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

(54) **Subframe for sliding doors**

(57) Sub-frame for sliding doors made up of at least one upper crossbeam (1), a lower crossbeam (12), and at least four vertical mountings (16) parallel and opposed between each other two-by-two; wherein said upper crossbeam (1) incorporates a number of folded flanges that form an upper track (6) and two side tracks (7) and further incorporates a first inside element (2), a second side element (3) on each side comprising grooves on the

upper and lower part, and wherein at least two hitching elements (4) are disposed on said upper part in addition to at least two fastening elements (5) on each side of the upper crossbeam (1); and wherein the lower crossbeam (12) has a U-shape section and wherein the side channels (14) are equal and are narrower than the central channel (15), with the lower crossbeam (12) having numerous holes (13) along its edges, so that it is adjustable in height and width.

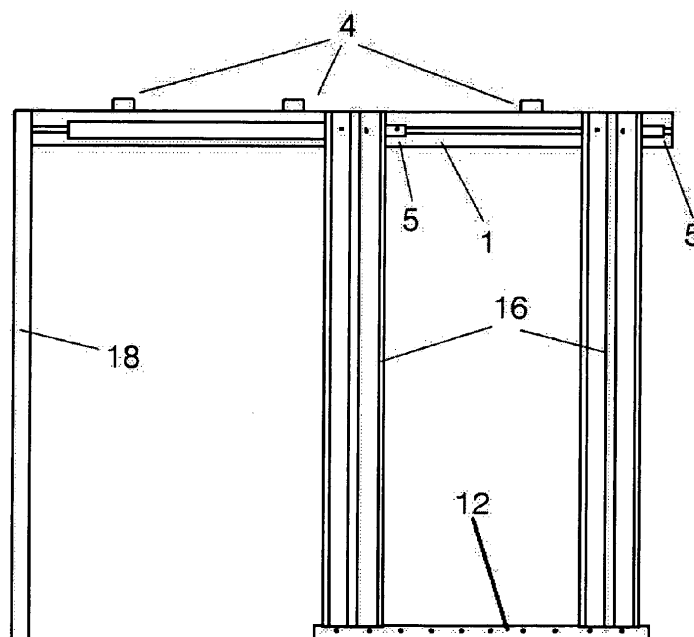


FIG. 16

Description

[0001] The purpose of this invention is a sub-frame for a sliding door.

BACKGROUND TO THE INVENTION

[0002] Finishing partitions and walls in doorway areas with a sub-frame for the purpose of later installation of a frame, with the aim to assist assembly of the frame is well-known in construction. Especially concerning sliding doors, the assembly of this sub-frame is essential.

[0003] An example of this is the European patent EP2299043, which describes a modular sub-frame made up of a lower crossbeam, another upper parallel crossbeam and two or more pairs of vertical crossbeams. The upper crossbeam is made up of a sliding guide with a profile on its upper part that enables the placement of hitching elements for sliding. The sliding guide is inserted into the upper crossbeam by sliding it and these crossbeams are placed in the area that has flanges that fit together with the vertical crossbeams profile. On the lower part, the vertical crossbeam pairs are joined to the lower U" shapes crossbeam by inserting it into the flanges that fit together with the profile. In alternative shapes, holes are provided for joining with a screw and nut.

[0004] In turn, the sliding guide presents two lateral wings in its profile on which a plastic element can slide, which can be cut to the desired size, making a buffer with the part that fastens the vertical crossbeams to the upper crossbeam and provides the sliding guide with the same thickness as the wall.

[0005] Finally, this patent includes vertical support elements on the ends of the sub-frame for placing it in the gap in the wall.

[0006] The main difference with the invention proposed here is in the fact that the sub-frame object of this report can resolve the technical problem derived from the distance variation of the vertical mountings during assembly.

[0007] The Spanish patent ES2182922 describes a wall structure with a sliding door made up of four peripheral crossbeams that make up the main structure, of variable size, to which a multitude of vertical, straight elements are joined that define support media for the wall panels and the sliding door guide media, which are made up of a rail fixed to a wooden support or a plastic support with a wood appearance, between the two parallel parts. The straight support elements are fastened to the lower and upper crossbeams at a suitable distance depending on the length of the crossbeams.

