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(54) **Modular counter-frame for disappearing sliding doors and relevant kit and assembling method**

Modulare Gegenzarge für versenkbare Schiebetüre sowie dazugehöriger Bausatz und Montagemethode

Huisserie modulaire pour portes coulissantes escamotables, kit et méthode de montage

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Description

[0001] The present invention relates to a modular counter-frame for disappearing sliding doors and relevant kit and assembling method.

[0002] More specifically, the invention concerns to a counter-frame that can be divided into modular parts, which has been particularly studied and realised to be easily transported and easily installed, particularly in plasterboard walls.

[0003] As it is well known, disappearing sliding doors are widely used in the building field, said doors having a counter-frame, provided with a box, realising a space, and with sliding means, so as to take a first opening position, in which it is fully or partially inserted within said space, and a closure position, in which it is outside said space. Usually said box replaces a portion of the wall on which said sliding door is installed.

[0004] It is also known in the above field that plasterboard walls are always more diffused. In order to realise a plasterboard wall, it is usually provided a first horizontal guide, having a "U" shaped cross-section on the floor, along the line on which it is wished realising the wall, with its concavity faced upward, and a second "U" shaped horizontal guide on the ceiling, with its concavity faced downward. Furthermore, a plurality of uprights, with a "U" shaped cross-section, is provided vertically and have their ends inserted and coupled, respectively, with said first and second guides. Usually, said uprights are spaced each other of 60 cm. Finally, plasterboard panels are fixed to said guides and to uprights by self-threading screws, to be then stuccoed and finished.

[0005] A need of those installing plasterboard walls is that of installing disappearing sliding doors within plasterboard walls. Furthermore, it is also felt the need of reducing installation and transportation costs.

[0006] First solution providing a standard counter-frame requires a high precision when realising the opening for positioning the counter-frame. This obviously increases time required for realising plasterboard walls and for installing the door.

[0007] Further, the above counter-frames are sold packaged, each packaging containing a box, sliding transverse bars and suitable members for permitting sliding of the wing. However, they are well known in this field limits due to dimensions of said packaging. This creates remarkable transportation problems and increases total costs of counter-frame, as well as logistic complications. It is also known in this field a wall structure for sliding doors described in Italian patent n° 1.277.197, concerning a perimeter frame on which it is possible fixing the structure walls, so as to define a space for inserting the sliding wall, and longitudinal elements that can be fixed to the frame, comprising adhesive means, such as a bi-adhesive band, for fixing said walls for keeping them before fixing the same to said frame. If, on one side, the above solution overcomes the packaging dimension problems, on the other side it has the technical problem

of being very difficult to install, not being a real counter-frame that can be inserted within the wall, but only a frame on which the containment space can be realised, and for coupling the sliding guide for a sliding door. Therefore, the whole installation is even more complex and slow. Counterframe kit available has different installation problems, particularly when coupling of different parts, which are often fixed not precisely, thus not ensuring a proper manufacturing.

[0008] Finally, it must also be taken into consideration that at present different measures exist for wings of sliding doors. Therefore, it would be suitable having a kit suitable to wings having different sizes. The patent application EP751275A describes a counter-frame according to the preamble of claim 1. The relevant prior art includes also the patent application EP2072744A. In view of the above, it is object of the present invention that of suggesting a modular counter-frame for disappearing sliding doors that can overcome the above technical problems. Particularly, it is main object of the invention that of suggesting a modular counterframe that can be precisely mounted, easily transported and easily installed. It is further object of the present invention that of suggesting a counter-frame that can be precisely conformed to the dimensions of different wings.

[0009] It is therefore specific object of the present invention a modular counter-frame for disappearing sliding doors, of the type that can be installed in an opening of a wall, comprising a base crossbeam, an upper crossbeam arranged parallel with respect to said base crossbeam, two or more pairs of uprights, to which wall panels are fixable by fixing means, such as screws and like, each upright of each pair being faced and spaced with respect the upright of the same pair and coupled with said base crossbeam and with said upper crossbeam, the assembly of said pairs of uprights, said base crossbeam and said upper crossbeam defining a sliding cavity for a wing, and a linear sliding guide inserted within said upper crossbeam in such way that the ends of said sliding guide extend out from it, wherein sliding means, such as carriages are moving, couplable with said wing, **characterized in that** said base crossbeam and said upper crossbeam have respectively a "U" shaped and an inverted "U" shaped cross section and comprise coupling elements on the lateral walls of said two or more pairs of uprights, and in that said uprights are couplable by snap-fit coupling with said coupling means of said upper crossbeam.

[0010] Always according to the invention, each one of said uprights is realized by two or more vertical grooves and provides on each end at least one slot, that is made in the re-entering portion between the said grooves, and each coupling element of said upper crossbeam comprises two or more folded tabs, arranged projected outwardly with respect to said lateral walls and each one capable of inserting in one corresponding groove, one or more insertion tongues with a funnel-shaped end coupling with seats arranged in the re-entering portions at

the sides of the respective upright and at least one insertion and blocking tongue comprising an elastically preloaded notching, said insertion and blocking tongue coupling with the re-entering portion between said grooves and said elastically preloaded notching coupling with said slot.

[0011] Still according to the invention, said uprights can be snap-fit coupled with said coupling elements of said base crossbeam.

[0012] Advantageously, according to the invention, each one of said uprights has, on each one of its ends, at least a slot, obtained in the re-entering portion between said grooves, and each coupling element of said base crossbeam comprises two or more folded tabs, arranged projected outwardly with respect to said lateral walls and each one capable of inserting in one corresponding groove, one or more insertion tongues with a funnel-shaped end, coupling with seats arranged in the re-entering portions at the sides of the respective upright and at least one insertion and blocking tongue comprising an elastically preloaded notching, said insertion and blocking tongue coupling with the re-entering portion between said grooves and said elastically preloaded notching coupling with said slot.

[0013] Furthermore, according to the invention, said base crossbeam can be provided with threaded pins, to which said uprights can be fixed by nuts, and each one of said uprights can have a plurality of notchings along its lower portion, along which said uprights can be cut to adjust their length, said notchings being provided at different heights, and a plurality of hole groups, each hole groups being placed at different heights in correspondence of each notching, said threaded pins being able to be inserted within said holes of said base crossbeam, to which they can be fixed by nuts.

[0014] Always according to the invention, said counter-frame can comprises means for coupling with said wall, said coupling means comprising one or more fixation bridges, slidably inserted on said sliding guide and fixed to the same by fixation means, such as screws and like, and at least one fixation square fixed to an end of said sliding guide by fixation means, such as screws and like.

[0015] Still according to the invention, said upper crossbeam comprises a reference tooth, and said sliding guide is provided with: reference marks on the surface, for adjusting its length according to the measurement of the width of the wing to be installed within said counter-frame and/or according to the installation of said counter-frame for a single or double wing door; and a notch with which said reference tooth interferes, so as to set the reciprocal final assembly position of said sliding guide with said upper crossbeam.

[0016] Furthermore, according to the invention, said counter-frame comprises thickness elements made of plastic material coupled with each side of said sliding guide, arranged so that the width of the portion of the sliding guide not inserted in said upper crossbeam is substantially equal to the overall width of said wall.

[0017] Advantageously, according to the invention, said base crossbeam is selected among one of the following groups: said base crossbeam has a length substantially equal to the length of said upper crossbeam; said base crossbeam has a length greater than the length of said upper crossbeam, said length being eventually adjustable by cutting on the basis of the width of the wing to be installed within said counter-frame.

[0018] Always according to the invention, said counter-frame is couplable with a further counter-frame arranged opposed for realizing double wing doors, the ends of the respective sliding guides of said counterframes being fixed each other by coupling means, such as bars.

[0019] It is further object of the present invention, a modular counter-frame as defined in the above, **characterized in that** it comprises: at least one base crossbeam; at least one upper crossbeam; two or more pairs of uprights; at least one sliding guide; and coupling means such as one or more fixation bridges and one or more fixation squares.

[0020] Still according to the invention, said kit comprises at least one rod, provided with reference marks.

[0021] It is also an object of the present invention, a method for assembling a disappearing sliding door comprising a counter-frame as defined in the above **characterized in that** it comprises the following steps: arranging said base crossbeam and said upper crossbeam; coupling said uprights with said base crossbeam and with said upper crossbeam by snap-fit coupling; cutting said sliding guide and inserting the same within said upper crossbeam; providing a rod provided with reference marks adjusting its length by cutting, eventually coupling a square to an end of said rod, inserting said rod between said uprights in said cavity and fixing said rod to said uprights preferably to the profiles fixed to the pair of uprights which define the entrance of said cavity; fixing said counter-frame to said wall by said coupling means; fixing the wall panels, preferably plasterboard panels, to said uprights by fixing member, like screws and like; removing said rod; and coupling a wing with said sliding means of said sliding guide.

