] The cabinet rail is the rail which is connected to the cabinet, or other item, that is to be mounted to the wall.

[0013] It is noted that the cabinet may be any type of structure that is to be mounted to the wall, including, but not limited to, bathroom furnishings, including commodes with or without washstands, cupboards and the like, kitchen furnishings and wall-mounted shelf systems.

[0014] The wall may be vertical, or sloping, as would be the case where the wall is formed by the inside of a roof, such as a gable roof, gambrel roof, mansard roof, etc.

[0015] The recess may be a through hole or a bottom hole formed in one of the supports.

[0016] The protrusion may be a separate detail which is mounted or permanently fixed to the associated support. In particular, the protrusion may be formed in one piece with the support, such as would be the case where the protrusion is formed as a tongue.

[0017] The device described above provides safe mounting of a cabinet while only requiring two holes being made in the wall, such as through a waterproofing layer of the wall.

[0018] The device can be installed and operated by a single person, provided the weight and other dimensions of the cabinet allows such person to lift it.

[0019] Moreover, the entire mounting device may be arranged above such items as wall bushings for water and drain, which also facilitates the installation.

[0020] The device enables installation of a cabinet with a high degree of perfection both with regard to vertical position of the cabinet and with regard to orientation of the cabinet.

[0021] The device may further comprise an angle bracket, wherein a first flange of the angle bracket is attached to the cabinet rail and a second flange of the angle bracket is attachable to a vertical frame portion of the cabinet.

[0022] Such attachments may preferably be performed by a threaded connector, such as a screw or a nut-and-bolt connection.

[0023] The first flange of the angle bracket may present a first vertical stack of mounting holes for mounting the cabinet rail to the angle bracket.

[0024] Hence, it is possible to provide a plurality, such as 2-10, preferably 3-8 or 4-6, mounting holes that are positioned at different vertical positions and vertically spaced apart, such that the relative position between the angle bracket and the cabinet rail may be selected to obtain a desired mounting height of the cabinet.

[0025] The second flange may present a second stack

of securing holes, which is laterally offset from the first stack of mounting holes.

[0026] The mounting holes may each be adapted for receiving a fastener in a single position, such as by being round, and the securing holes may each be adapted for receiving a fastener in multiple positions, such by being elongate, preferably in the vertical direction.

[0027] Each mounting hole may be horizontally aligned with one of the securing holes.

[0028] The cabinet rail may present a mounting hole and a securing hole, which is laterally offset from the mounting hole.

[0029] The mounting hole and the securing hole of the cabinet rail may be horizontally aligned.

[0030] The wall rail may present at least two spaced apart through holes adapted for mounting the wall rail to a wall.

[0031] The upwardly operative support may present an angle to a horizontal plane of +/- 30 degs, preferably +/- 20 degs, +/- 10 degs or +/- 5 degs. It is particularly advantageous if the support is outwardly angled, as this would facilitate access to operate the adjustment device that will be described herein.

[0032] Preferably, the support surface is inclined away from the wall.

[0033] The wall rail presents a mounting portion that is configured to be mounted against the wall to extend parallel with the wall, whereby the upwardly operative support extends outwardly from the mounting portion.

[0034] The wall rail may further present an abutment portion, which may extend coplanar with the mounting portion.

[0035] The wall rail may present a profile comprising a pair of coplanar wall abutting portions and an intermediate mounting portion, which is horizontally spaced from the wall abutting portions when the wall rail is mounted to a wall.

[0036] The support surface may extend between the one of the wall abutting portions and the mounting portion, preferably between an upper wall abutting portion and the mounting portion.

[0037] The protrusion and the corresponding recess may be arranged at a distance from a wall rail end corresponding to 5-30 % of a total length of the wall rail.

[0038] The protrusion may form part of a pair of spaced apart protrusions, each of which being arranged at said distance from a respective wall rail end.

[0039] The device may further comprise a tuning device for tuning a relative horizontal orientation between the wall rail and the cabinet rail.

[0040] The tuning device may comprise at least one threaded member, arranged to threadingly engage one of the wall rail and the cabinet rail such that a distance between a portion of the wall rail and a corresponding portion of the cabinet rail is variable.

[0041] The threaded member may be axially movable in a direction perpendicular to the at least one of the supports.

[0042] According to a second aspect, there is provided a cabinet, which is adapted to be mounted to a wall, comprising first and second parallel and spaced apart vertical cabinet frame members, and a device as described above,
wherein the cabinet rail extends between and is connected to the cabinet frame members.

[0043] The cabinet rail may be shorter than a distance between inwardly facing surfaces of the vertical cabinet frame members to which the cabinet rail is attached.

[0044] The wall rail may be shorter than a width of the cabinet, preferably shorter than an inside width of the cabinet.

[0045] According to a third aspect, there is provided a method of mounting a cabinet to a wall, comprising mounting an elongate wall rail, having a vertically upwardly operative support, such that the wall rail extends substantially horizontally on the wall, mounting an elongate cabinet rail, having a vertically downwardly operative support, such that the cabinet rail extends substantially horizontally along a wall facing side of the cabinet, and bringing the support of the cabinet rail into contact with the support of the wall rail. The method further comprises causing a recess formed in one of the supports, and a protrusion formed in the other one of the supports to engage each other, such that relative horizontal movement between the supports is prevented or limited in at least one direction.

[0046] The method may further comprise tuning the relative vertical positions of portions of the cabinet rail and the wall rail by means of an adjustment arrangement operative between at least one portion of the cabinet rail and a corresponding portion of the wall rail, such that the cabinet obtains a predetermined, preferably horizontal, orientation.

[0047] The method may further comprise securing the orientation of the cabinet by fixing it directly to the wall rail

[0048] In the method, a fastener may be caused to engage a securing hole of an angle bracket mounted to the cabinet, a securing hole formed in the cabinet rail and a securing hole formed in the wall rail.

[0049] Hence, it is possible to secure the angle bracket, and thus the cabinet, to the wall rail once a desired relative position of the cabinet rail and the wall rail has been attained.

Brief description of the drawings

[0050]

Fig. 1 schematically illustrates a cabinet mounted to a wall.

Figs 2a-2d schematically illustrate a device and method for mounting the cabinet to the wall.

Figs 2e-2g schematically illustrate the wall rail 16.

Figs 3a-3b schematically illustrate the device in cross sectional view.

Figs 3c-3d schematically illustrate the device as

seen from above.

Figs 4a-4b schematically illustrate a detail of the device.

Figs 5a-5b schematically illustrate an adjustment device for adjusting the cabinet's orientation.

Figs 6a-6c schematically illustrate device and method for adjusting the cabinet's orientation.

Detailed description

[0051] Fig. 1 schematically illustrates a cabinet 1 mounted to a wall 21 of a room, such that the cabinet is not, or only partially, supported by the floor 22. In the illustrated example, the cabinet 1 has the form of a low cabinet, and can function as a base for a washstand, as a wall mounted chest of drawers, a counter, or the like. Hence, the cabinet may comprise open shelves, doors, drawers, interior shelves, sliding doors, etc. When used in a kitchen, the cabinet may be used to house items such as ovens, microwave ovens, coffee makers or other fixed appliances.

[0052] The cabinet may be provided with a countertop and/or a wash basin/sink arrangement.

[0053] The cabinet of the present disclosure may be an upper cabinet, to be mounted above a counter or a washstand, or it may be a cupboard, with arbitrary height.

[0054] It is understood that while in the context of the present disclosure, the cabinet is illustrated as having a pair of vertical walls and a horizontal bottom, the cabinet may in general comprise a cabinet frame.

[0055] A cabinet frame may comprise at least one horizontal part, which may be formed by a board, as in the case where the cabinet has a bottom, or by one or more ribs, and a pair of vertical parts, that are to be arranged adjacent the wall, and that may also be formed by boards, as in the case where the cabinet has walls, or by ribs.

[0056] Ribs may be used to provide an open frame, or to carry side walls which may be made of a thinner board material or even by glass or the like.

[0057] In any case, the cabinet can be said to have a rear portion, closest to the wall and a front portion facing outwardly towards the space in which the cabinet is arranged. The rear portion should preferably be at least partially open, to allow access, through the cabinet, to the wall to which the cabinet is to be mounted on.