[0008] The main drawback of this patent is that it must be assembled on the wall, compared with the invention proposed here, which can be assembled on the floor or other assembly alternatives, which requires fewer parts for assembly, offers a safer and more resistant assembly that is adjustable in height and width, and which is perfectly fitted as long as the desired measurements are

maintained.

DESCRIPTION OF THE INVENTION

[0009] The technical problem this invention solves is achieving a sub-frame for the assembly of doors in plaster walls which in turn enable the distance of mountings to be varied during assembly. To achieve this, the door sub-frame, the object of this report, of the type made up of an upper crossbeam (preferably manufactured from aluminium), a lower crossbeam (preferably manufactured from galvanised sheeting) and at least four vertical mountings parallel and opposite each other two-by-two, on which the upper crossbeam (preferably rectangular) has a series of folded flanges that form an upper track and two side tracks.

[0010] The sub-frame is also made up of a wooden lower element and a wooden side element on each side. This side element also has grooves on the lower and upper elements, and at least two hitching elements with the other sub-frame elements, as well as at least two fastening elements on each side, for its support on the structure. These wooden elements also serve as a guide for assembly and a stop once the measurements are taken.

[0011] The lower crossbeam has a triple-U-shaped section, where the side channels are equal and narrower than the central channel; the lower crossbeam has a series of holes arranged along its edges to be adapted to the preestablished measurements, avoiding having to make holes at the assembly location.

[0012] The sub-frame of the invention includes a fastening element, which has an elongated shape and preferably a T-shape section. It is fitted into the side tracks by means of the protruding side edges bearing at least two holes to house the corresponding fastening screws.

[0013] The entire structure object of the invention is adjustable in width and in height, in such a way that, given that it is presented disassembled, and since assembly is planned for on the floor, this is an advantage over other state of the art sub-frames, since it saves time and is more convenient to assemble, and has a correct coupling in the hole for this purpose, thanks to its adjustable capacity, once assembly has been completed.

[0014] Throughout the description and the claims, the word "include" and its variants does not aim to exclude other technical specifications, additives, components or steps. For the experts on the matter, other purposes, advantages and features of the invention shall be provided in the description part and in the invention practice part. The following examples and drawings are provided for illustrative purposes and are not intended to limit this invention. Additionally, this invention covers all possible combinations of specific and preferred implementations indicated here.

BRIEF DESCRIPTION OF THE ILLUSTRATIONS

[0015] Following is a brief description of a series of drawings that help to better understand the invention, which are expressly listed with an implementation of the invention presented as a non-limiting example of it.

FIG. 1 shows a side view of the upper crossbeam, as part of the sub-frame for a door, object of this invention.

FIG. 2 shows a front view section of the upper crossbeam.

FIG. 3 and 4 show the wooden elements that accompany the upper crossbeam.

FIG. 5, 6 and 7 show the upper hitch element to the upper part of the wall structure.

FIG. 8 shows the fastening element, as part of the sub-frame for a door, object of this invention.

FIG. 9 shows a side view of the lower crossbeam, as part of the sub-frame for a door, object of this invention.

FIG. 10 and 11 show the different views of the lower crossbeam.

FIG. 12 and 13 show the different views of a vertical assembly.

FIG. 14 shows the join between the two vertical mountings and the lower crossbeam.

FIG. 15 shows the join between a vertical mounting and the fastening element.

FIG. 16 shows the complete assembly of the sub-frame for a door, object of this invention.

PREFERENTIAL IMPLEMENTATION OF THE INVENTION

[0016] The attached illustrations show a preferential implementation of the invention. More specifically, the sub-frame for a door, object of this invention, includes a first upper crossbeam (1), in this particular implementation manufactured from aluminium, a second lower crossbeam (12), in this practical implementation manufactured from galvanised sheeting and at least four vertical mountings (16) parallel to each other and opposed two-by-two.

[0017] As can be seen, the first upper crossbeam (1) is rectangular in this particular implementation, and is made up of an upper track (6) and two side tracks (7), defined by numerous flanges folded in a "C" shape.

[0018] In the same manner, the sub-frame is made up

of a lower part (2), which is made of wood, and a side part (3) on each side track (7), on which this side part (3) is also made up of numerous grooves corresponding to the flanges on these side tracks (7), as can be seen in figures 2 and 3.