[0022] Always according to the invention, said method wherein said wall comprises horizontal guides and vertical rods for fixing to them further wall panels, preferably plasterboard panels, can comprises the following further step: arranging said base crossbeam so as to superimpose on the same at least partially said horizontal guide of said wall arranged on the floor.

[0023] Still according to the invention, said method can comprise the following further step: cutting possible exceeding length of said base crossbeam on the basis of the dimensions of the wing employed.

[0024] The present invention will be now described for illustrative but not limitative purposes, according to its preferred embodiments, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 shows an exploded view of the modular

counter-frame according to the invention;
 figure 2 shows a perspective view of a counter-frame according to figure 1, fully assembled;
 figure 3 shows a front view of a counter-frame according to figure 2;
 figure 4 shows a particular of a base cross-beam of counter-frame according to the invention;
 figure 5 shows a particular of an upper cross-beam of counter-frame according to the invention;
 figure 6 shows a portion of a sliding guide of the counter-frame according to the invention;
 figure 7 shows a particular of a fixing bridge of the counter-frame according to the invention;
 figure 8 shows a counter-frame according to the invention installed within the space of a wall;
 figure 9 shows a pair of counter-frames according to the invention for a double-wing door;
 figure 10 shows a double-wing door of figure 9 installed;
 figure 11 shows coupling bars of counter-frames of figure 9;
 figure 12 is an exploded view of a further embodiment of a modular counter-frame according to the invention;
 figure 13 shows some particulars of figure 12;
 figure 14 shows a perspective view of counter-frame of figure 12 mounted; and
 figure 15 shows particulars of figure 14.

[0025] Similar parts will be indicated in the various figures by the same reference numbers.

[0026] Making reference to figures 1-3, it is possible observing a modular counter-frame 1 for a disappearing sliding door (wing is not shown in the figures) to be installed within a space obtained in a wall (not shown in the figure). In case of plasterboard walls, the space can be realised by a first horizontal guide on the floor, possibly a second horizontal guide fixed to the ceiling, and a plurality of vertical uprights, the ends of which are inserted in, and coupled to, said first and second guides. Plasterboard panels are fixed to said guides and to the uprights by self-threading screws, before the finishing.

[0027] Modular counter-frame 1 mainly comprises a base crossbeam 20, an upper crossbeam 30, two pairs of uprights 40 and a sliding guide 50. Structure of counter-frame 1 will be described in the following, also following the main mounting steps.

[0028] Base crossbeam 20 has a "U" shaped cross section, and it can be placed on the floor, while upper crossbeam 30 has an inverted "U" cross section, and it is substantially parallel with respect to the base crossbeam 20. Concavity of said base crossbeam 20 and of said upper crossbeam 30 are faced each other. Each one of said uprights 40 is coupled at the ends of base crossbeam 20 and to the upper crossbeam 30.

[0029] Uprights 40 are section bars, preferably realised by forming. They can couple with lateral walls 21 and 31, respectively, of said base crossbeam 20 and of

said upper crossbeam 30, by snap-fit with suitable coupling elements, respectively indicated by reference numbers 22 and 32.

[0030] Figures 4 and 5 show in detail said coupling elements 22 and 32, respectively, of said base crossbeam 20 and of said upper crossbeam 30, which, in the present embodiment are the same; therefore, only the coupling element of said base crossbeam 20 will be described in detail. Particularly, said coupling element 22 comprises a pair of folded tabs, projecting outward with respect to said lateral walls 21, that can be inserted into corresponding vertical grooves 43 of said uprights, so as to prevent that the latter can move from the wished position. Said coupling element 22 also comprises a pair of insertion tongues 24 with a funnel shape, coupling with seats realised in re-entering parts aside the upright 40, and an insertion and blocking tongue 25, also comprising an elastically preloaded notching 26, suitable to enter in a corresponding slot 41 realised on upright 40 surface, in the re-entering portion between the two grooves 43, so as to block upright in position once inserted and coupled with the coupling element 22.

[0031] Once coupled uprights 40, said base crossbeam 20, said upper crossbeam 30 and said uprights 40 define a space 60 that can receive a wing.

[0032] Profiles 42 are fixed, by screws, on the uprights 40 defining entrance of space 60 for inserting the wing, and namely on their leading edges.

[0033] Sliding guide 50, realised as well by extrusion, defines an inner channel 51, within which carriages (not shown in the figures) can be inserted, to which a wing is coupled, so that the latter can slide to enter/exit from space 60.

[0034] Sliding guide 50, made up of a section bar, preferably realised by extrusion, can be sliding inserted in said upper crossbeam 30. The latter has a reference tooth 37, that can interfere with a corresponding notch (not shown in the figures) obtained on said sliding guide 50, so as to determine final position of each one of the parts.

[0035] Sliding guide 50 is also provided with reference notches 52, for adjusting its length according to the width of the wing employed (e.g. for a size standard set of 80 cm, 90 cm and 100 cm), and on the basis of installation of counter-frame 1 for a single- or double-wing door. By said reference notches 52, an operator can properly cut sliding guide 50 by a standard cutting tool (not shown in the figures). Thus, when reference tooth 37 interferes with said notch, said space 60 defined by said base crossbeam 20, by said upper crossbeam 30 and by uprights 40, besides by the opening of wall in which counter-frame 1 is installed, is already conformed to the wing size.

[0036] At the sliding end of sliding guide 50 (reference is made also to figure 6), fixing square elements 53 are coupled by screws or like, also suitable to permit fixing of counter-frame 1 with said front opening. Further, square element 53 coupling with the eventually cut end for adapting the sliding guide to the wing size, also per-

mits compensating possible imprecision due to the same cutting.

[0037] One or more fixing bridge 54 (see also figure 7) are sliding coupled, and then fixed, to said sliding guide 50, and are also suitable to fixing of counter-frame 1 to the opening edge wherein installing counter-frame 1.

[0038] Finally, once inserted the sliding guide 50 in upper crossbeam 50, plastic thicknesses 5 that can be suitably cut, are coupled to each side of said sliding guide 50. Said thicknesses 55 substantially make width of sliding guide 50 portion not inserted within upper crossbeam 30 equal to the whole width of wall.

[0039] As it can be noted from figures, base crossbeam 20 is larger than upper crossbeam 30. As it will be clearer in the following, this is useful for an alternative mounting of counter-frame 1. In any case, said base crossbeam 20 can, with respect to the upper crossbeam 30:

- have the same length;
- be longer, being it necessary adapting its length by cutting the possible exceeding part, to the dimension of the specific wing;
- be longer and partially juxtaposed to the horizontal guide on the floor of the plasterboard wall. This opportunity also permits a higher precision when realising the whole plasterboard wall within which the door is inserted.

[0040] Before installing the counter-frame 1, it is also provided a rod 70. Length of the latter is adjusted on the basis of the wing width by reference notches 71, by which operator cuts the possible exceeding part. A fixing square element is preferably coupled to the end 72 of said rod 70. Then, said rod 70 is inserted, as shown in the figure, within space 60 and fixed to section bars 42 by two holes realised on the same.

[0041] Then, it is possible installing counter-frame 1. Particularly, making reference to figure 8, operator realising plasterboard wall makes opening A perimeter for counter-frame by horizontal guides 81 and uprights 82 (to which panel 83 will be coupled). Then, counter-frame 1 is placed within opening A, fixing it by fixing square elements 53, bridges 54 and possible square element fixed to rod 70. Said rod 70 keeps fixed distance between uprights 40 in a point which is substantially at half of their length. Thus, when plasterboards panels are fixed to uprights 40 by self-threading screws, their flexion is prevented. After fixing of plasterboards panels to uprights 40, rod 70 is removed.

[0042] Figures 12 - 15 show a further embodiment of modular counter-frame 1 according to the invention, providing only the upper crossbeam 30, the uprights of which couple by snap-fit coupling described in the above, while at the bottom it is provided an "U" shaped base crossbeam 20', provided with threaded pins 27, to which said uprights can be fixed by nuts 27'.

[0043] In the present embodiment, uprights 40 have laterally, and in their lower portion, a plurality of notches

45 at different heights, for adjusting cutting, and a plurality of holes groups 44, each hole group 44 being placed at different heights, in correspondence of each notch 45. Said threaded pins 27 of said base crossbeam 20' can enter within each one of said hole groups 44.

[0044] By said embodiment, it is possible adjusting length of said uprights 40. Particularly, it is sufficient cutting said uprights 40 along said notches 45, in order to select the (same) measure of all the uprights 40, fixing each upright 40 to the threaded pins 27 of the "U" shaped base crossbeam 20', inserting said threaded pins 27 within holes 44 of the corresponding upright 40 and screwing nuts 27' on said threaded pins 27.

[0045] Thus, it is possible easily adjusting height of modular counterframe 1.