[0058] The wall as illustrated may be any type of wall, including organic or inorganic materials. For example, the wall may be a concrete or other type of mineral material solid wall.

[0059] Alternatively, the wall may be formed by a plurality of at least vertical studs, possibly also with horizontal studs (noggings), covered by any type of panel or board material, such as wood planks, plaster boards, plywood boards, chip boards, wood fiber boards (such as MDF, HDF) or mineral, inorganic boards, as are frequently used in rooms subjected to water or moisture, such as in wet rooms, e.g. bathrooms.

[0060] The wall 21 may be provided with a waterproofing layer, as is conventional. Such waterproofing layer may comprise one or more impermeable compounds, wall coverings, films or the like. Moreover, the wall may be provided with a wear layer, such as ceramic or stone tiles or other type of wall covering.

[0061] Referring to Figs 2a-2d, there is illustrated a cabinet frame comprising a pair of walls 11, 12, a bottom 13 and an optional horizontal reinforcement member 14. The cabinet frame is provided with a pair of angle brackets 15a, 15b for mounting the frame to the cabinet rail 16.

[0062] In Fig. 2b and 2e-2g, a cabinet rail 16 is mounted to the angle brackets 15a, 15b. The cabinet rail 16 may be formed by an elongate profiled member. The profile member may be of a metallic material, including substantially pure metals and metal alloys. Specific examples may be steel or steel alloy, aluminum or aluminum alloy. The profile may be formed by a sheet metal that is bent and/or pressed into the desired profile, or it may be formed by extrusion.

[0063] In applications with lower load requirements, it may be possible to form the profile member from a polymer based material, including thermoplastic polymers or thermosetting polymers. Such polymer material may contain reinforcing fibers.

[0064] The cabinet rail 16 comprises an elongate member having a length Wc that is shorter than an inner width of the cabinet 1, and in particular shorter than the horizontal distance between inwardly facing surfaces of the walls 11, 12, to which the angle brackets 15a, 15b are mounted. Hence, the cabinet rail 16 may fit in its entirety between the walls 11, 12. The length Wc of the cabinet rail should be long enough such that its respective end portions can be engaged by the angle brackets 15a, 15b. Hence, the length Wc of the cabinet rail 16 should typically not be less than 90 % of inner width of the cabinet, preferably not less than 95 % of said inner width.

[0065] Typically, a cabinet rail 16 may be adapted to a width of the cabinet. The adaptation may reside in that the length of the cabinet rail is equal to the width of the cabinet less 2 x the wall thickness of the cabinet. Hence, a cabinet rail for a 40 cm cabinet may be about 36-37 cm in length.

[0066] Fig. 2c schematically illustrates a wall rail 17. The wall rail may be formed in any of the manners disclosed for the cabinet rail 16. The wall rail 17 comprises an elongate member having a length Ww that is shorter than an inner width of the cabinet 1, and in particular shorter than the width of the cabinet less twice the thickness of the cabinet frame members, such as the walls 11, 12, to which the angle brackets 15a, 15b are mounted. The length Ww of the wall rail 17 may be greater than 40 % of the inner width of the cabinet 1, preferably greater than 50 %, 60 %, 70 % or 80 % of said inner width.

[0067] Typically, the wall rail 17 is shorter than the cabinet rail 16, such that a fastener engaging a mounting hole in the cabinet rail will not interfere with the wall rail.

[0068] The wall rail 17 presents an upwardly facing support surface 171. The support surface may be hori-

zontal or slightly sloping. In particular, the support surface 171 may slope away outwardly, away from the wall, at an angle between 0 and 30 degrees, preferably 0-20 degrees, 0-15 degrees or 0-10 degrees.

[0069] The wall rail 17 may further comprise sets of mounting holes 173a, 174a; 173b, 174b, which may be round holes or elongate holes. The sets of holes may, but need not, be grouped and spaced so as to correspond to a relevant distance between vertical studs, in case it would be preferred to mount the wall rail to vertical studs. Hence, in such case the holes may be spaced and arranged so as to provide one set of spaced apart holes 173a, 173b arranged to be mounted to vertical studs that are spaced about 60 cm apart, whereas another set of spaced apart holes 174a, 174b may be arranged to be mounted to vertical studs that are spaced about 45 cm apart.

[0070] The wall rail 17 further comprises mounting holes 175a, 175b for securing the angle brackets 15a, 15b to the wall rail 17, through the cabinet rail 16.

[0071] Fig. 2d schematically illustrates the movement when the cabinet 1 with the cabinet rail 16 is lifted to be placed onto the wall rail 17.

[0072] Figs 2e-2g schematically illustrate the cabinet rail 16, as seen in planar view. The cabinet rail comprises a pair of spaced apart mounting holes 166a, 166b and a pair of spaced apart securing holes 167a, 167b. Also visible are the protrusions 168a, 168b and the treaded parts 165a, 165b of the adjustment device.

[0073] Figs 3a-3b schematically illustrate the rail profiles as well as the connectors.

[0074] In Fig. 3a, there is illustrated the profile of the cabinet rail 16 and of the wall rail 17. The wall rail 17 comprises a first vertical portion 176, which may be adapted for mounting to the wall, e.g. by being provided with the sets of holes 173a, 174a; 173b, 174b.

[0075] The wall rail 17 further comprises a second vertical portion 177, which is coplanar with the first vertical portion 176, and which is vertically spaced therefrom when the wall rail 17 is mounted on a wall.

[0076] The wall rail 17 further comprises a third vertical portion 178, which is horizontally spaced from the other vertical portions 176, 177. The support surface 171 may connect the first vertical portion 176 to the third vertical portion 178. A space is thus formed inside the wall rail 17. Such that screw tips may be received without engaging and/or damaging the wall 21 surface.

[0077] Moreover, the wall rail comprises recesses 172a, 172b, here in the form of through holes. The recesses 172a, 172b are adapted to receive protrusions 168a, 168b formed on the cabinet rail 16.

[0078] Fig. 3c shows the cabinet rail and the wall rail in exploded view as seen from above.

[0079] Further in Fig. 3a, there is illustrated the profile of the cabinet rail 16. This profile comprises an upper support flange 162 which provides a downwardly facing support surface 161. An angle to the horizontal plane of the upper support flange may correspond substantially, such as +/- 5 degrees, preferably +/- 1 degree, to the slope of the upwardly facing support surface 171 of the wall rail 17.

[0080] The cabinet rail further comprises a vertical portion 163 and optionally a further flange 164.

[0081] The upper flange 162 comprises protrusions 168a, 168b, which are arranged at positions along the length of the cabinet rail 17 corresponding to positions of the recesses 172a, 172b. The protrusions 162 may be formed as downwardly bent tongues of the material from which the cabinet rail 16 is formed from.

[0082] The cabinet rail also comprises mounts 166, here in the form of nuts integrated with the vertical portion 163 of the profile, for mounting of the angle brackets 15a, 15b.

[0083] The angle brackets 15a, 15b comprise a respective cabinet mount flange 151 and a respective cabinet rail mount flange 152. (Figs 3a, 3b)

[0084] The cabinet mount flange 151 may comprise one, two or a plurality of holes 153a, 153b, 153c for mounting to the cabinet frame or wall.

[0085] The cabinet rail mount flange 152 may comprise one, two or a plurality cabinet rail mount holes 156 for receiving mounting screws 154 for mounting the cabinet rail to the angle bracket 15a, 15b.

[0086] The cabinet rail mount holes 156 may be provided as a vertical stack of spaced apart holes. In the illustrated example, there are five holes, having a non-limiting center-to-center distance of 2 cm.

[0087] Figs 3b, 3d schematically illustrate the assembled device as seen in profile and from above, respectively.

[0088] The cabinet rail mount flange 152 may further comprise one or more securing holes 157 (Fig. 4b). While the former 156 may be round holes, the latter 157 may be elongate holes arranged such that the angle bracket 15a, 15b can be secured to the wall rail 17. To this end, a securing hole 167a, 167b may be provided in the cabinet rail 16, such that the securing screws 155 may extend through the cabinet rail and directly engage a securing hole 175a, 175b in the wall rail 17. Alternatively, the securing screws may be self-drilling screws that are caused to drill through the cabinet rail 16 and optionally also through the wall rail 17.