[0019] There are numerous hitching elements (4) on the upper part of the upper crossbeam (1). Additionally, there are two fastening elements (5) on each side of the crossbeam (1).

[0020] On the other hand, the lower crossbeam (12) has a triple-U-shape section, identical on the side channels (14) and narrower than the central channel (15), with the lower crossbeam (12) also having numerous holes (13) distributed evenly along the edges.

[0021] The fastening element (5) is an elongated T-shape inserted into the side tracks (7) by means of protruding side edges (9) with at least two holes (10) for housing the corresponding fastening screws, and an additional hole (11) for housing a set screw.

[0022] Additionally, in a specific implementation, the fastening element (5) makes up a lower channel (5a), obtained by machining, as can be seen in figure 8.

[0023] On the other hand, and as can be seen in figures 6 and 7, the hitching element (4) has a hole in its central part and is an omega-shape. This hitching element (4) is situated above the upper track (6) of the upper crossbeam (1) and is made up of extensions (8) folded by their lower parts, which correspond to the upper track flanges (6), embracing them. This hitching element (4) is configured to join the sub-frame to the upper part of the wall once the set is assembled. Finally, the set incorporates a vertical element (18) made of wood, fastened on the end of the upper crossbeam (1) and opposite the vertical mountings (16).

[0024] Figure 12 shows a perspective view of a vertical mounting (16), which has a notably elongated shape and is preferably manufactured from galvanised sheeting. On the surface of the vertical mounting (16) there is a series of folds for mechanical reinforcement, and to acquire sufficient thickness to be inserted into the lower crossbeam (12). It also incorporates at least two sets of holes (17) for use depending on the height of the assembly. Figure 13 shows the vertical mounting section (16) which has a series of folds on its surface being, in this preferential implementation, one side with a flange folded towards the centre, one central and another V-shape on the other side. On the other hand, figure 14 shows the join between the two vertical mountings (16) parallel and opposite each other and the lower crossbeam (12). The vertical mounting folds ensure it is perfectly fitted into the side channels (14) of the lower crossbeam (12). 15 shows the join between a vertical mounting (16) and the fastening element (5). Once the required width to which the vertical mountings must be fitted is known (16), the fastening element is inserted (5) in the side channel (7) of the upper crossbeam (1) and the distance adjusted by means of the side element (3) made of wood, which acts as a stop and a set screw is inserted in the side (11) hole of the

fastening element (5) to immobilise it. The following shows the vertical mounting (16) superimposed on the fastening element (5) making the holes match up (17) with the holes (10) and inserting a screw in each superimposed hole (10, 17).

[0025] Four vertical mountings shall preferably be used (16) screwing each of them to a fastening element (5).

[0026] The vertical mountings (16) have been previously inserted in the lower crossbeam (12), parallel and opposite each other two-by-two. With respect to the upper crossbeam (1) they are also placed parallel and opposite each other two-by-two. The entire assembly operation is carried out on the floor.

[0027] Finally, figure 16 shows a complete assembly placed on the wall. The lower crossbeam (12), the vertical mountings (16) and the fastening elements (5) to which they are screwed form an element capable of moving along the upper crossbeam (1) for adjusting the assembly, in such a way that it is fastened to the wall structure with the hitching elements (4) screwed to a beam on the structure. A vertical element is added to this set (18) made of wood fastened to the upper crossbeam (1) opposite the vertical mountings (16), to provide more firmness to the assembly.

Claims

1. Sub-frame for a door made up of at least one upper crossbeam (1), a lower crossbeam (12), and at least four vertical mountings (16) parallel and opposite each other two-by-two; in which the upper crossbeam (1), includes numerous folded flanges (6) and two side tracks (7); also incorporating a first lower element (2), a second side element (3) on each side with grooves on the upper and lower part, and at least two hitching elements (4) on the upper part in addition to at least two fastening elements (5) to each side of the upper crossbeam (1); and where the lower crossbeam (12) has a triple-U-shaped section, where the side channels (14) are equal and these in turn are narrower than the central channel (15), the lower crossbeam (12) has numerous holes (13) along its edges, characterised because the fastening element (5), is an elongated shape with a T-shape section and is inlaid in the side tracks (7) by means of the protruding side edges (9); all in such a way that the lower crossbeam (12), the vertical mountings (16) and the fastening elements (5) to which they will be screwed form an element that can move along the upper crossbeam (1) to adjust the assembly so that it is fastened to the wall structure by screwing in the hitching elements (4) to a beam on the structure.
2. Sub-frame in accordance with claim 1 in which the fastening element (5) incorporates at least two holes

(10) for housing the corresponding fastening screws, and an additional hole (11) for housing a set screw.