[0046] As it can be noted, counterframe 1 according to the invention can be mounted to be then inserted within opening A of a wall. However, it is also possible assembling counterframe 1 and the inserting the same within the wall while the same is realised. For example, while installer places horizontal guide on the floor, it is possible juxtaposing the latter to the base crossbeam 20, coupling them, thus limiting the risk of misalignment of the wall. Only then it will be placed and fixed the upper horizontal guide to counterframe 1, to define opening A. In other words, it is first assembled counterframe 1, and then the wall.

[0047] Making reference to figures 9 - 11, it is observed that counterframe 1 according to the invention is also prepared for installation of double wing doors, so that two counterframes 1 are provided opposed each other, and coupled at the ends of the relevant sliding guides 50 by bars 56 that can be fixed by suitable screws without passage interruption of the sliding guides.

[0048] The present invention has been described for illustrative, but not limitative purposes, according to its preferred embodiments, but it is to be understood that variations and/or modification can be introduced by those skilled in the art without departing from the relevant scope, as defined in the enclosed claims.

Claims

1. Modular counter-frame (1) for disappearing sliding doors, of the type that can be installed in an opening (A) of a wall, comprising a base crossbeam (20), an upper crossbeam (30) arranged parallel with respect to said base crossbeam (20: 20'), two or more pairs of uprights (40), to which wall panels (83) are fixable by fixing means, such as screws and like, each upright (40) of each pair being faced and spaced with respect the upright (40) of the same pair and coupled with said base crossbeam (20) and with said upper crossbeam (30), the assembly of said pairs of uprights (40), said base crossbeam (20) and said upper crossbeam (30) defining a sliding cavity

(60) for a wing, and
 a linear sliding guide (50) inserted within said upper crossbeam (30) in such way that the ends of said sliding guide (50) extend out from it, wherein sliding means, such as carriages, are moving couplable with said wing,
 said base crossbeam (20) and said upper crossbeam (30) having respectively a "U" shaped and an inverted "U" shaped cross section and comprise coupling elements (22, 32) on the lateral walls (21, 31) of said two or more pairs of uprights (40), and said uprights (40) being couplable by snap-fit coupling with said coupling elements (22, 32) of said upper crossbeam (30),

characterized

in that each one of said uprights (40) is realized by two or more vertical grooves (43) and provides on each end at least one slot (41), that is made in the re-entering portion between said grooves (43), and **in that** each coupling element (22, 32) of said upper crossbeam (20) comprises two or more folded tabs (23, 33), arranged projected outwardly with respect to said lateral walls (21, 31) and each one capable of inserting in one corresponding groove (43), one or more insertion tongues (24, 34) with a funnel-shaped end coupling with seats arranged in the re-entering portions at the sides of the respective upright (40) and at least one insertion and blocking tongue (25, 35) comprising an elastically preloaded notching (26, 36), said insertion and blocking tongue (25, 35) coupling with the re-entering portion between said grooves (43) and said elastically preloaded notching (26, 36) coupling with said slot (41).

2. Counter-frame (1) according to claim 1, **characterized in that** said uprights (40) is snap-fit coupled with said coupling elements (22) of said base crossbeam (20).

3. Counter-frame (1) according to claim 2, **characterized in that**

each one of said uprights (40) have, on each one of its ends, at least a slot (41), obtained in the re-entering portion between said grooves (43), and **in that** each coupling element (22) of said base crossbeam (40) comprises two or more folded tabs (23), arranged projected outwardly with respect to said lateral walls (21) and each one capable of inserting in one corresponding groove (43), one or more insertion tongues (24) with a funnel-shaped end, coupling with seats arranged in the re-entering portions at the sides of the respective upright (40) and at least one insertion and blocking tongue (25) comprising an elastically preloaded notching (26), said insertion and blocking tongue (25) coupling with the re-entering portion between said grooves (43) and said elastically preloaded

notching (26) coupling with said slot (41).

4. Counter-frame (1) according to claim 1, **characterized in that**

said base crossbeam (20') can be provided with threaded pins (27), to which said uprights (40) can be fixed by nuts (27'), and each one of said uprights (40) have a plurality of notchings (25) along its lower portion, along which said uprights (40) can be cut to adjust their length, said notchings (45) being provided at different heights, and a plurality of hole groups (44), each hole groups (44) being placed at different heights in correspondence of each notching (45), said threaded pins (27) being able to be inserted within said holes (44) of said base crossbeam (20'), to which they can be fixed by nuts (27').

5. Counter-frame (1) according to anyone of the preceding claims, **characterized in that** it comprises means (53, 54) for coupling with said wall, said coupling means (53, 54) comprising one or more fixation bridges (54), slidably inserted on said sliding guide (50) and fixed to the same by fixation means, such as screws and like, and at least one fixation square (53) fixed to an end of said sliding guide (50) by fixation means, such as screws and like.

6. Counter-frame (1) according to anyone of the preceding claims, **characterized in that** said upper crossbeam (30) comprises a reference tooth (37), and said sliding guide (50) is provided with:

- reference marks (52) on the surface, for adjusting its length according to the measurement of the width of the wing to be installed within said counter-frame (1) and/or according to the installation of said counter-frame (1) for a single or double wing door; and
- a notch with which said reference tooth (37) interferes, so as to set the reciprocal final assembly position of said sliding guide (50) with said upper crossbeam (30).

7. Counter-frame (1) according to anyone of the preceding claims, **characterized in that** it comprises thickness elements (55) made of plastic material coupled with each side of said sliding guide (50), arranged so that the width of the portion of the sliding guide (50) non inserted in said upper crossbeam (30) is substantially equal to the overall width of said wall.

8. Counter-frame (1) according to anyone of the preceding claims, **characterized in that** said base crossbeam (20) is selected among one of the following groups:

- said base crossbeam (20) has a length sub-

stantially equal to the length of said upper crossbeam (30);

- said base crossbeam (20) has a length greater than the length of said upper crossbeam (30), said length being eventually adjustable by cutting on the basis of the width of the wing to be installed within said counter-frame (1).

9. Counter-frame (1) according to anyone of the preceding claims, **characterized in that** it is couplable with a further counterframe (1) arranged opposed for realizing double wing doors, the ends of the respective sliding guides (50) of said counterframes (1) being fixed each other by coupling means, such as bars (56).

10. Kit of a modular counter-frame (1) as defined in preceding claims, **characterized in that** it comprises:

- at least one base crossbeam (20; 20');
- at least one upper crossbeam (30);
- two or more pairs of uprights (40);
- at least one sliding guide (50); and
- coupling means (53, 54) such as one or more fixation bridges (54) and one or more fixation squares (53).

11. Kit according to claim 10, **characterized in that** it comprises at least one rod (70), provided with reference marks (71).

12. Method for assembling a disappearing sliding door comprising a counter-frame (1) as defined in claims 1-9, **characterized in that** it comprises the following steps:

- arranging said base crossbeam (20) and said upper crossbeam (30);
- coupling said uprights (40) with said base crossbeam (20) and with said upper crossbeam (30) by snap - fit coupling;
- cutting said sliding guide (50) and inserting the same within said upper crossbeam (30);
- providing a rod (70) provided with reference marks (71) adjusting its length by cutting, eventually coupling a square to an end of said rod (70), inserting said rod (70) between said uprights in said cavity (60) and fixing said rod (70) to said uprights (40) preferably to the profiles (42) fixed to the pair of uprights (40) which define the entrance of said cavity (60);
- fixing said counter-frame to said wall by said coupling means (53, 54);
- fixing the wall panels, preferably plasterboard panels, to said uprights (40) by fixing member, like screws and like;
- removing said rod (70); and
- coupling a wing with said sliding means of said

sliding guide (50).

13. Method according to claim 12, wherein said wall comprises horizontal guides and vertical rods for fixing to them further wall panels, preferably plasterboard panels, **characterized in that** it comprises the following further step:

- arranging said base crossbeam (20) so as to superimpose on the same at least partially said horizontal guide of said wall arranged on the floor.

14. Method according to anyone of claims 12 or 13, **characterized in that** it comprises the following further step:

- cutting the eventual exceeding length of said base crossbeam (20) according to the dimension of the employed wing.

