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(54) **Joint for metal furniture**

(57) A joint for metal furniture (10) comprising a pair of sides (11), a base (12) and a top (13) suitable for realising a substantially quadrangular perimetric structure of the furniture, the joint comprises a shaped element (30) equipped with a wing (31) projecting from each of its two ends in a direction perpendicular to the shaped element (30) itself so as to realise, at the front, a U-

shaped profile, the shaped element (30) being arranged to be fixed to each end of the base (12) and of the top (13), or alternatively to each end of each side (11), and correspondingly each end of the sides (11), or alternatively of the base (12) and of the top (13), being equipped with engagement seats (55) suitable for housing said wings (31).

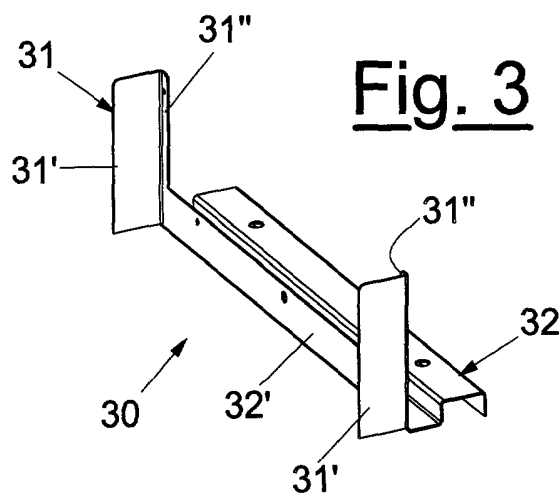
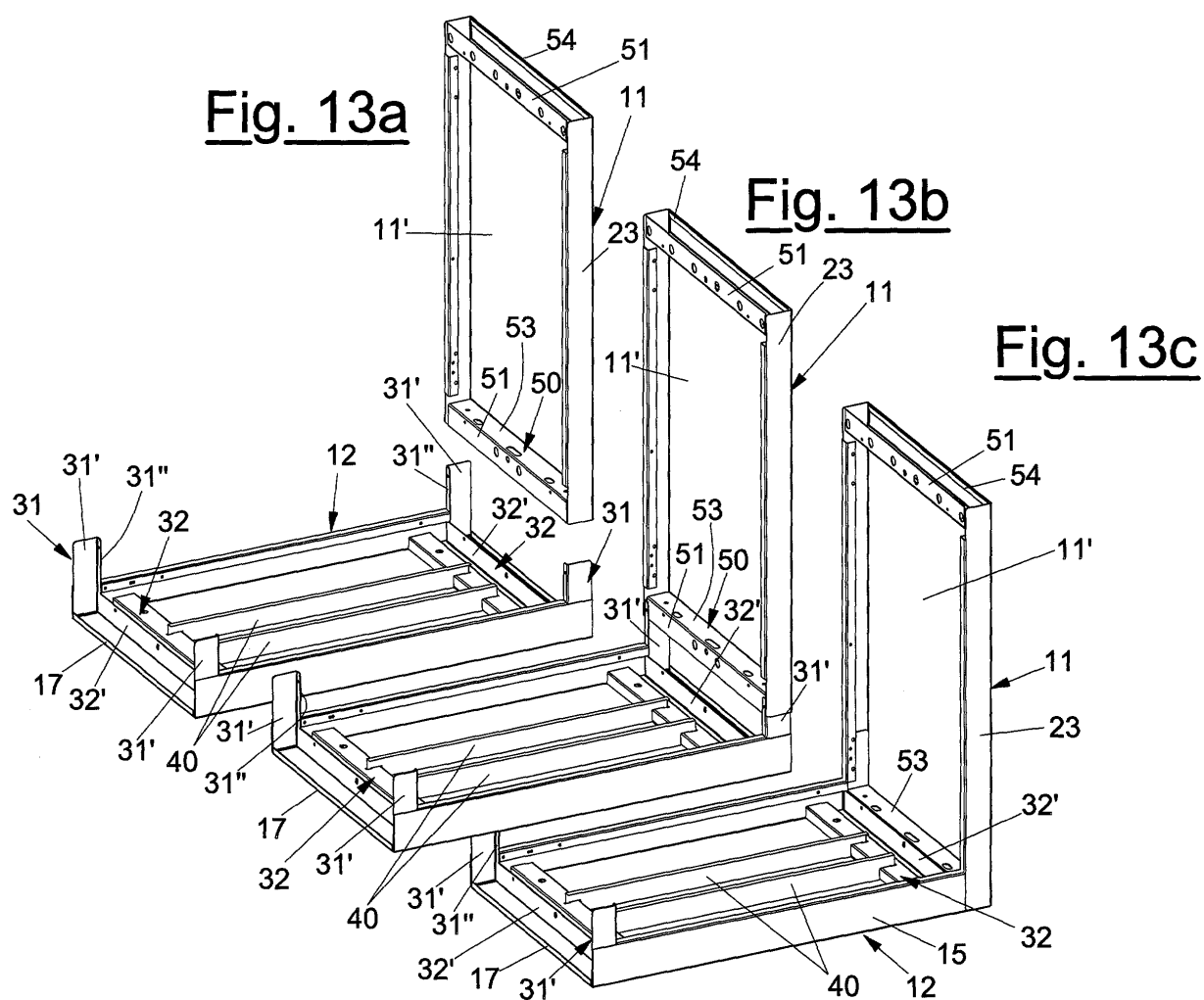