[0089] The securing holes 157 formed in the angle brackets 15a, 15b may also be arranged as a respective vertical stack of spaced apart holes.

[0090] While the mounting holes 156 may be round, so as to allow effectively only a single positioning of the mounting fastener 154, the securing holes 157, 167a, 167b may be elongate, so as to allow variable positioning of the securing fastener 155. Preferably, the securing holes 157, 167a, 167b may be elongate in the vertical direction.

[0091] In the flange 152, each of the mounting holes 156 may be horizontally aligned with a respective one of the securing holes 157. The alignment may be with respect to upper hole edges, lower hole edges, hole centers

or the like, so long as each hole 156 is aligned with a corresponding hole 157.

[0092] Likewise, in the cabinet rail, the mounting hole 166a, 166b is aligned with a respective securing hole 167a, 167b. The alignment relationship may be the same for the mounting holes 166a, 166b and securing holes 167a, 167b of the cabinet rail 16 as for each pair of mounting hole 156 and securing hole 157 of the angle bracket flange 152.

[0093] The securing fasteners 155 may be used together with a washer, or may be selected as fastener having a greater diameter fastener head, so as to properly engage the surface of the cabinet rail around the hole 157.

[0094] At least one securing arrangement may be provided for each angle bracket 15a, 15b.

[0095] In figs 3a-3b there is also visible one of the adjustment arrangements, which here comprises a threaded hole 165a and a threaded member 18a, such as a screw or bolt.

[0096] The threaded hole 165a, 165b is provided in one of the support surfaces 161, 171, with the threaded member 18a, 18b being received in the threaded hole 165a, 165b such that a distal end 182 of the threaded member 18a, 18b bears against the other support surface 171.

[0097] In the illustrated example, the threaded holes 165a, 165b are provided in the support surface 161 of the cabinet rail 16 and the distal portion of the threaded members 18a, 18b are caused to bear on the support surface 171 of the wall rail 17.

[0098] There may be one or more, preferably two, spaced apart, adjustment arrangements provided.

[0099] The description will now be directed to a method of installing a cabinet 1 on a wall 21.

[0100] When used with stud/nogging based walls, typically, noggings are installed at a predetermined height for mounting of cabinets and the like.

[0101] Referring to Fig. 2c, as a first step, it is determined where on the wall the cabinet is to be arranged.

[0102] One or more pre-installed noggings are identified. alternatively, or as a supplement, vertical studs, if any, may be identified.

[0103] Angle brackets 15a, 15b are mounted to respective vertical frame members of the cabinet. The angle brackets may be mounted near, but not flush with, a rear surface of the cabinet that is to face the wall. Preferably, the angle brackets may be spaced forwardly from the rear surface by a distance corresponding to a total thickness of the connected wall rail 17 and cabinet rail 16.

[0104] The cabinet rail 16 is then mounted to the cabinet rail mount flanges 152 of the angle brackets 15a, 15b, with mounting holes 156 being selected based on the known position of the nogging and on the desired position of the top surface of the cabinet. In the case where there are multiple mount holes 156 in the cabinet rail mount flange, appropriate holes must be selected with due regard to the intended mounting height and position.

[0105] Through the arrangement disclosed herein, an 8 cm adjustment height may be attained (with 5 holes spaced 2 cm apart), simply through the selection of a particular mounting hole 156 to connect to the mounting hole 166 of the cabinet rail.

[0106] Next, the wall rail 17 is mounted to the wall 21. Preferably, the rail 17 is mounted in an exact horizontal orientation and with only two screws. By minimizing the number of mounting screws, the number of holes in the waterproofing of the wall is minimized, as is the risk of damage to the wall due to a failed sealing at the mounting screw.

[0107] The cabinet 1 is then lifted into place, as illustrated in Fig. 2d such that the support surface 161 of the cabinet rail 16 bears on the support surface 171 of the wall rail 17. The protrusion or protrusions 168a, 168b of the cabinet rail 16 are caused to engage the recesses 172a, 172b in the wall rail 17, whereby the cabinet rail 16 is prevented from sliding off the wall rail 17, see Fig. 4b. Preferably, the protrusions 168a, 168b have vertical lengths which exceed a vertical range of the adjustment arrangement 18, such that the adjustment can be carried out without risk of the protrusions 168a, 168b leaving the recesses 172a, 172b.

[0108] At this point, the adjustment arrangement may be operated so as to obtain a perfect horizontal orientation of the cabinet.

[0109] The adjustment arrangement may also be used to fine tune the height of cabinets that are arranged side by side on the wall 21, or that otherwise need to be installed at a very specific height.

[0110] The adjustment screws 18a, 18b may be prearranged in the holes 165a, 165b, or they may be inserted at this point.

[0111] Fig. 6a illustrate the arrangement with both adjustment screws at their innermost positions. Likewise, fig. 6b illustrate the arrangement with the adjustment screws at their outermost positions. As can be seen, in Fig. 6a, the cabinet rail 16 is higher up relative to the wall rail 17 in Fig. 6a than in Fig. 6b.

[0112] In Fig. 6c, the left portion of the cabinet rail 16 is higher up than the right portion of the cabinet rail 16.

[0113] Hence, the adjustment arrangement makes it possible to adjust or fine tune the cabinet relative to the wall rail 17, such that the cabinet can be perfectly horizontal. A level device, such as a water level, may be used to aid while tuning the orientation of the cabinet 1.

[0114] Once the desired relative position of the cabinet rail 16 and the wall rail 17 has been attained, the securing screws 155 are engaged, whereby the relative position of the cabinet rail 16 and the wall rail 17 is locked. At this point, the cabinet has been securely and perfectly horizontally mounted to the wall, with only two piercings of any waterproofing layer.

Claims

1. A device for mounting a cabinet to a wall, comprising:

   an elongate wall rail (17), arranged to extend substantially horizontally and having a vertically upwardly operative support (171), and
   an elongate cabinet rail (16), arranged to extend substantially horizontally and having a vertically downwardly operative support (161),

   characterized by

   a recess (172a, 172b) formed in one of the supports (161, 171), and
   a protrusion (168a, 168b) formed in the other one of the supports (171, 161),
   the protrusion (168a, 168b) being configured to engage the recess (172a, 172b) when the support of the cabinet rail (161) is brought into engagement with the support of the wall rail (171).

2. The device as claimed in any one of the preceding claims, further comprising an angle bracket (15a, 15b), wherein a first flange (152) of the angle bracket is attached to the cabinet rail and a second flange (151) of the angle bracket is attachable to a vertical frame portion (11, 12) of the cabinet (1).

3. The device as claimed in claim 2, wherein the first flange (152) presents:

   a first vertical stack (156) of mounting holes for mounting the cabinet rail to the angle bracket (15), and
   optionally a second vertical stack of securing holes (157), which is laterally offset from the first stack of mounting holes (156).

4. The device as claimed in any one of the preceding claims, wherein the cabinet rail (16) presents a mounting hole (166a, 166b) and a securing hole (167a, 167b), which is laterally offset from the mounting hole (166a, 166b).

5. The device as claimed in any one of the preceding claims, wherein the upwardly operative support (171) presents an angle to a horizontal plane of +/- 30 degs, preferably +/- 20 degs, +/- 10 degs or +/- 5 degs.

6. The device as claimed in any one of the preceding claims, wherein the wall rail (17) presents a mounting portion (176) that is configured to be mounted against the wall to extend parallel with the wall, whereby the upwardly operative support (171) extends outwardly from the mounting portion (176).

7. The device as claimed in any one of the preceding claims, wherein the protrusion (168a, 168b) and the corresponding recess (172a, 172b) are arranged at a distance from a wall rail end corresponding to 5-30 % of a total length of the wall rail (17).

8. The device as claimed in any one of the preceding claims, wherein the protrusion (168a, 168b) forms part of a pair of spaced apart protrusions (168a, 168b), each of which being arranged at said distance from a respective wall rail (17) end.

9. The device as claimed in any one of the preceding claims, further comprising a tuning device (18a,18b; 165a, 165b) for tuning a relative horizontal orientation between the wall rail and the cabinet rail.