Patentansprüche

1. Modulare Gegenzarge (1) für versenkbare Schiebetüren des Typs, der in einer Öffnung (A) einer Wand installiert werden kann, umfassend einen Basisquerbalken (20), einen oberen Querbalken (30), der in Bezug auf den Basisquerbalken (20; 20') parallel angeordnet ist, zwei oder mehr Paare von Pfosten (40) an denen Wandpaneele (83) befestigt werden können durch Befestigungsmittel, wie Schrauben oder dergleichen, wobei jeder Pfosten (40) jedes Paares in Bezug auf den Pfosten (40) des selben Paares zugewandt und beabstandet und mit dem Basisquerbalken (20) und mit dem oberen Querbalken (30) verbunden ist, wobei die Anordnung der Paare von Pfosten (40), des Basisquerbalkens (20) und des oberen Querbalkens (30) einen Verschiebehohlraum (60) für einen Flügel definiert, und eine lineare Schiebeführung (50), die innerhalb des oberen Querbalkens (30) in einer solchen Weise eingesetzt ist, dass sich die Enden der Schiebeführung (50) daraus erstrecken, wobei Schiebemittel, wie Schlitten, beweglich mit dem Flügel verbunden werden können, wobei der Basisquerbalken (20) und der obere Querbalken (30) jeweils einen u-förmigen bzw. einen umgekehrten u-förmigen Querschnitt haben und Verbindungselemente (22, 32) an den Seitenwänden (21, 31) der zwei oder mehr Paare von Pfosten (40) aufweisen, wobei die Pfosten (40) durch Rastverbindungen mit den Verbindungselementen (22, 32) des oberen Querbalkens (30) verbunden werden können, **dadurch gekennzeichnet, dass jeder der Pfosten (40) realisiert ist durch zwei**

oder mehrere vertikale Nuten (42) und an jedem Ende mindestens einen Schlitz (41) bereitstellt, der in dem Wiedereintrittsabschnitt zwischen den Nuten (43) hergestellt ist,

und **dass** jedes Verbindungselement (22, 32) des oberen Querbalkens zwei oder mehr gefaltete Streifen (23, 33) aufweist, die in Bezug auf die Seitenwände (21, 31) nach außen hervorstehend angeordnet sind und die jeweils in der Lage sind, in eine entsprechende Nut (43) eingeführt zu werden, wobei eine oder mehrere Einführungen (24, 34) mit einem trichterförmigen Ende mit Sitzen verbunden sind, die in den Wiedereintrittsabschnitten an den Seiten der jeweiligen Pfosten (40) angeordnet sind und wobei mindestens eine Einführ- und Blockierung (25, 35) eine elastisch vorgespannte Kerbung (26, 36) aufweist, wobei die Einführ- und Blockierung (25, 35) mit dem Wiedereintrittsabschnitt zwischen den Nuten (43) verbunden ist und die elastisch vorgespannte Kerbung (26, 36) mit dem Schlitz (41) verbunden ist.

2. Gegenzarge (1) gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Pfosten (40) mit den Verbindungselementen (22) des Basisquerbalkens (20) rastverbunden sind.

3. Gegenzarge (1) gemäß Anspruch 2, **dadurch gekennzeichnet, dass**

jeder der Pfosten (40) an jedem seiner Enden mindestens einen Schlitz (41) aufweist, der in dem Wiedereintrittsabschnitt zwischen den Nuten (43) erhältlich ist,

und dass jedes Verbindungselement (22) des Basisquerbalkens (40) aufweist

zwei oder mehrere gefaltete Streifen (23), die in Bezug auf die Seitenwände (21) nach außen hervorstehend angeordnet sind und von denen jeder in der Lage ist, in eine entsprechende Nut (43) eingeführt zu werden,

eine oder mehrere Einführungen (24) mit einem trichterförmigen Ende, verbunden mit Sitzen, die in den Wiedereintrittsabschnitten an den Seiten des jeweiligen Pfostens (40) angeordnet sind, und mindestens einer Einführ- und Blockierung (25), die eine elastisch vorgespannte Kerbung (26) aufweist, wobei die Einführ- und Blockierung (25) mit dem Wiedereintrittsabschnitt zwischen den Nuten (43) verbunden ist und die elastisch vorgespannte Kerbung (26) mit dem Schlitz (41) verbindet.

4. Gegenzarge (1) gemäß Anspruch 1, **dadurch gekennzeichnet, dass**

der Basisquerbalken (20') mit Gewindestiften (27) versehen werden kann, an denen die Pfosten (40) durch Muttern (27') befestigt werden können, und jeder der Pfosten (40) eine Vielzahl von Kerben (25) entlang seines unteren Abschnitts aufweist, wobei

die Pfosten (40) daran entlang geschnitten werden können, um deren Länge einzustellen, wobei die Kerben (45) in verschiedenen Höhen vorgesehen sind, und einer Vielzahl von Lochgruppen (44), wobei jede Lochgruppe (44) in verschiedenen Höhen angeordnet ist entsprechend jeder Kerbe (45), wobei die Gewindestifte (27) in der Lage sind, um innerhalb der Löcher (44) des Basisquerbalkens (20') eingeführt zu werden, an denen sie durch Muttern (27') befestigt werden können.

5. Gegenzarge (1) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (53, 54) aufweist zum Verbinden mit der Wand, wobei die Verbindungsmittel (53, 54) eine oder mehrere Fixierungsbrücken (54) aufweisen, die verschiebbar auf der Schiebeführung (50) eingesetzt sind und an der selben durch Befestigungsmittel, wie Schrauben oder dergleichen befestigt sind, und wobei mindestens ein Befestigungswinkel (53) an einem Ende der Schiebeführung (50) durch Befestigungsmittel, wie Schrauben oder dergleichen, befestigt ist.

6. Gegenzarge (1) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der obere Querbalken (30) einen Referenzzahn (37) aufweist und die Schiebeführung (50) versehen ist mit:

- Referenzmarkierungen (52) an der Oberfläche zum Einstellen von deren Länge gemäß der Messung der Breite des Flügels, der innerhalb der Gegenzarge (1) installiert werden soll und/oder entsprechend der Installation der Gegenzarge (1) für eine Ein- oder Doppelflügeltür; und

- eine Kerbe, mit der der Referenzzahn (37) eingreift, um die wechselseitige endgültige Montageposition der Schiebeführung (50) mit dem oberen Querbalken (30) festzulegen.

7. Gegenzarge (1) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie aus Kunststoffmaterial hergestellte Dickenelemente (55) aufweist, die mit jeder Seite der Schiebeführung (50) verbunden sind, angeordnet, so dass die Breite des Abschnitts der nicht in den oberen Querbalken (30) eingesetzten Schiebeführung (50) im Wesentlichen gleich der Gesamtbreite der Wand ist.

8. Gegenzarge (1) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Basisquerbalken (20) aus einer der folgenden Gruppen ausgewählt ist:

- der Basisquerbalken (20) hat eine Länge, die im Wesentlichen gleich der Länge des oberen Querbalkens (30) ist;

- der Basisquerbalken (20) hat eine Länge größer als die Länge des oberen Querbalkens (30), wobei die Länge irgendwie einstellbar ist durch Schneiden an der Basis der Breite des innerhalb der Gegenzarge (1) zu installierenden Flügels. 5
9. Gegenzarge (1) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie mit einer weiteren Gegenzarge (1) verbunden werden kann, die gegenüberliegend angeordnet ist, um Doppelflügeltüren zu realisieren, wobei die Enden der jeweiligen Schiebeführungen (50) der Gegenzargen (1) durch Verbindungsmittel, wie Stäbe (56) miteinander verbunden sind. 10
10. Bausatz einer modularen Gegenzarge (1), wie in den vorangehenden Ansprüchen definiert, **dadurch gekennzeichnet, dass** er aufweist: 15
- mindestens einen Basisquerbalken (20; 20'); 20
 - mindestens einen oberen Querbalken (30);
 - zwei oder mehr Paare von Pfosten (40);
 - mindestens eine Schiebeführung (50);
 - Verbindungsmittel (53, 54), wie ein oder mehrere Befestigungsbrücken (54) und ein oder mehrere Befestigungswinkel (53). 25
11. Bausatz gemäß Anspruch 10, **dadurch gekennzeichnet, dass** er mindestens einen Stab (70) aufweist, der mit Referenzmarkierungen (71) versehen ist. 30
12. Verfahren zum Zusammenbau einer versenkbaren Schiebetür aufweisend eine Gegenzarge (1), wie sie in den Ansprüchen 1-9 definiert ist, **dadurch gekennzeichnet, dass** es die folgenden Schritte aufweist: 35
- Anordnen des Basisquerbalkens (20) und des oberen Querbalkens (30); 40
 - Verbinden der Pfosten (40) mit dem Basisquerbalken (20) und mit dem oberen Querbalken (30) durch Rastverbindung;
 - Abschneiden der Schiebeführung (50) und Einsetzen der selben innerhalb des oberen Querbalkens (30); 45
 - Bereitstellen eines Stabs (70), der mit Referenzmarkierungen (71) versehen ist, Einstellen von dessen Länge durch abschneiden, schließlich verbinden eines Winkels mit einem Ende des Stabs (70), Einsetzen des Stabs (70) zwischen den Pfosten in den Hohlraum (60) und befestigen des Stabs (70) an den Pfosten (40), vorzugsweise an den Profilen (42), die an den Paaren von Pfosten (40) befestigt sind, welche den Einlass des Hohlraums (60) definieren; 50
 - Befestigen der Gegenzarge an der Wand durch Verbindungsmittel (53, 54); 55
- Befestigen der Wandpaneele, vorzugsweise von Gipskartonplatten, an den Pfosten (40) durch Befestigungsmittel, wie Schrauben oder dergleichen;
- Entfernen des Stabs (70) und
- Verbinden eines Flügels mit den Schiebemitteln der Schiebeführung (50).
13. Verfahren gemäß Anspruch 12, wobei die Wand horizontale Führungen und vertikale Stäbe aufweist, um daran weitere Wandpaneele zu befestigen, vorzugsweise Gipskartonplatten, **dadurch gekennzeichnet, dass** es den folgenden weiteren Schritt aufweist:
- Anordnen des Basisquerbalkens (20), um auf dem selben mindestens teilweise die horizontale Führung der auf dem Boden angeordneten Wand zu überlagern.
14. Verfahren gemäß einem der Ansprüche 12 oder 13, **dadurch gekennzeichnet, dass** es den folgenden weiteren Schritt aufweist:
- Abschneiden der schlussendlichen Überschusslänge des Basisquerbalkens (20) gemäß der Abmessung des eingesetzten Flügels.