3. Sub-frame in accordance with any of the above claims, in which the fastening element (5) has an inside channel (5a).
4. Sub-frame in accordance with any of the above claims, in which the hitching element (4) has a hole in the central part and forms an omega-shape; where this hitching element (4) is situated above the upper track (6) of the upper crossbeam (1) and has extensions (8) folded by the lower part, which correspond to the flanges on the upper track (6), embracing them.
5. Sub-frame in accordance with any of the above claims in which the set incorporates a vertical element (18) made of wood, fastened on the end of the upper crossbeam (1) and opposed to the vertical mountings (16).
6. Sub-frame in accordance with any of the above claims in which the vertical mounting (16) presents a series of folds on its surface and incorporates at least two pairs of holes (17) for use depending on the height of the assembly.
7. Sub-frame in accordance with any of the above claims with four vertical mountings (16) screwing each of them to a fastening element (5).
8. Sub-frame in accordance with any of the above claims in which the vertical mountings (16) are inserted into the lower crossbeam (12), parallel and opposite each other two-by-two; and where the upper crossbeams (1) are also placed parallel and opposite each other two-by-two.
9. Sub-frame in accordance with any of the above claims which also incorporates a vertical element (18) made of wood, fastened on the end of the upper crossbeam (1) opposite the vertical mountings (16).

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

1. Sub-frame for sliding doors made up of at least one upper crossbeam (1), a lower crossbeam (12), and at least four vertical mountings (16) parallel and opposite each other two-by-two; the sub-frame being arranged to be fastened to the wall structure to a beam on the structure; and in which the upper crossbeam (1), includes numerous folded flanges (6) and two side tracks (7); **characterized in that** said also comprises a first lower element (2), a second side element (3) on each side with grooves on the upper

and lower part, and at least two hitching elements (4) on the upper part in addition to at least two fastening elements (5) to each side of the said upper crossbeam (1); and where the lower crossbeam (12) has a triple-U-shaped section, where the side channels (14) are equal and these in turn are narrower than the central channel (15), the lower crossbeam (12) has numerous holes (13) along its edges, wherein the fastening element (5), is an elongated shape with a T-shape section and is inlaid in the side tracks (7) by means of the protruding side edges (9); and wherein the lower crossbeam (12), the vertical mountings (16) and the fastening elements (5) to which they are screwed form an element movable along the upper crossbeam (1) to adjust the assembly.

2. Sub-frame in accordance with claim 1 in which the fastening element (5) incorporates at least two holes (10) for housing the corresponding fastening screws, and an additional hole (11) for housing a set screw.

3. Sub-frame in accordance with any of the above claims, in which the fastening element (5) has an inside channel (5a).

4. Sub-frame in accordance with any of the above claims, in which the hitching element (4) has a hole in the central part and forms an omega-shape; where this hitching element (4) is situated above the upper track (6) of the upper crossbeam (1) and has extensions (8) folded by the lower part, which correspond to the flanges on the upper track (6), embracing them.

5. Sub-frame in accordance with any of the above claims in which the set incorporates a vertical element (18) made of wood, fastened on the end of the upper crossbeam (1) and opposed to the vertical mountings (16).

6. Sub-frame in accordance with any of the above claims in which the vertical mounting (16) presents a series of folds on its surface and incorporates at least two pairs of holes (17) for use depending on the height of the assembly.

7. Sub-frame in accordance with any of the above claims with four vertical mountings (16) screwing each of them to a fastening element (5).

8. Sub-frame in accordance with any of the above claims in which the vertical mountings (16) are inserted into the lower crossbeam (12), parallel and opposite each other two-by-two; and where the upper crossbeams (1) are also placed parallel and opposite each other two-by-two.

9. Sub-frame in accordance with any of the above claims which also incorporates a vertical element (18) made of wood, fastened on the end of the upper crossbeam (1) opposite the vertical mountings (16).