10. A cabinet (1), which is adapted to be mounted to a wall (21), comprising:

    first and second parallel and spaced apart vertical cabinet frame members (11, 12), and
    a device as claimed in any one of the preceding claims,
    wherein the cabinet rail (16) extends between and is connected to the cabinet frame members (11, 12).

11. The cabinet as claimed in claim 10, wherein the cabinet rail (16) is shorter than a distance between inwardly facing surfaces of the vertical cabinet frame members to which the cabinet rail (16) is attached.

12. A method of mounting a cabinet (1) to a wall (21), comprising:

    mounting an elongate wall rail (17), having a vertically upwardly operative support (171), such that the wall rail extends substantially horizontally on the wall (21),
    mounting an elongate cabinet rail (16), having a vertically downwardly operative support (161), such that the cabinet rail (16) extends substantially horizontally along a wall facing side of the cabinet (1), and
    bringing the support (161) of the cabinet rail (16) into contact with the support (171) of the wall rail (17),

    characterized by

    causing a recess (168a, 168b) formed in one of the supports (161, 171), and a protrusion (172a, 172b) formed in the other one of the supports to engage each other, such that relative horizontal movement between the supports is prevented or limited in at least one direction.

13. The method as claimed in claim 12, further comprising tuning the relative vertical positions of portions of the cabinet rail (16) and the wall rail (17) by means of an adjustment arrangement operative between at least one portion of the cabinet rail (16) and a corresponding portion of the wall rail (17), such that the cabinet obtains a predetermined, preferably horizontal, orientation.

14. The method as claimed in claim 12 or 13, further comprising securing the orientation of the cabinet (1) by fixing it directly to the wall rail (17).

15. The method as claimed in claim 14, wherein a fastener is caused to engage a securing hole (157) of an angle bracket mounted to the cabinet, a securing hole (167a, 167b) formed in the cabinet rail (16) and a securing hole (175a, 175b) formed in the wall rail (17).

Amended claims in accordance with Rule 137(2) EPC.

1. A device for mounting a cabinet to a wall, comprising:

an elongate wall rail (17), arranged to extend substantially horizontally and having a vertically upwardly operative support (171), and
an elongate cabinet rail (16), arranged to extend substantially horizontally and having a vertically downwardly operative support (161),
the device further comprising:

a recess (172a, 172b) formed in one of the supports (161, 171),
a protrusion (168a, 168b) formed in the other one of the supports (171, 161), and
an angle bracket (15a, 15b), wherein a first flange (152) of the angle bracket is attached to the cabinet rail and a second flange (151) of the angle bracket is attachable to a vertical frame portion (11, 12) of the cabinet (1),

the protrusion (168a, 168b) being configured to engage the recess (172a, 172b) when the support of the cabinet rail (161) is brought into engagement with the support of the wall rail (171)
characterized in that
the cabinet rail mount flange (152) comprises one or more securing holes (157), and
a securing hole (167a, 167b) is provided in the cabinet rail (16), such that a fastener may extend through the cabinet rail and directly engage a securing hole (175a, 175b) in the wall rail (17).

2. The device as claimed in claim 1, wherein the first flange (152) presents:

a first vertical stack (156) of mounting holes for mounting the cabinet rail to the angle bracket (15), and
optionally a second vertical stack of securing holes (157), which is laterally offset from the first stack of mounting holes (156).

3. The device as claimed in any one of the preceding claims, wherein the cabinet rail (16) presents a mounting hole (166a, 166b) and a securing hole (167a, 167b), which is laterally offset from the mounting hole (166a, 166b).

4. The device as claimed in any one of the preceding claims, wherein the upwardly operative support (171) presents an angle to a horizontal plane of +/- 30 degs, preferably +/- 20 degs, +/- 10 degs or +/- 5 degs.

5. The device as claimed in any one of the preceding claims, wherein the wall rail (17) presents a mounting portion (176) that is configured to be mounted against the wall to extend parallel with the wall, whereby the upwardly operative support (171) extends outwardly from the mounting portion (176).

6. The device as claimed in any one of the preceding claims, wherein the protrusion (168a, 168b) and the corresponding recess (172a, 172b) are arranged at a distance from a wall rail end corresponding to 5-30 % of a total length of the wall rail (17).

7. The device as claimed in any one of the preceding claims, wherein the protrusion (168a, 168b) forms part of a pair of spaced apart protrusions (168a, 168b), each of which being arranged at said distance from a respective wall rail (17) end.

8. The device as claimed in any one of the preceding claims, further comprising a tuning device (18a,18b; 165a, 165b) for tuning a relative horizontal orientation between the wall rail and the cabinet rail.

9. A cabinet (1), which is adapted to be mounted to a wall (21), comprising:

first and second parallel and spaced apart vertical cabinet frame members (11, 12), and
a device as claimed in any one of the preceding claims,
wherein the cabinet rail (16) extends between and is connected to the cabinet frame members (11, 12).

10. The cabinet as claimed in claim 9, wherein the cabinet rail (16) is shorter than a distance between inwardly facing surfaces of the vertical cabinet frame members to which the cabinet rail (16) is attached.

11. A method of mounting a cabinet (1) to a wall (21), comprising:

mounting an elongate wall rail (17), having a vertically upwardly operative support (171), such that the wall rail extends substantially horizontally on the wall (21),
mounting an elongate cabinet rail (16), having a vertically downwardly operative support (161), such that the cabinet rail (16) extends substantially horizontally along a wall facing side of the cabinet (1), and
bringing the support (161) of the cabinet rail (16) into contact with the support (171) of the wall rail (17),
causing a recess (172a, 172b) formed in one of the supports (161, 171), and a protrusion (168a, 168b) formed in the other one of the supports to engage each other, such that relative horizontal movement between the supports is prevented or limited in at least one direction,
characterized in that the method further comprises:

securing the orientation of the cabinet (1) by fixing it directly to the wall rail (17),
wherein a fastener is caused to engage a securing hole (157) of an angle bracket mounted to the cabinet, and a securing hole (175a, 175b) formed in the wall rail (17), such that the fastener extends through the cabinet rail and directly engages the securing hole (175a, 175b) in the wall rail (17).

12. The method as claimed in claim 11, further comprising tuning the relative vertical positions of portions of the cabinet rail (16) and the wall rail (17) by means of an adjustment arrangement operative between at least one portion of the cabinet rail (16) and a corresponding portion of the wall rail (17), such that the cabinet obtains a predetermined, preferably horizontal, orientation.