Fig. 3



Description

[0001] The present invention concerns a joint for metal furniture.

[0002] In particular, the invention concerns a fixed joint for the realisation of perimetric structures of metal furniture such as wardrobes, shelving, chests of drawers, filing cabinets and the like.

[0003] Metal furniture has for some time been used in the field of interior decoration, and in particular in office furnishing.

[0004] Currently, metal furniture is realised by assembling the perimetric parts generally through bolting, engagement or welding.

[0005] Modern point welding techniques, for example, realised through automated plants allow a substantial reduction in assembly costs.

[0006] In furniture made according to the aforementioned techniques there are, however, structural shortfalls since the reinforcement of the bolting or welding zones requires the demanding application of special profiles or addition of material to increase the rigidity and hyperstatic characteristics of the furniture.

[0007] The assembly of such furniture, in particular welded or riveted furniture, can only be carried out at industrial installations which have the necessary equipment.

[0008] As for bolted furniture, it is generally complex to assemble requiring at least two operators and the displacement or in general the turning over of the furniture.

[0009] The general purpose of the present invention is, therefore, that of realising a joint for metal furniture comprising a pair of sides, a base and a top to be assembled fixedly so as to realise a substantially quadrangular perimetric structure of the furniture, which allows greater rigidity and a substantial degree of hyperstaticity of the assembled furniture to be obtained.

[0010] Another purpose of the present invention is that of providing a joint for metal furniture that allows the assembly of the furniture in a reduced number of operations.

[0011] Also amongst the purposes of the present invention is to provide a joint for metal furniture that is simple and cost-effective to realise.

[0012] Another purpose of the present invention is that of providing furniture that, thanks to the type of joint allows assembly even by a single operator avoiding lifting and burdensome manipulations.

[0013] Advantageously, the joint for metal furniture according to the present invention, thanks to the ease of use and manipulation of the elements making up the furniture during assembly, allows the varnishing of the elements themselves before their assembly since there is no risk of damaging them in the subsequent operations.

[0014] These and other purposes and advantages according to the present invention are accomplished by a joint for metal furniture according to that which is out-

lined in claim 1.

[0015] Further characteristics of the invention form the object of the dependent claims.

[0016] The joint for metal furniture comprising a pair of sides, a base and a top suitable for realising a substantially quadrangular perimetric structure of the furniture, comprises a shaped element equipped with wings projecting from its ends in a direction perpendicular to the shaped element itself so as to realise a U-shaped profile, the shaped element being arranged to be fixed to each end of the base and of the top or alternatively to each end of each side, and correspondingly each end of the sides or alternatively of the base and of the top being equipped with engagement seats suitable for housing the wings.