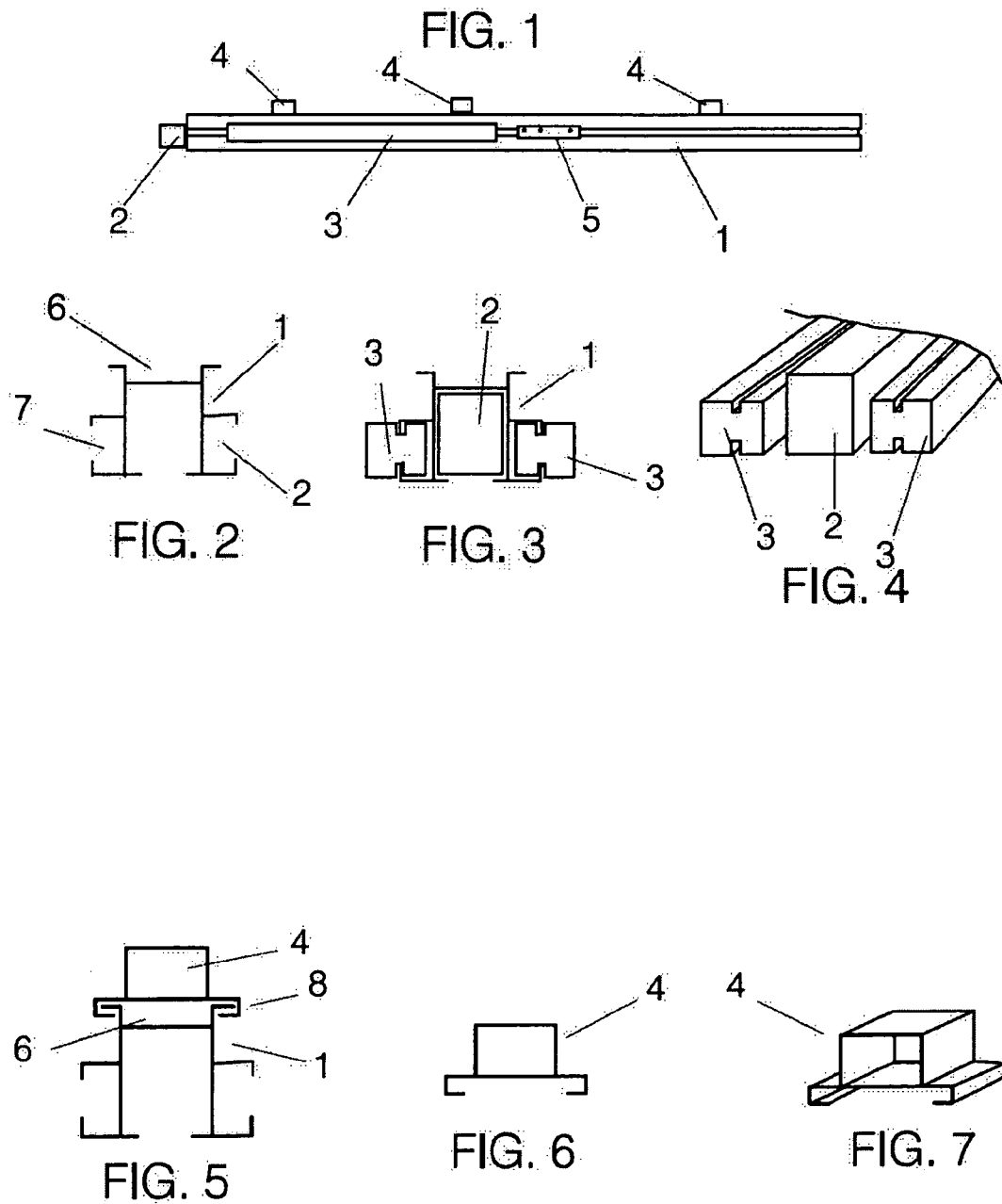


FIG. 8