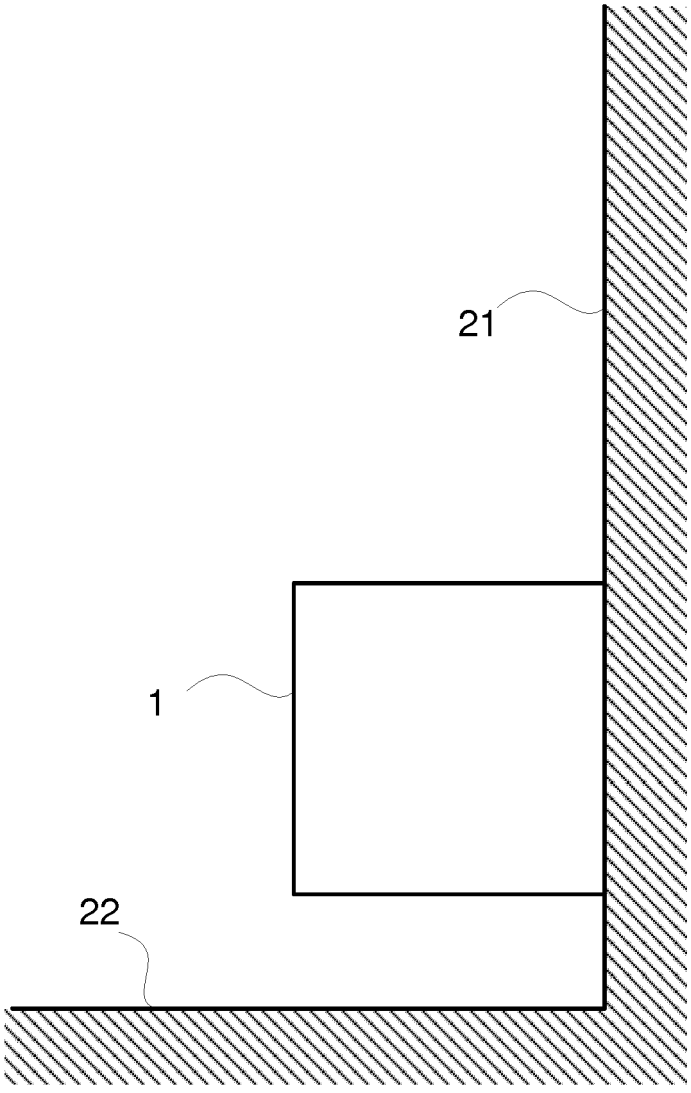


Fig 1

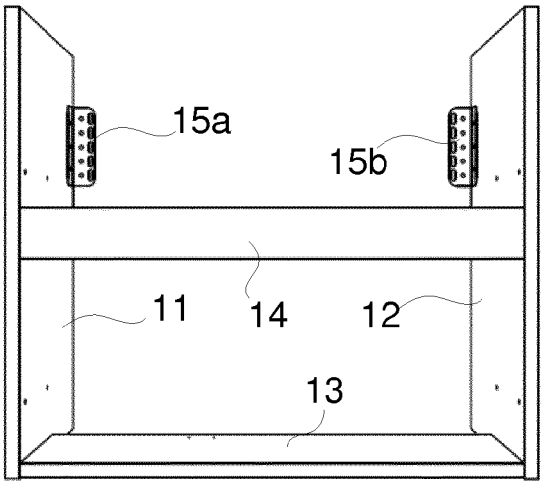


Fig 2a

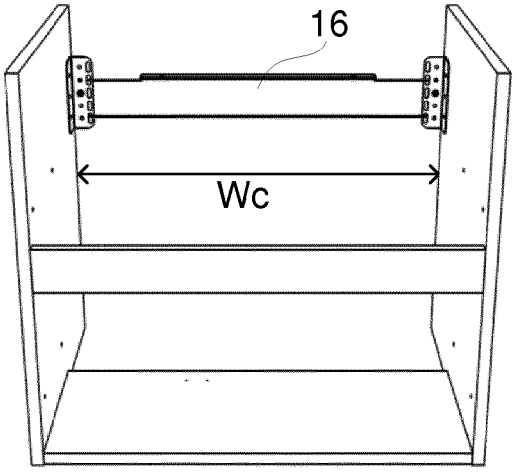


Fig 2b

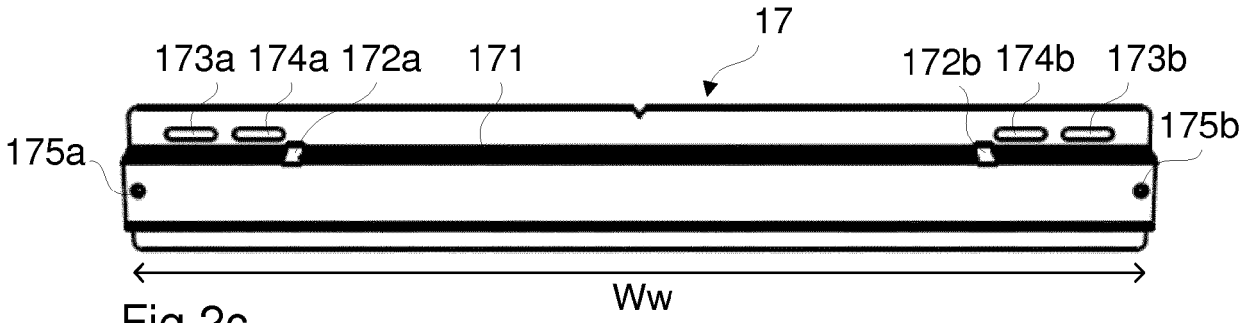


Fig 2c

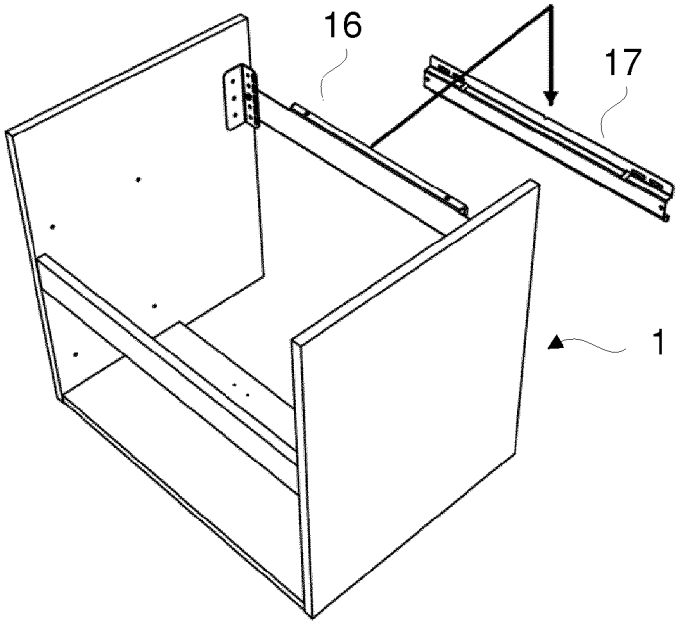


Fig 2d

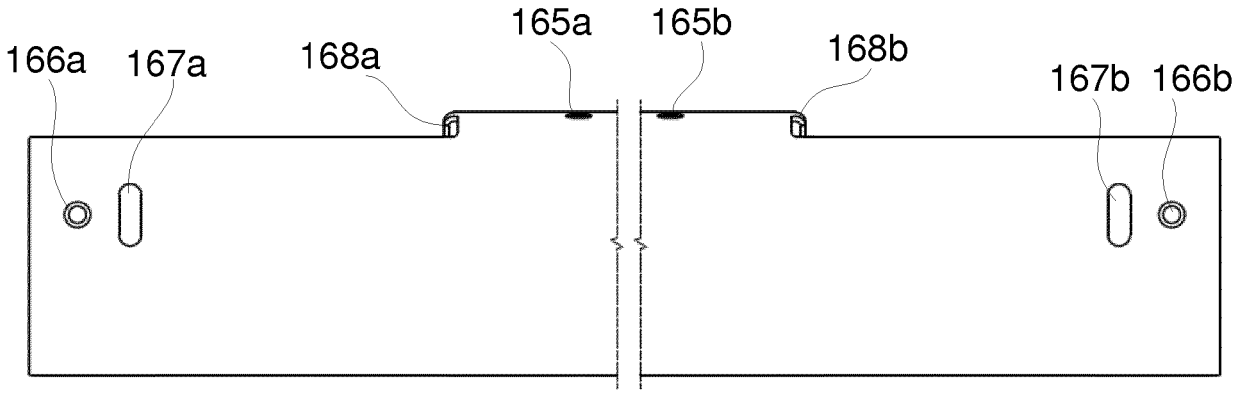


Fig 2e

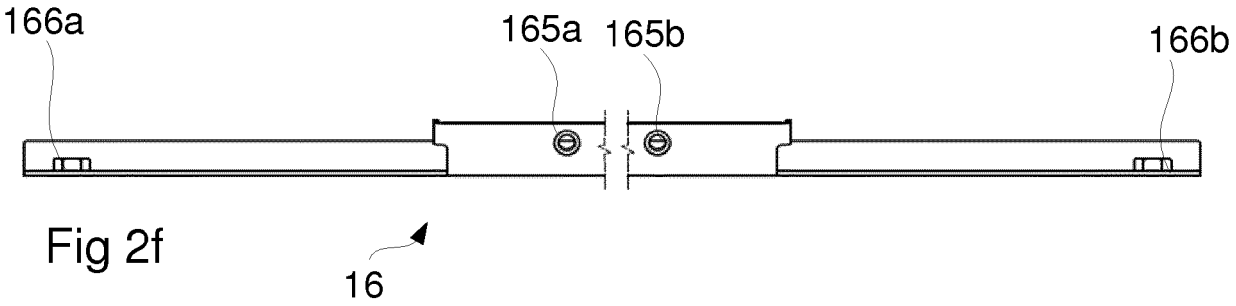