[0017] The characteristics and advantages of a joint for metal furniture according to the present invention shall become clearer from the following description, given as an example and not for limiting purposes, referring to the attached schematic drawings, in which:

Figure 1 is a perspective schematic view of a piece of furniture incorporating the joint according to the invention;

Figure 2 is a perspective schematic view of the base of the piece of furniture of figure 1;

Figures 3 to 5 illustrate as many details of the joint according to the invention relative to the base of figure 2;

Figure 6 is a perspective schematic view of the top of the piece of furniture of figure 1;

Figures 7 to 9 illustrate as many details of the joint according to the invention relative to the top of figure 6;

Figure 10 is a perspective schematic view of the side of the piece of furniture of figure 1;

Figures 11 and 12 illustrate as many details of the joint according to the invention relative to the side of figure 10;

Figures 13a-13c and 14-16 illustrate various steps of the assembly of the piece of furniture incorporating the joint according to the invention.

[0018] With reference to the figures, a piece of metal furniture 10, that can for example be a wardrobe, shelving, a chest of drawers, a filing cabinet or the like, is partially schematised.

[0019] The furniture 10 comprises a pair of sides 11, a base 12 and a top 13 arranged to be assembled through engagement completed through bolting or attachment through screws in already-threaded holes, to realise the substantially quadrangular perimetric structure of the furniture.

[0020] The indicated system for completing the assembly is purely an example, with self-threading screws and rivets being able to be used.

[0021] The fixed assembly can also be completed through a nail, for example made from plastic, suitable

for preventing disassembly for example during lifting and movement of the furniture.

[0022] The furniture can, if necessary, be closed through one or more backs and doors (not illustrated), and can be equipped with shelves 18 fixed to uprights 19 in turn fixed to a base plane 20 fixed to the base 12.

[0023] The furniture 10 is equipped, for each corner, with a fixed joint comprising a first or a second shaped element, respectively indicated with 30 or 30', each realised in the form of an elongated element, equipped with a wing 31 projecting from each of its two opposite ends in a direction perpendicular to the shaped element itself so as to realise a U-shaped profile view from the front.

[0024] Such a shaped element is fixed to each end of the base 12 and of the top 13.

[0025] It should be understood, however, that without altering the inventive idea, as an alternative, the shaped element can be fixed to each end of each side 11.

[0026] In any case, the attachment of the element to the corresponding part of the furniture, preferably carried out through point welding, is realised so that the shaped element has the wings 31 arranged to be inserted in engagement seats 55 realised correspondingly in each end of the sides 11 or alternatively of the base 12 and of the top 13.

[0027] With assembly of the furniture completed, therefore, each shaped element 30, 30' shall have its wings 31 inserted in the corresponding engagement seats 55 so as to obtain a substantially stiffer corner in the perimetric structure of the furniture itself, irrespective of the mutual position of the shaped element and the engagement seats.

[0028] In such a way the elements carrying the respective joint portions can be arranged in the production step to proceed to assembly still in the production step, or else the parts can be packaged separately leaving such assembly to the user.

[0029] Advantageously, given the simplicity of the assembly operations and the reduced need for manipulation of the elements, it is also possible to varnish them before assembly.

[0030] Thanks to the presence of the wings inserted in the engagement seats, the bolting is simplified since the structure is self-supporting during assembly.

[0031] Moreover, the type of assembly foreseen creates reduced bulk and practically eliminates the need for turning over of the furniture so as to be able to be carried out by a single operator possibly at a site very close to the definitive location of the furniture or of the packaging thereof.

[0032] The presence of the wings, as well as easing the assembly of the furniture, together with the profile of the shaped element, gives substantial rigidity to the coupling that translates into high hyperstaticity of the assembled furniture, which ensures substantial stability and strength of the structure.

[0033] With particular reference to figures 2 to 9 in the

exemplified embodiments, the first shaped element 30 is previously fixed to the base whereas the second shaped element 30' is fixed to the top.