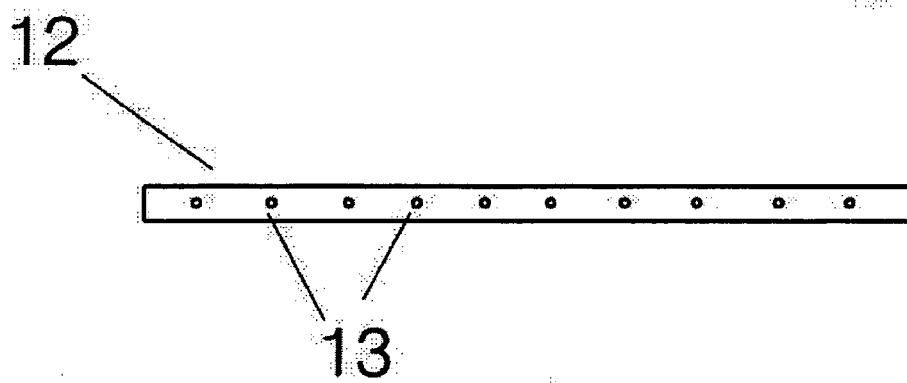
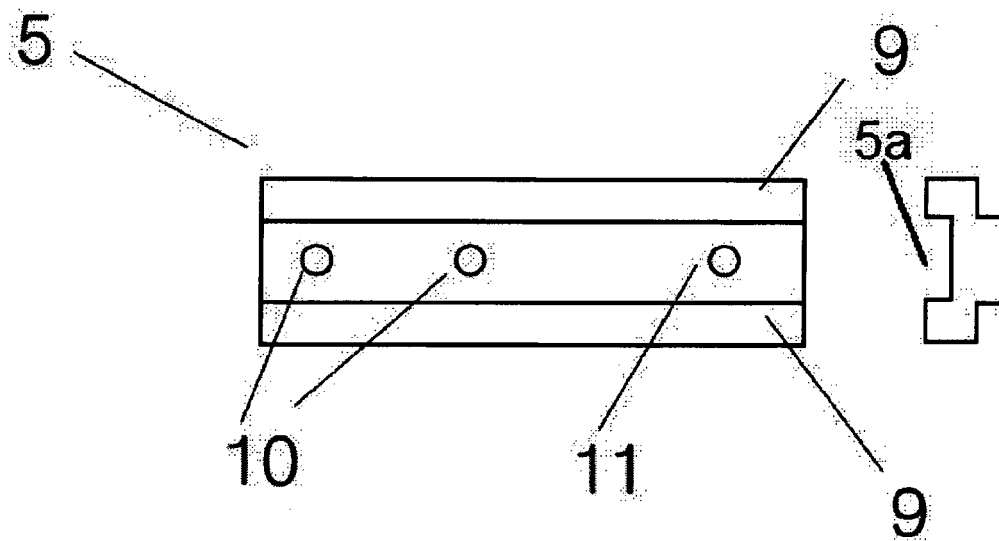