Fig 2f

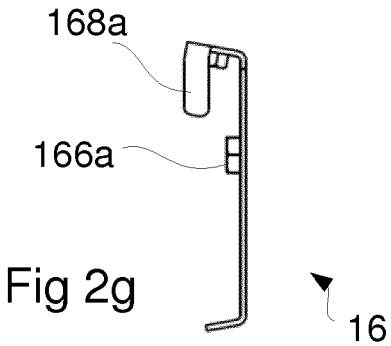


Fig 2g

Fig 3a

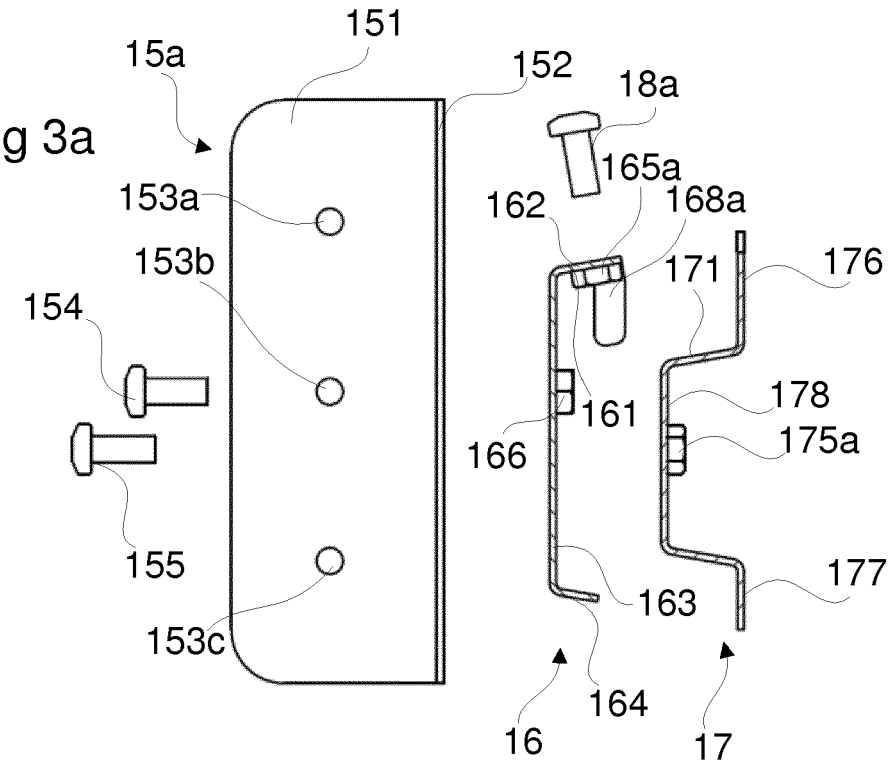
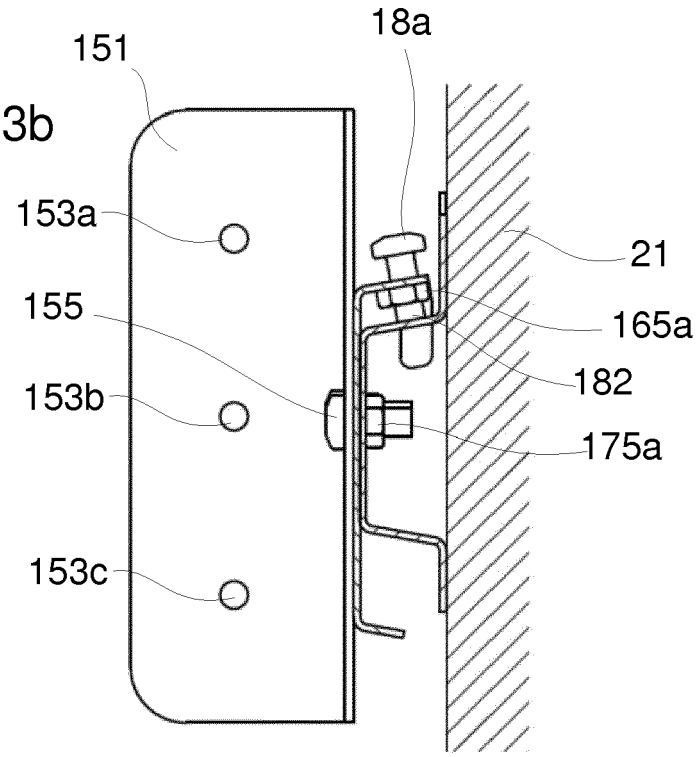

151
15a
152
18a
165a
162
168a
153a
153b
171
176
154
178
161
166
175a
155
177
163
153c
164
16
17

Fig 3b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151
153a
21
155
165a
182
153b
175a
153c