Revendications

1. Contre-bâti modulaire (1) pour portes coulissantes escamotables, du type qui peut être installé dans une ouverture (A) d'un mur, comprenant :

une traverse de base (20),
 une traverse supérieure (30) disposée parallèlement à ladite traverse de base (20; 20'),
 deux paires ou plus de montants verticaux (40), auxquels des panneaux de murs (83) peuvent être fixés par des moyens de fixation, tels que des vis ou analogue, chaque montant vertical (40) de chaque paire étant en regard et espacé du montant vertical (40) de la même paire et accouplé à ladite traverse de base (20) et à ladite traverse supérieure (30), l'ensemble constitué desdites paires de montants verticaux (40), de ladite traverse de base (20) et de ladite traverse supérieure (30) définissant une cavité de coulissement (60) pour un vantail, et
 un guide de coulissement linéaire (50) inséré dans ladite traverse supérieure (30) de telle sorte que les extrémités dudit guide de coulissement (50) s'étendent à l'extérieure de celle-ci, des moyens de coulissement, tels que des chariots, étant accouplés de manière amovible audit vantail,
 ladite traverse de base (20) et ladite traverse

- supérieure (30) ayant respectivement une section transversale en forme de "U" et en forme de "U inversé", et comprenant des éléments d'accouplement (22, 32) sur les parois latérales (21, 31) desdites deux paires ou plus de montants verticaux (40), et
 lesdits montants verticaux (40) pouvant être accouplés auxdits éléments d'accouplement (22, 32) de ladite traverse verticale (30) par un accouplement par encliquetage,
caractérisé
en ce que chacun desdits montants verticaux (40) est formé de deux rainures verticales (43) ou plus et présente à chaque extrémité au moins une lumière (41), qui est formée dans partie rentrante entre lesdites rainures (43),
 et **en ce que** chaque élément d'accouplement (22, 32) de ladite traverse supérieure (20) comprend deux pattes repliées (23, 33) ou plus, disposées de façon à faire saillie vers l'extérieur par rapport auxdites parois latérales (21, 31) et pouvant chacune être insérées dans une rainure (43) correspondante,
 une ou plusieurs languettes d'insertion (24, 34) ayant une extrémité en forme d'entonnoir, s'accouplant à des sièges formés dans les parties rentrantes au niveau des côtés du montant vertical (40) respectif, et au moins une languette d'insertion et blocage (25, 35) comprenant une encoche (26, 36) soumise à une précontrainte élastique, ladite languette d'insertion et blocage (25, 35) s'accouplant à la partie rentrante entre lesdites rainures (43) et ladite encoche (26, 36) soumise à une précontrainte élastique s'accouplant à ladite lumière (41).
2. Contre-bâti (1) selon la revendication 1, **caractérisé en ce que** lesdits montants verticaux (40) sont accouplés auxdits éléments d'accouplement (22) de ladite traverse de base (20) par un accouplement par encliquetage.
3. Contre-bâti (1) selon la revendication 2, **caractérisé en ce que** chacun desdits montants verticaux (40) a, à chacune de ses extrémités, au moins une lumière (41) obtenue dans la partie rentrante entre lesdites rainures (43),
 et **en ce que** chaque élément d'accouplement (22) de ladite traverse de base (40) comprend deux pattes repliées (23) ou plus, disposées de façon à faire saillie vers l'extérieur par rapport auxdites parois latérales (21) et pouvant chacune être insérées dans une rainure (43) correspondante,
 une ou plusieurs languettes d'insertion (24) ayant une extrémité en forme d'entonnoir, s'accouplant à des sièges formés dans les parties rentrantes au niveau des côtés du montant vertical (40) respectif, et au moins une languette d'insertion et blocage (25) comprenant une encoche (26) soumise à une précontrainte élastique, ladite languette d'insertion et blocage (25) s'accouplant à la partie rentrante entre lesdites rainures (43) et ladite encoche (26) soumise à une précontrainte élastique s'accouplant à ladite lumière (41).
4. Contre-bâti (1) selon la revendication 1, **caractérisé en ce que** ladite traverse de base (20') peut être pourvue de tiges filetées (27), auxquelles lesdits montants verticaux (40) peuvent être fixés par des écrous (27'), et chacun desdits montants verticaux (40) a, le long de sa partie inférieure, une pluralité d'encoches (25) le long desquelles lesdits montants verticaux (40) peuvent être découpés pour leur ajustement en longueur, lesdites encoches (45) étant prévues à différentes hauteurs, et une pluralité de groupes de trous (44), chaque groupe de trou (44) étant placé à des hauteurs différentes en correspondance de chaque encoche (45), lesdites tiges filetées (27) pouvant être insérées dans lesdits trous (44) de ladite traverse de base (20'), à laquelle elles peuvent être fixées par des écrous (27').
5. Contre-bâti (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend des moyens (53, 54) pour son accouplement audit mur, lesdits moyens d'accouplement (53, 54) comprenant un ou plusieurs ponts de fixation (54), insérés à coulissement sur ledit guide de coulissement (50) et fixés à ce dernier par des moyens de fixation, tels que des vis ou analogue, et au moins une équerre de fixation (53) fixée à une extrémité dudit guide de coulissement (50) par des moyens de fixation, tels que des vis ou analogue.
6. Contre-bâti (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite traverse supérieure (30) comprend une dent de référence (37), et ledit guide de coulissement (50) est pourvu de :
 - marques de référence (52) sur la surface, pour l'ajustement de sa longueur en fonction de la mesure de la largeur du vantail à installer dans ledit contre-bâti (1) et/ou en fonction de l'installation dudit contre-bâti (1) pour une porte à simple vantail ou à double vantaux ; et
 - une encoche avec laquelle interfère ladite dent de référence (37), de façon à définir la position d'assemblage finale entre ledit guide de coulissement (50) et ladite traverse supérieure (30).
7. Contre-bâti (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend des éléments d'épaisseur (55) constitués d'un matériau plastique, accouplés à chaque côté dudit

- guide de coulissement (50), disposés de telle sorte que la largeur de la partie du guide de coulissement (50) qui n'est pas insérée dans ladite traverse supérieure (30) soit essentiellement égale à la largeur globale dudit mur. 5
8. Contre-bâti (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite traverse de base (20) est sélectionnée dans l'un des groupes suivants : 10
- ladite traverse de base (20) a une longueur essentiellement égale à la longueur de ladite traverse supérieure (30) ;
 - ladite traverse de base (20) a une longueur supérieure à la longueur de ladite traverse supérieure (30), ladite longueur étant éventuellement ajustable par découpage en fonction de la largeur du vantail qui doit être installé dans ledit contre-bâti (1). 15 20
9. Contre-bâti (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** peut être accouplé à un autre contre-bâti (1) disposé en regard pour la réalisation de portes à double vantaux, les extrémités des guides de coulissement (50) respectifs desdits contre-bâti (1) étant fixées les unes aux autres par des moyens d'accouplement, tels que des barres (56). 25 30
10. Nécessaire de montage d'un contre-bâti modulaire (1) tel que défini dans les revendications précédentes, **caractérisé en ce qu'il** comprend : 35
- au moins une traverse de base (20, 20') ;
 - au moins une traverse supérieure (30) ;
 - deux paires ou plus de montants verticaux (40) ;
 - au moins un guide de coulissement (50) ; et
 - des moyens d'accouplement (53, 54) tels qu'un ou plusieurs ponts de fixation (54) et une ou plusieurs équerres de fixation (53). 40
11. Nécessaire de montage selon la revendication 10, **caractérisé en ce qu'il** comprend au moins une tige (70), pourvue de marques de référence (71). 45
12. Procédé d'assemblage d'une porte coulissante escamotable, comprenant un contre-bâti (1) tel que défini dans les revendications 1 à 9, **caractérisé en ce qu'il** comprend les étapes suivantes : 50
- mise en place de ladite traverse de base (20) et de ladite traverse supérieure (30) ;
 - accouplement desdits montants verticaux (40) à ladite traverse de base (20) et à ladite traverse supérieure (30) par un accouplement par encliquetage ; 55
- découpage dudit guide de coulissement (50) et insertion de ce dernier dans ladite traverse supérieure (30) ;
 - à l'aide d'une tige (70) pourvue de marques de référence (71), réglage de sa longueur par découpage, éventuellement accouplement d'une équerre à une extrémité de ladite tige (70), insertion de ladite tige (70) entre lesdits montants verticaux dans ladite cavité (60) et fixation de ladite tige (70) auxdits montants verticaux (40), de préférence au profilés (42) fixés à la paire de montants verticaux (40), qui définissent l'entrée de ladite cavité (60) ;
 - fixation dudit contre-bâti audit mur par lesdits moyens d'accouplement (53, 54) ;
 - fixation des panneaux de murs, de préférence des panneaux de plâtre, auxdits montants verticaux (40) par des moyens de fixation, tels que des vis ou analogue ;
 - retrait de ladite tige (70) ; et
 - accouplement d'un vantail auxdits moyens de coulissement dudit guide de coulissement (50).
13. Procédé selon la revendication 12, dans lequel ledit mur comprend des guides horizontaux et des tiges verticales pour permettre la fixation d'autres panneaux de murs, de préférence des panneaux de plâtre, **caractérisé en ce qu'il** comprend en outre l'étape de : 25 30
- mise en place de ladite traverse de base (20) de façon à venir y superposer au moins partiellement ledit guide horizontal dudit mur placé sur le sol.
14. Procédé selon l'une quelconque des revendications 12 ou 13, **caractérisé en ce qu'il** comprend en outre l'étape de : 35 40
- découpage de la longueur en excès éventuelle de ladite traverse de base (20) en fonction de la dimension du vantail employé.