[0034] The configuration of the two shaped elements 30, 30' is slightly different, the first shaped element 30 being arranged to fixedly house one or more stringers 40 arranged parallel to the longer sides of the base to increase its resistance to loads whereas the second shaped element 30', not having to support such loads, has a lighter configuration, as shall become clearer hereafter.

[0035] The base 12, in the embodiment shown, has a rectangular plan with long sides 14 folded so as to form the ribbing and containment edges 15, and substantially open short sides 16, possibly having a fold 17 of limited height so as to constitute a small rigidifying and containment edge.

[0036] Such short sides 16 are each closed by the first shaped element 30 through attachment thereof to an end of the base, preferably through point welding.

[0037] The first shaped element 30, intended for the base 12, has, on the side, the two wings 31 which extend from a profile 32 folded so as to have, in section, a profile in the shape of two upturned Us joined through a wing in common.

[0038] The wings 31 in turn have an angular shape defined by a first portion 31' arranged substantially adjacent to the end of the edge 15 of the long side of the base 12 and a second portion 31'', perpendicular to the first, going out from the wing of the profile 32 and thus arranged along the short side of the base.

[0039] Such a profile 32, therefore, has a band 32' defined by one wing of the double "U", from each of the two ends of which extends a wing 31, with its second portion 31' coplanar to the strip 32'.

[0040] The profile 32 has transversally, at least one cut 33 formed on the wing opposite the strip 32' and on the adjacent base and suitable for fixedly receiving an end of the corresponding stringer 40.

[0041] The function of the strip 32', as well as structural rigidification of the shaped element, is that of allowing the bolting of a corresponding integral blade (in the example shown) to the side 11 which, with engagement completed, is in contact with said base strip lying over the top of it.

[0042] With particular reference to figures 6 to 9, the top 13 is illustrated, in upturned position, which correspondingly to the base 12, has a rectangular plan with the longer sides 14 folded so as to form ribbing and containment edges 15, and substantially open short sides 16, possibly having a fold 17 of limited height so as to constitute a small rigidifying and containment edge.

[0043] Such short sides 16 are each closed by the second shaped element 30' through attachment thereof to an end of the base, preferably through point welding.

[0044] The second shaped element 30' is realised substantially the same as the first, having, at the side, the two wings 31 which extend from a profile 32a that is

lighter than the homologous profile 32 since it has, in section, a profile in the shape of two upturned Us and joined through a wing in common, but without the wing arranged towards the inside of the top, i.e. terminating with a raised base parallel to the plane of the top.

[0045] Identically to the first element 30, the second element 30' also has the wings 31 shaped to be angled, with a first portion 31' arranged substantially adjacent to the end of the edge 15 of the longer side of the top 13 and a second portion 31'', perpendicular to the first, going out from the wing of the profile 32a and thus arranged along the short side of the top.

[0046] Such a profile 32a thus has a band 32a' defined by a wing of the double U, from each of the two ends of which extends the wing 31, with its second portion 31' coplanar to the strip 32a'.

[0047] With reference to figures 10 to 16, the configuration of the sides 11 of the furniture and the assembly thereof are illustrated.

[0048] Each side 11 of the furniture, in the exemplified embodiment, is substantially rectangular shaped defined by longer sides 21 and short sides 22.

[0049] The side is realised through a sheet of plate constituting the side wall 11', folded along both of the longer sides 21 so as to realise a fold 23 for each longer side.

[0050] Close to each of the two short sides 22 and parallel to it an engagement element 50 is fixed realised in the form of a U-shaped profile defined by two tabs 51 and 52 and a base 53.

[0051] Such an engagement element 50, a little shorter than the short side, is fixed along each short side 22 preferably through welding of one of the two tabs to the wall 11' of the side 11 between the two folds 23 so as to have the opening of the U facing towards the top 13 or the base 12 during assembly.

[0052] In particular, the tab 52 intended for attachment to the wall 11' of the side 11 has, for its entire length, an end portion 54 folded towards the inside of the U so as to realise a housing for receiving the folds 17 of the corresponding top or base.