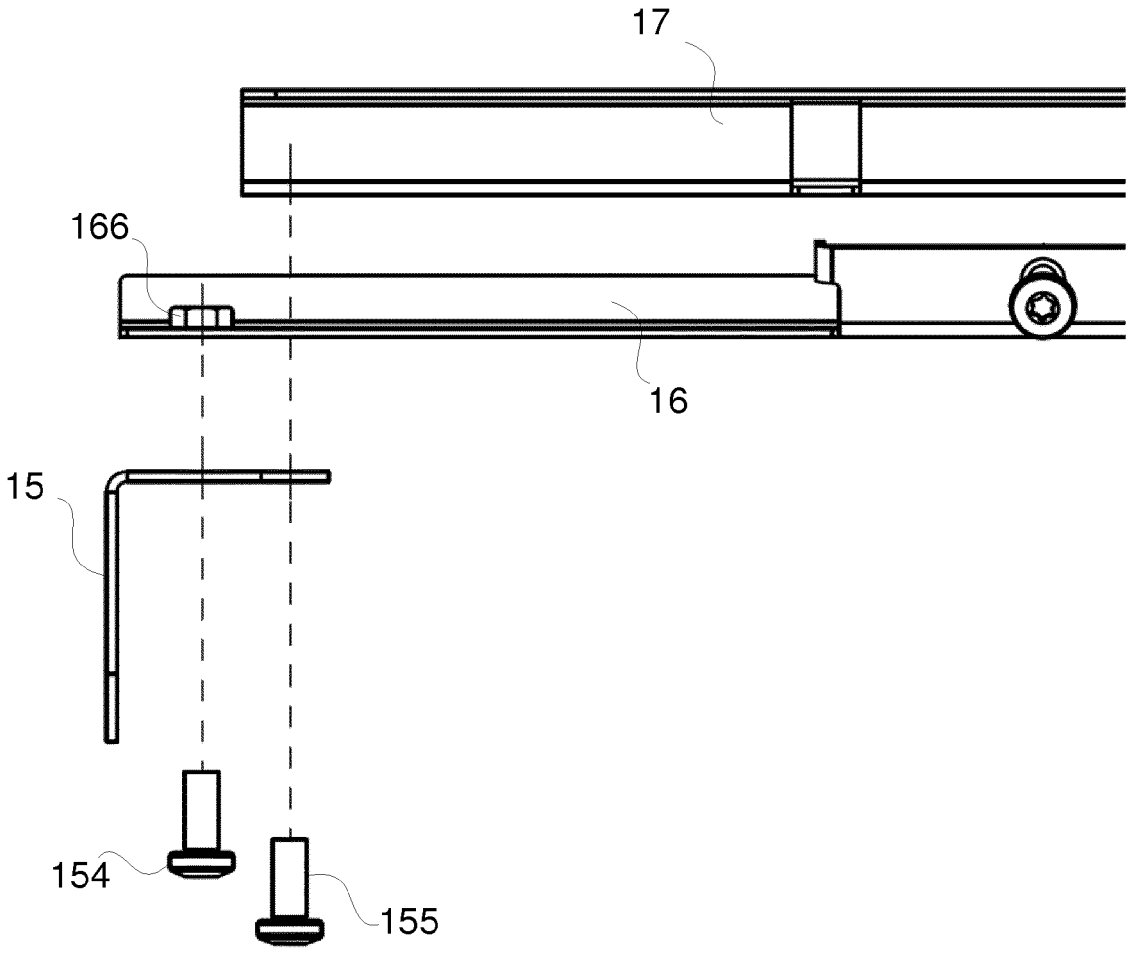


Fig 3c

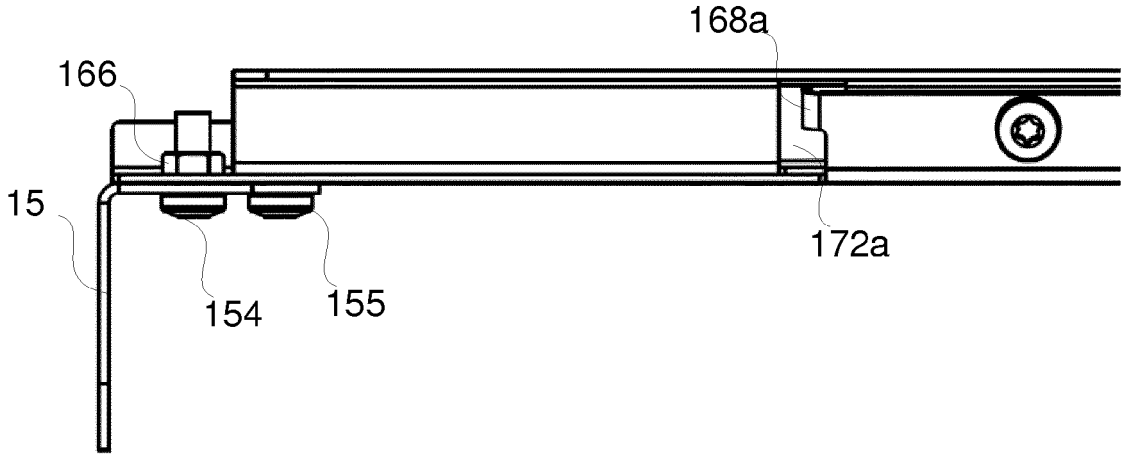


Fig 3d

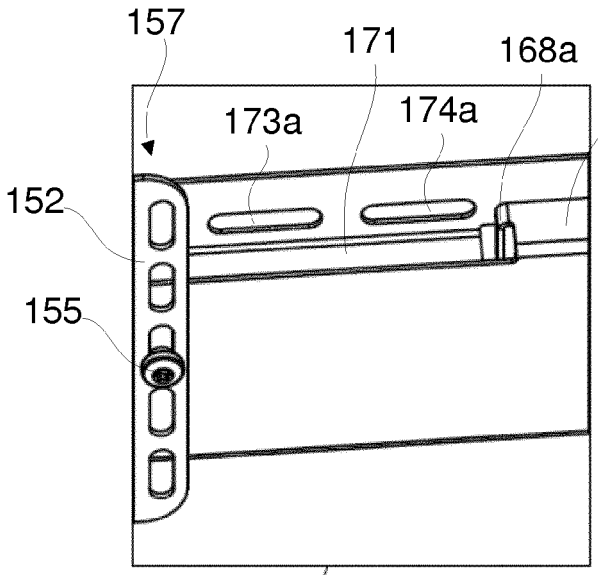


Fig 4b

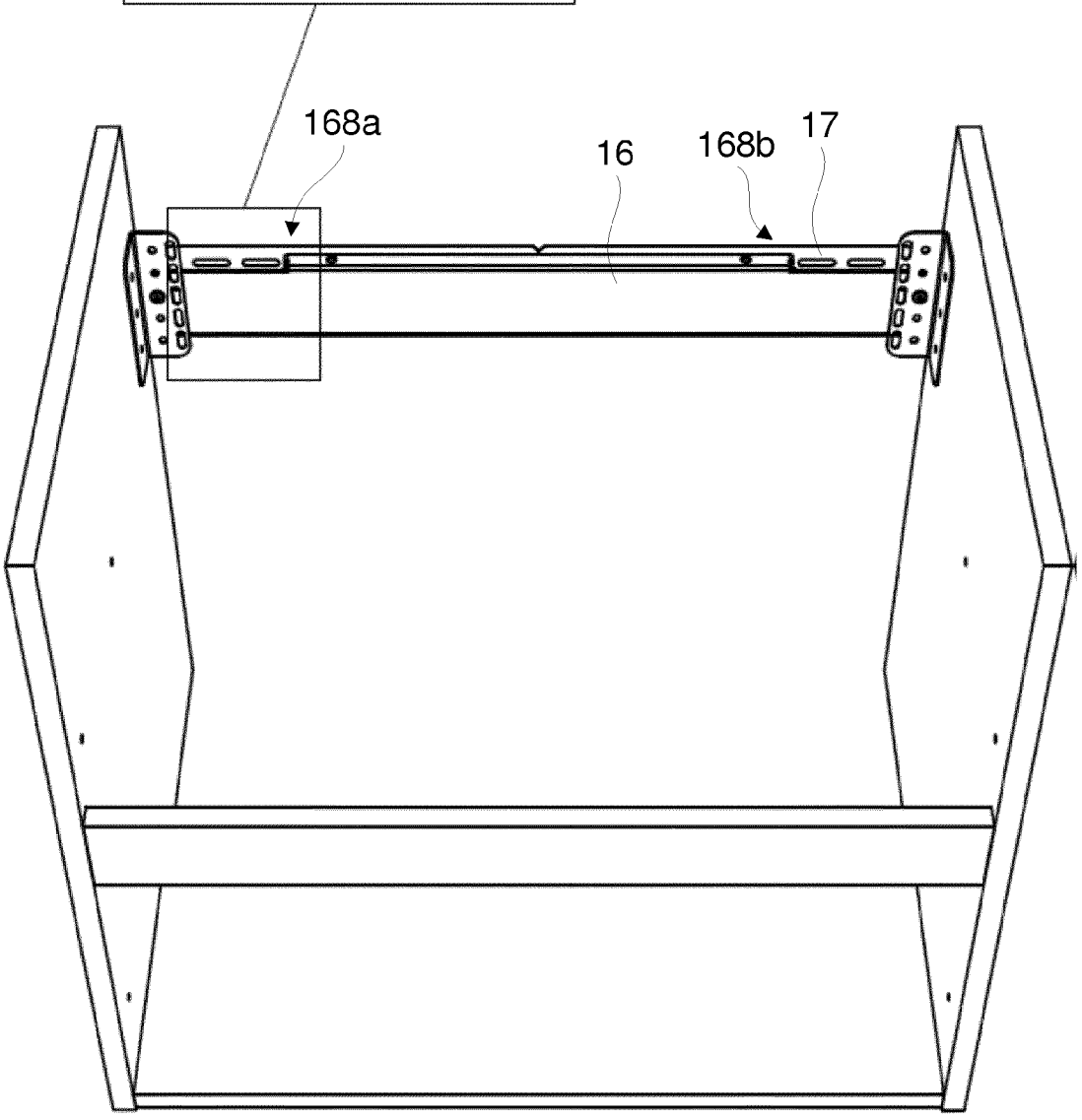


Fig 4a

Fig 5a

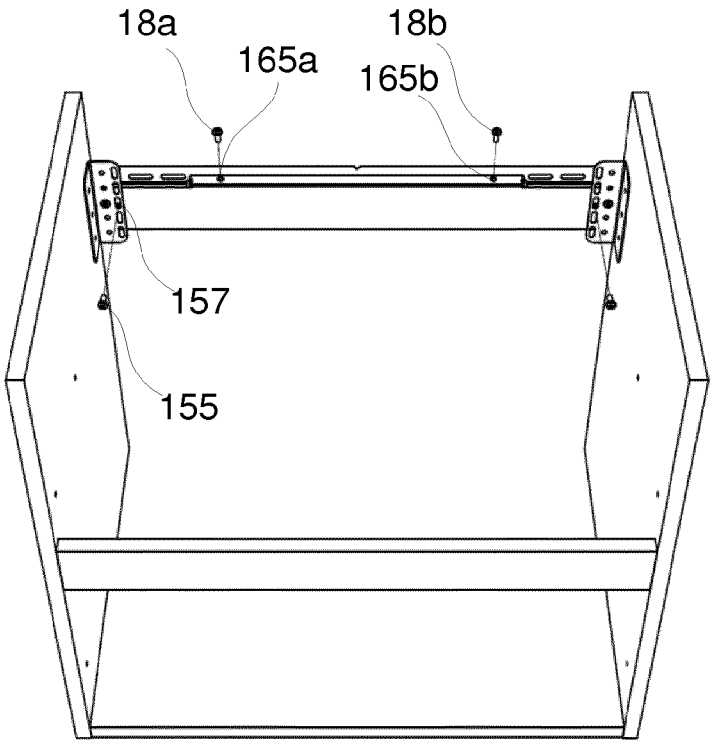


Fig 5b

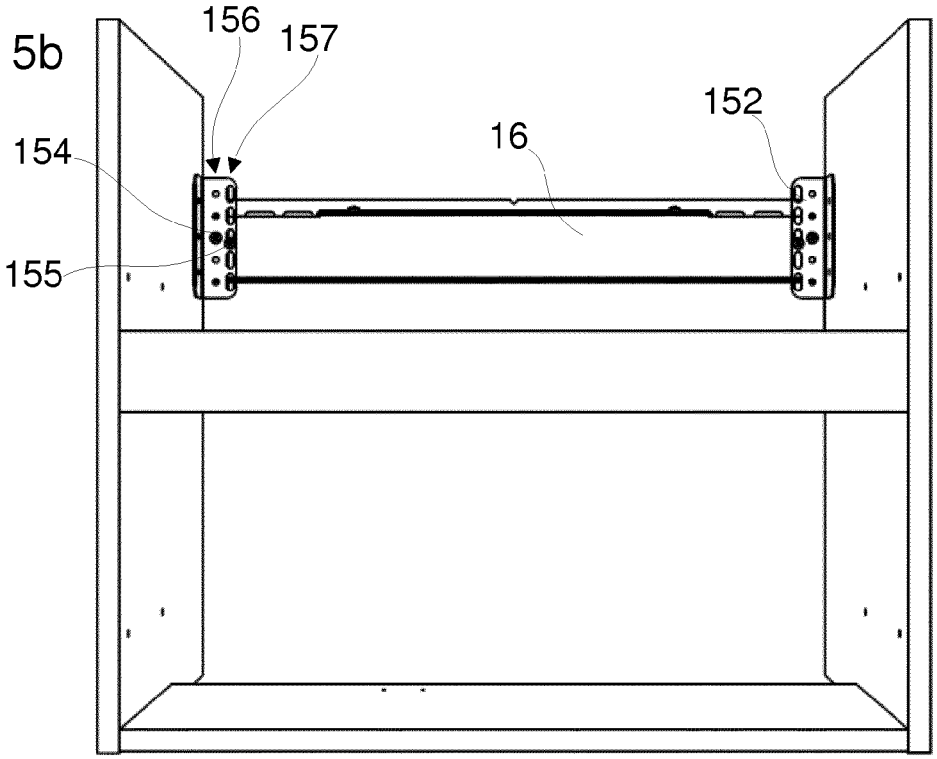


Fig 6a

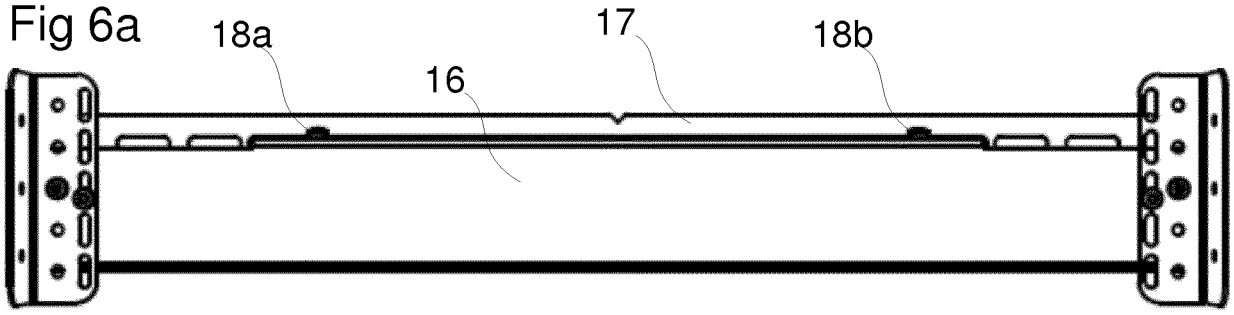


Fig 6b

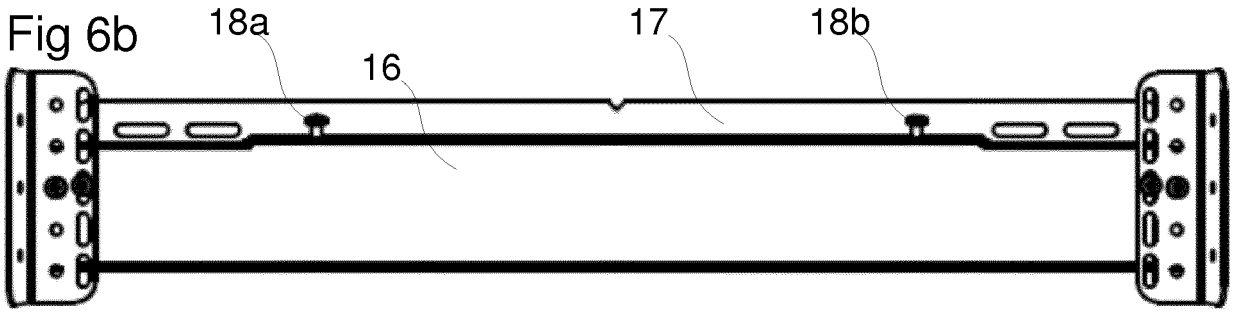
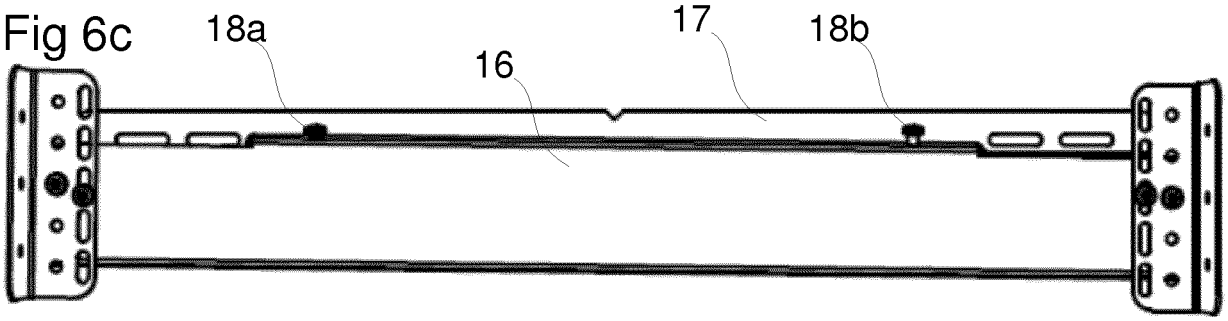


Fig 6c



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EUROPEAN SEARCH REPORT

Application Number
EP 18 19 3741

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	EP 2 377 431 A1 (LAGO S P A [IT]) 19 October 2011 (2011-10-19) * paragraph [0011] - paragraph [0037]; figures 1-8 *	1-4,6-14	INV. A47B95/00
X	US 2003/026445 A1 (ANDERSON ROSS [US]) 6 February 2003 (2003-02-06) * paragraph [0008] - paragraph [0027]; figures 1-3 *	1,4,5,7, 8,12	
X	US 2013/180202 A1 (WOODS DONALD [US] ET AL) 18 July 2013 (2013-07-18) * paragraph [0007] - paragraph [0041]; figures 1,2,7-8 *	1,6,12	

TECHNICAL FIELDS SEARCHED (IPC)

A47B
H04R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	22 January 2019	Kohler, Pierre

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22-01-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2377431 A1	19-10-2011	EP 2377431 A1	19-10-2011
		IT 1399497 B1	19-04-2013
US 2003026445 A1	06-02-2003	NONE	
US 2013180202 A1	18-07-2013	CA 2764508 A1	18-07-2013
		US 2013180202 A1	18-07-2013

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