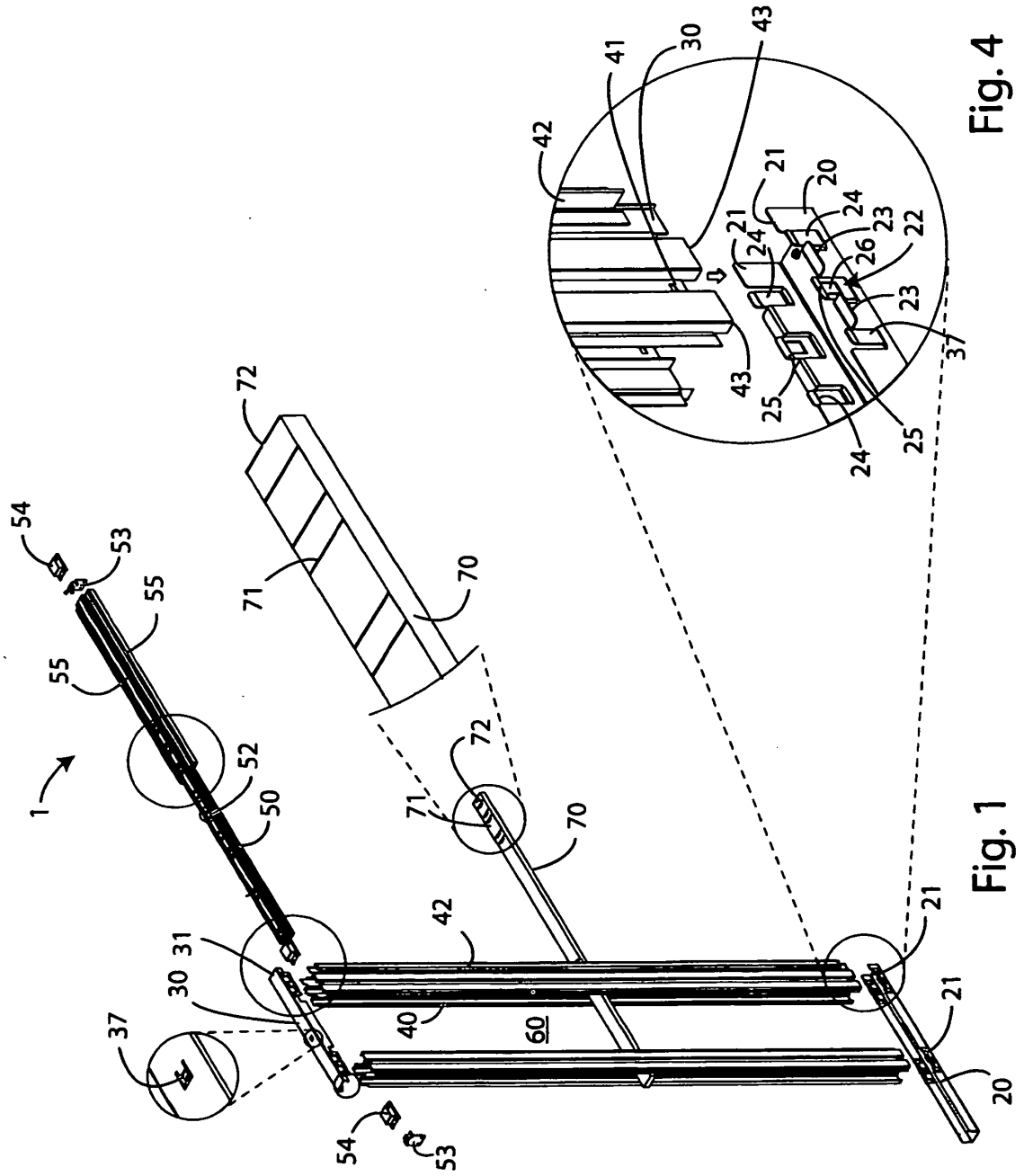


Fig. 4

Fig. 1

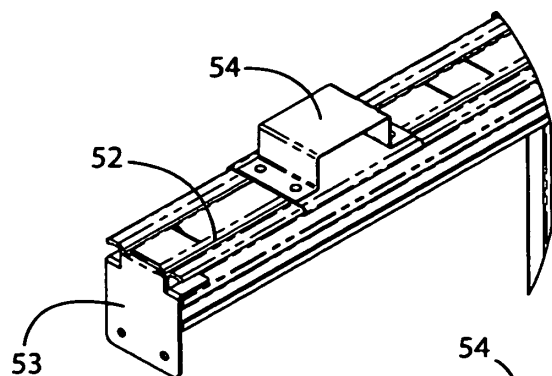


Fig. 6

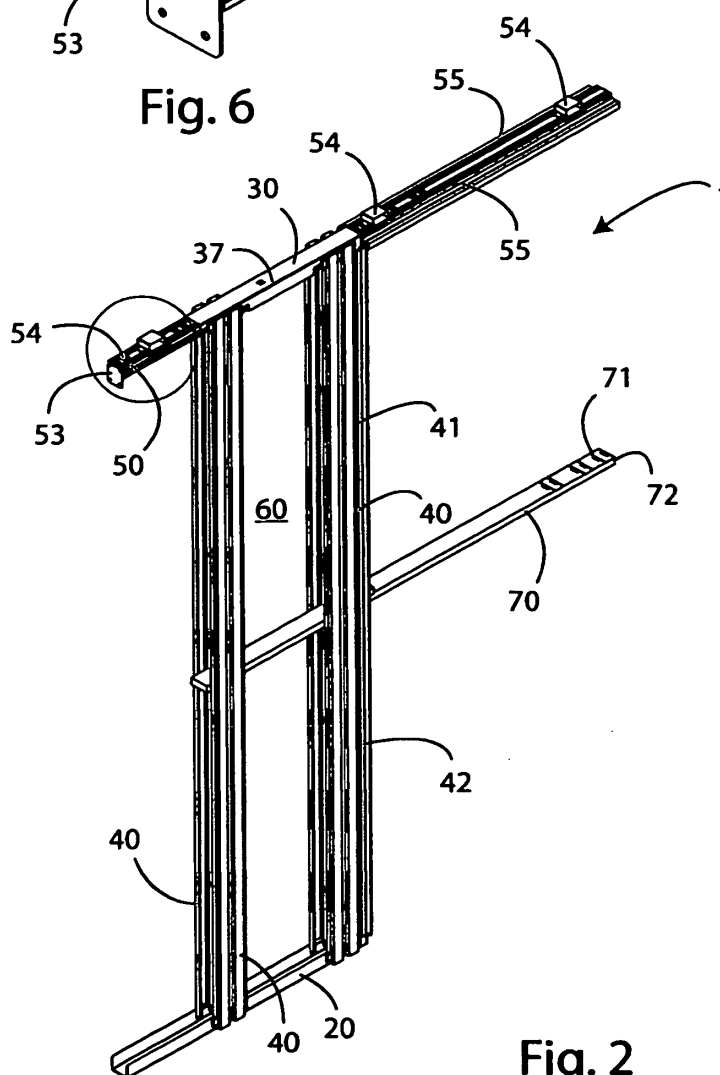


Fig. 2

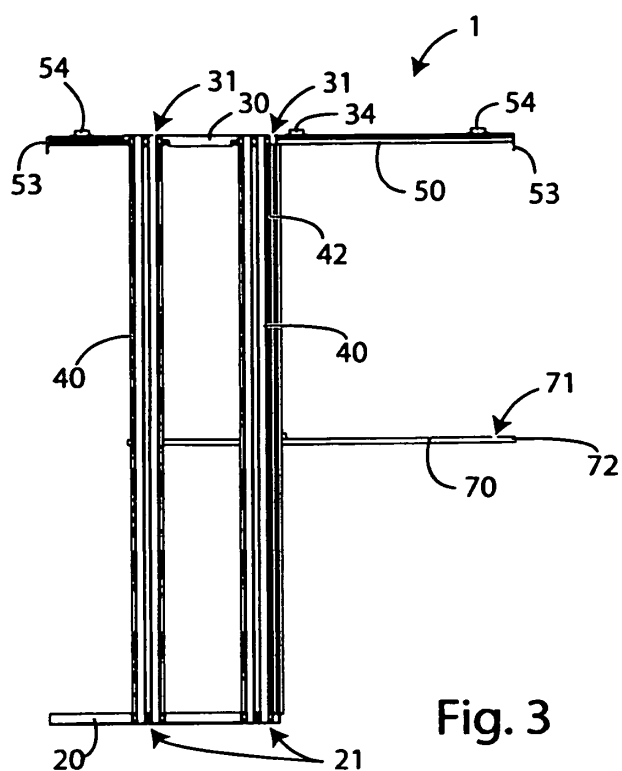