[0053] The realisation of the engagement element 50, smaller in size than the side 11, is foreseen to obtain, in cooperation with the folds 23 of the long sides 21, a pair of engagement seats 55 suitable for receiving the corresponding wings 31, so as to realise a partial engagement of the sides with the top and the base.

[0054] The tab 51, with assembly carried out, is arranged in contact with the corresponding strip 31' or 31a' so as to be fixed to them, for example through bolting, so as to define the assembly of the furniture structure.

[0055] With reference in particular to figures 13a-13c and 14-16, some of the assembly steps through the insertion of the tabs present on the sides in the engagement seats integral with the base and top are shown.

[0056] Moreover, the characteristic of self-support of the various elements during assembly should be noted, a characteristic that makes the overall assembly oper-

ation even by a single operator extremely easy and devoid of unnecessary stresses.

5 Claims

1. Joint for metal furniture (10) comprising a pair of sides (11), a base (12) and a top (13) suitable for realising a substantially quadrangular perimetric structure of the furniture, **characterised in that** said joint comprises a first or second shaped element (30, 30') equipped with a wing (31) projecting from each of its two ends in a direction perpendicular to the shaped element (30, 30') itself so as to realise, at the front, a U-shaped profile, each first or second shaped element (30, 30') being arranged to be fixed to each end of the base (12) and of the top (13), or alternatively to each end of each side (11), and correspondingly each end of the sides (11), or alternatively of the base (12) and of the top (13), being equipped with engagement seats (55) suitable for housing said wings (31)
2. Joint for metal furniture (10) according to claim 1, wherein said base (12) and said top (13) are rectangular shaped with long sides (14) folded so as to form ribbing and containment edges (15) and short sides (16) having limited folding (17).
3. Joint for metal furniture (10) according to claim 2, wherein the first shaped element (30) is fixed along each short side (16) of said base (12) and has, on the side, the two wings (31) which extend from a profile (32) folded so as to have, in section, a profile shaped as two upturned Us and joined through a wing in common.
4. Joint for metal furniture (10) according to claim 2, wherein the second shaped element (30') is fixed along each short side (16) of said top (13) and has, on the side, the two wings (31) which extend from a profile (32a) having, in section, a profile shaped as two upturned Us and joined through a wing in common, and without the wing of the U arranged towards the inside of the top, i.e. terminating with a raised base parallel to the plane of the top.
5. Joint for metal furniture (10) according to claim 3 or 4, wherein said wings (31) have an angular shape defined by a first portion (31') arranged substantially adjacent to the end of the edge (15) and a second portion (31''), perpendicular to the first.
6. Joint for metal furniture (10) according to claim 5, wherein said profiles (32, 32') each have a strip (32', 32a') defined by a wing of the double U, from each of the two ends of which extends the wing (31), with its second portion (31') coplanar to the strip (32',

32a').

7. Joint for metal furniture (10) according to claim 6, wherein each of said sides (11) of the furniture is substantially rectangular shaped defined by long sides (21) and short sides (22) and it has each long side folded so as to have a fold (23). 5
8. Joint for metal furniture (10) according to claim 7, wherein close to each of the two short sides (22) of said sides (11) and parallel to it an engagement element (50) is fixed realised in the form of a U-shaped profile defined by two tabs (51) and (52) and a base (53). 10 15
9. Joint for metal furniture (10) according to claim 8, wherein said engagement element (50) is realised shorter than the short side (22) of the side (11), and is fixed along each short side (22) preferably through welding of one of the two tabs to the wall (11') of the side (11) between the two folds (23) so as to have the opening of the U respectively facing towards the top (13) or the base (12) during assembly. 20 25
10. Joint for metal furniture (10) according to claim 9, wherein said engagement element (50) of a smaller size than the short side of the side (11), is foreseen to obtain, in cooperation with the folds (23) of the long sides (21), the pair of engagement seats (55) suitable for receiving the corresponding wings (31), so as to realise a partial engagement of the sides with the top and the base. 30
11. Joint for metal furniture (10) according to claim 9, wherein said tab (52) is intended to be fixed to the wall (11') of the side (11), and has, for its entire length, an end portion (54) folded towards the inside of the U so as to realise a housing to receive the fold (17) of the corresponding top or base. 35 40