FIG. 9

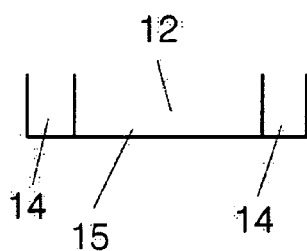


FIG. 10

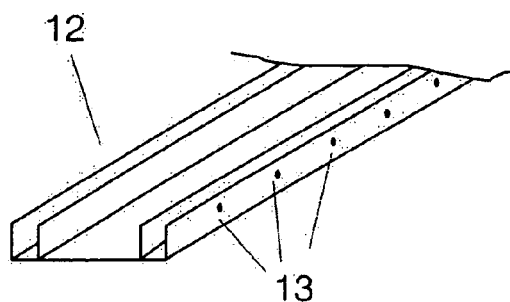


FIG. 11

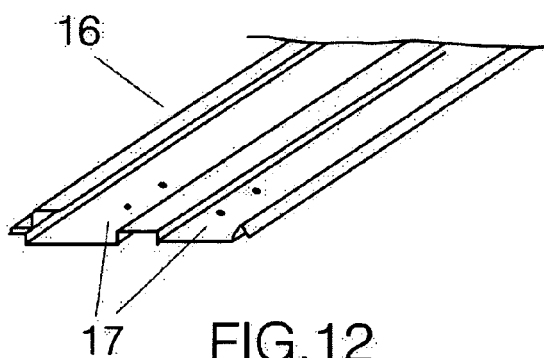


FIG. 12



FIG. 13

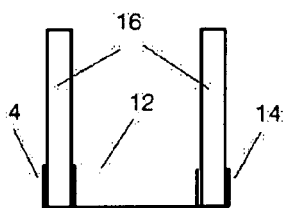


FIG. 14

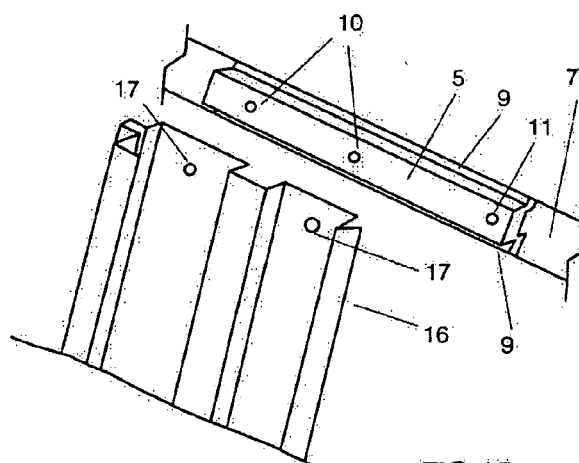


FIG. 15

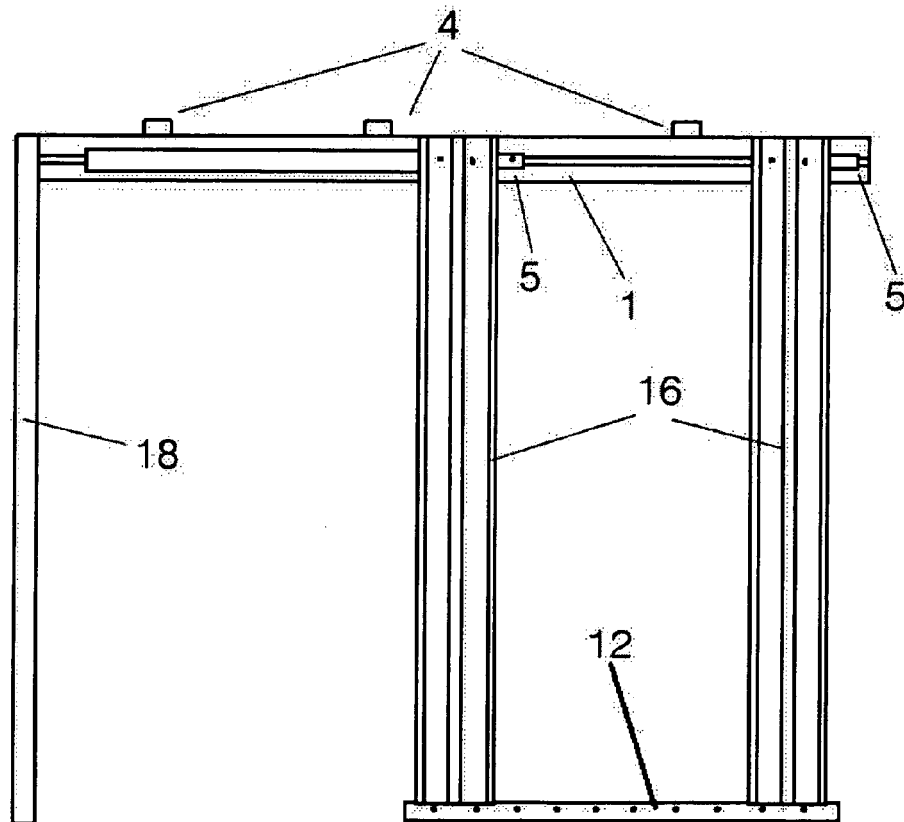


FIG. 16



EUROPEAN SEARCH REPORT

Application Number
EP 12 38 0020

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	EP 2 299 043 A1 (S C S P A [IT]) 23 March 2011 (2011-03-23) * abstract; figures 1-15 *	1-9	INV. E06B3/46
A	US 4 742 645 A (JOHNSTON JAMES R [US]) 10 May 1988 (1988-05-10) * abstract; figures 1-3,9,10 *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 September 2012	Examiner Koulo, G
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 12 38 0020

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21-09-2012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 2299043	A1	23-03-2011	NONE	

US 4742645	A	10-05-1988	NONE	

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

REFERENCES CITED IN THE DESCRIPTION

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