Fig. 3

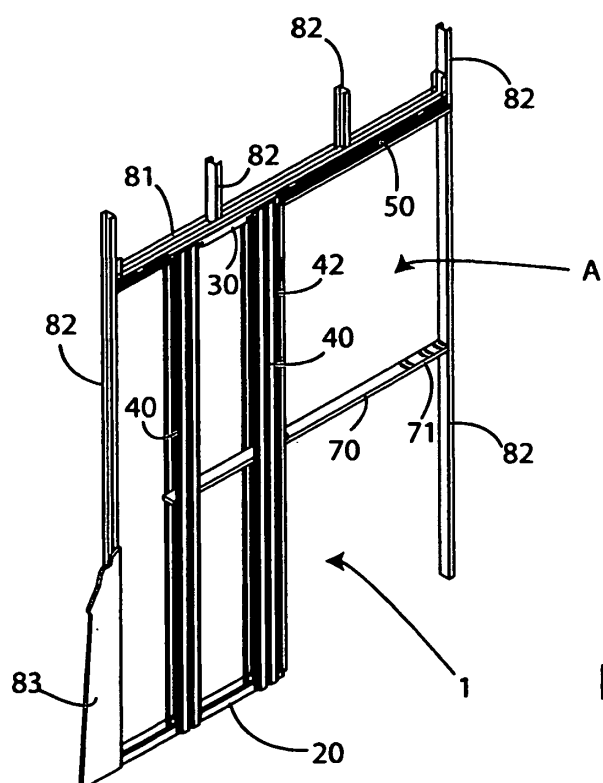


Fig. 8

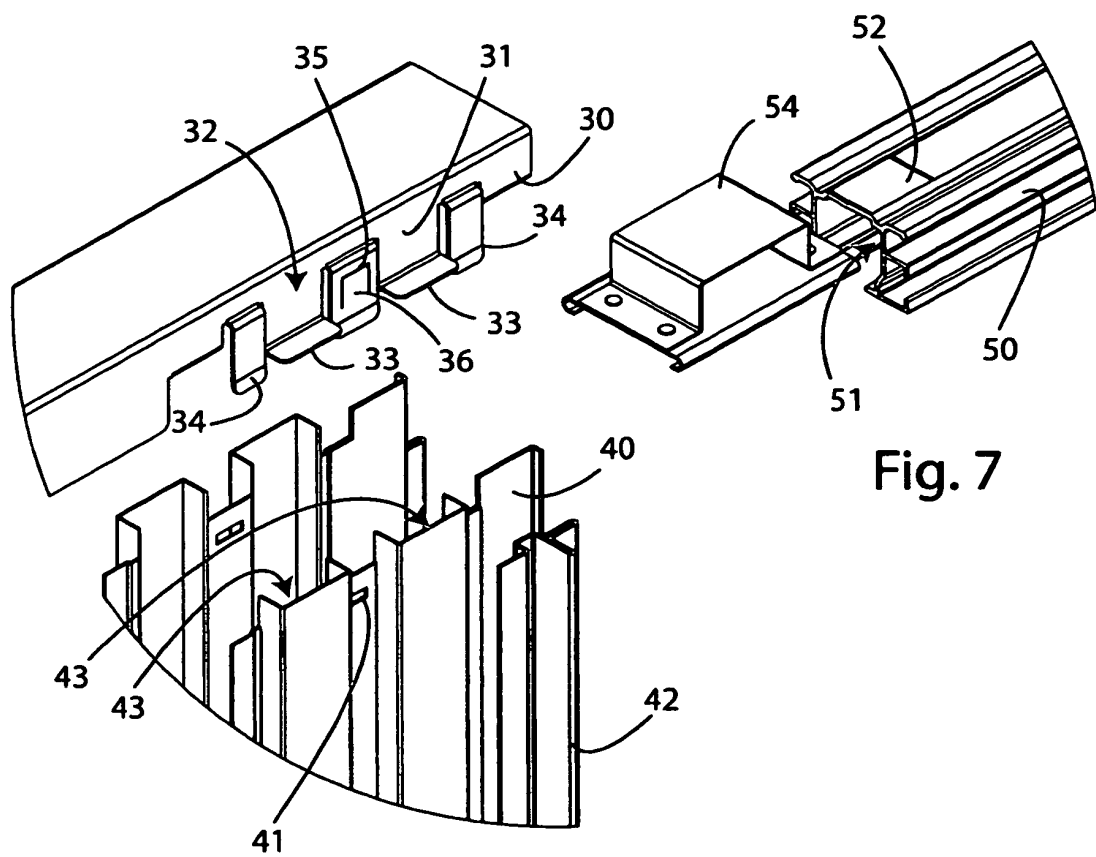


Fig. 7

Fig. 5

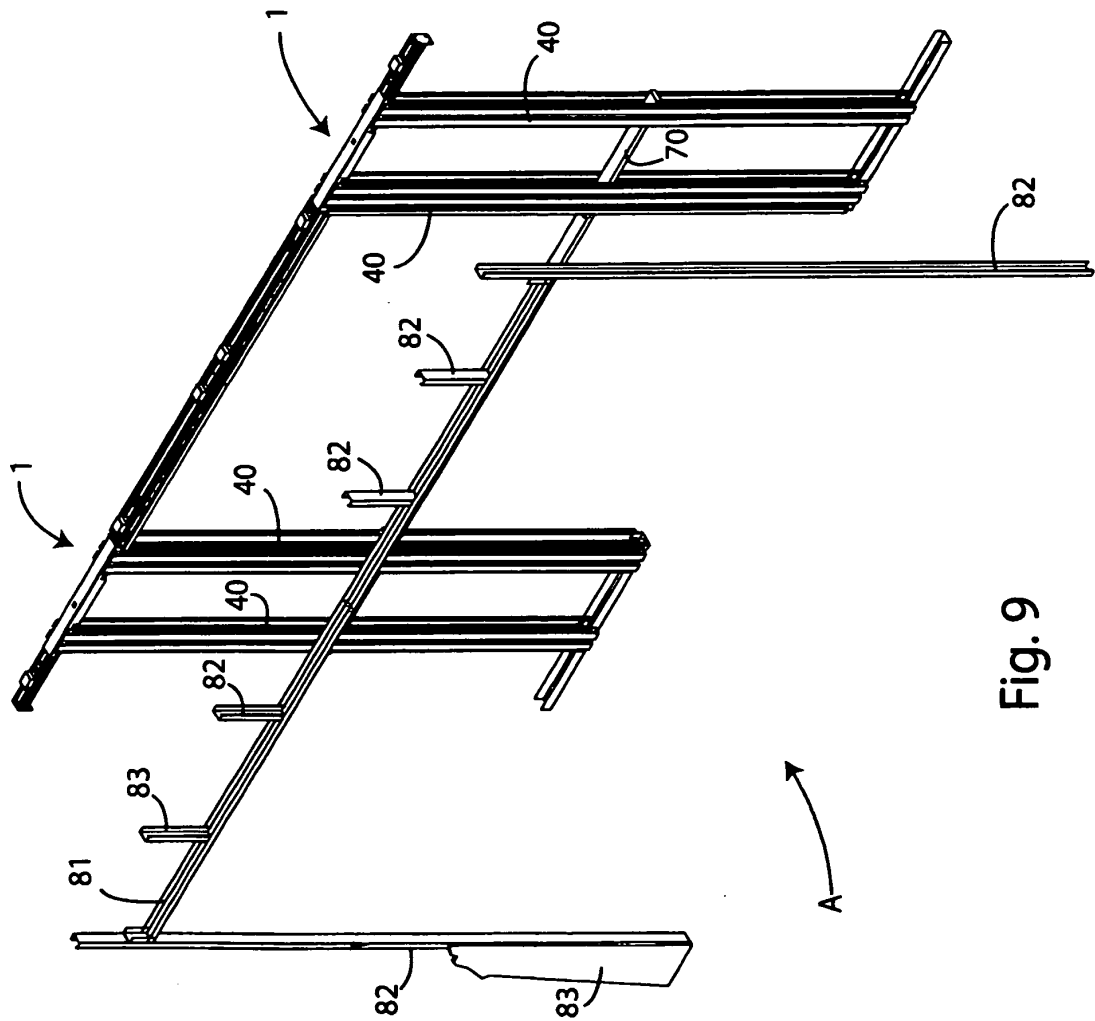


Fig. 9

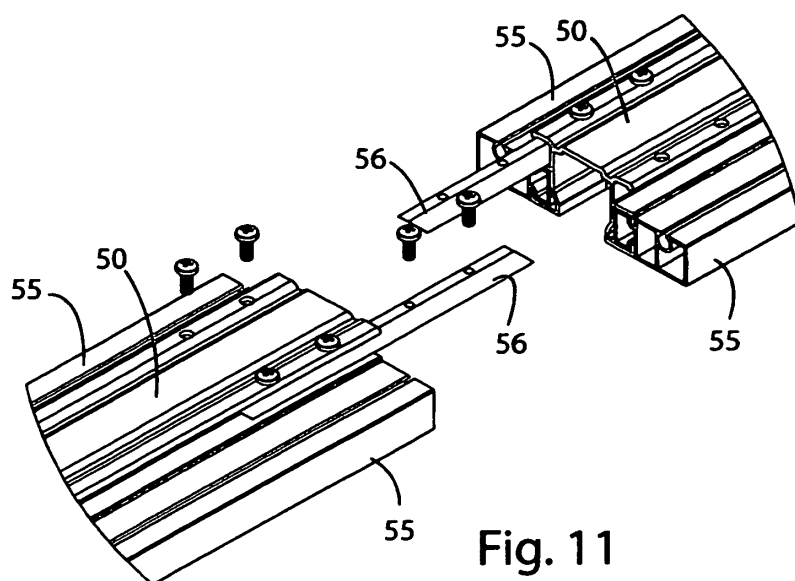


Fig. 11

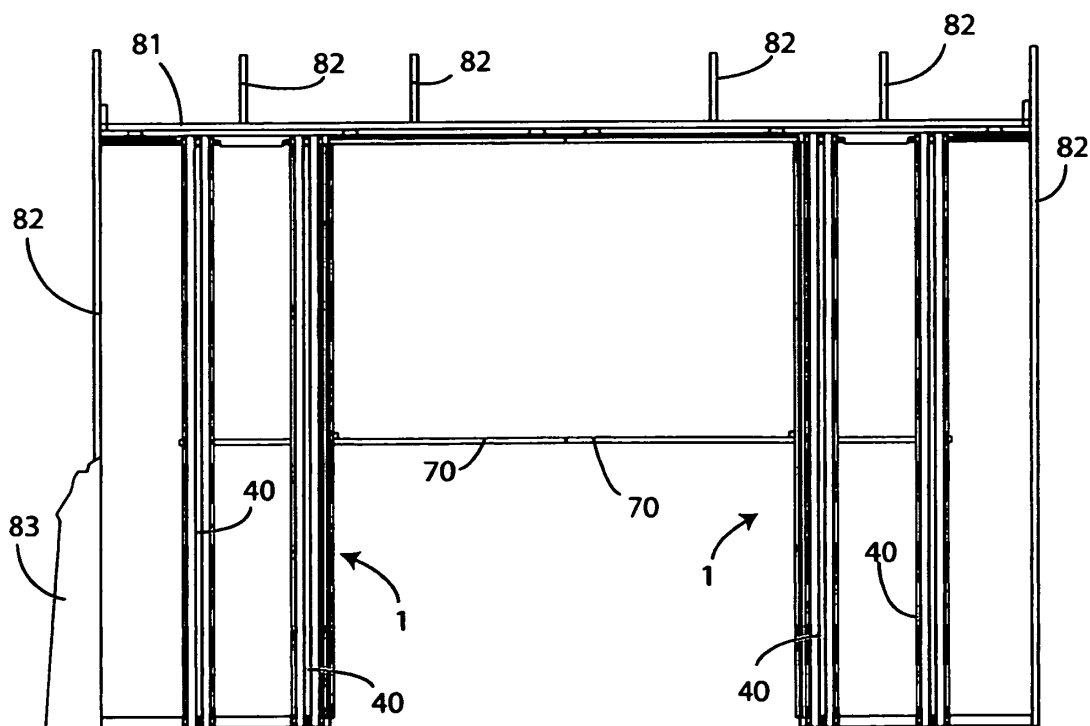
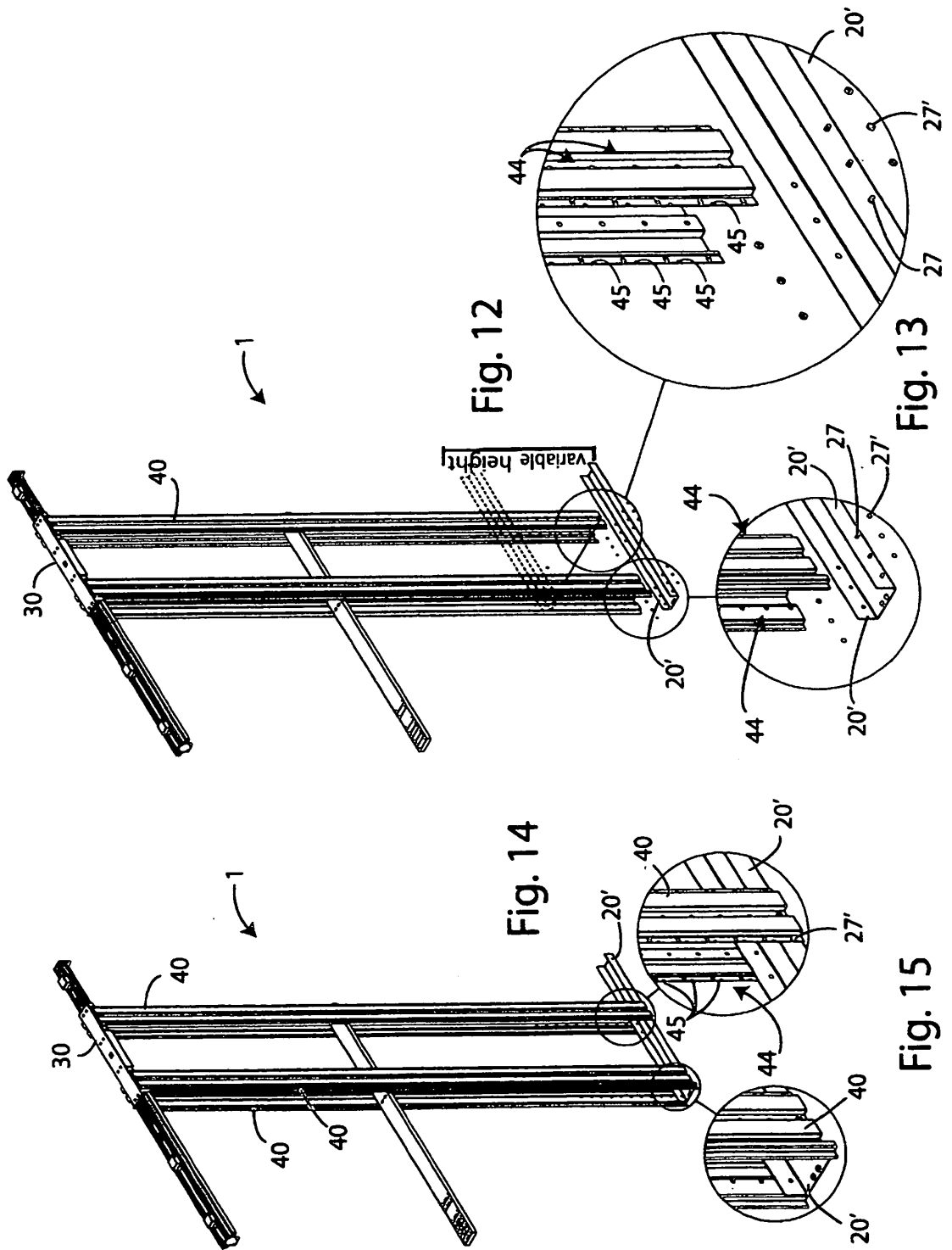


Fig. 10



REFERENCES CITED IN THE DESCRIPTION

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