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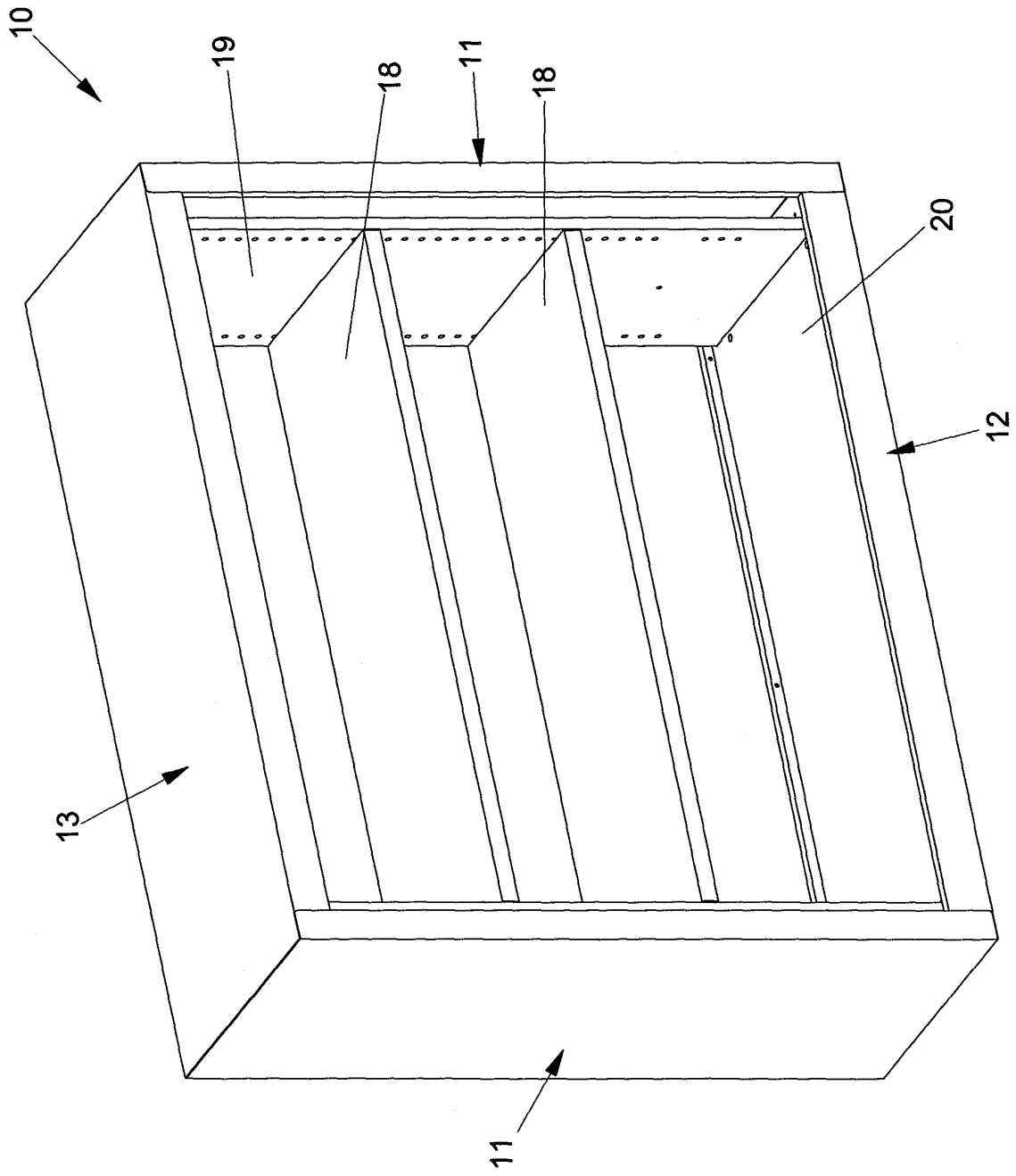
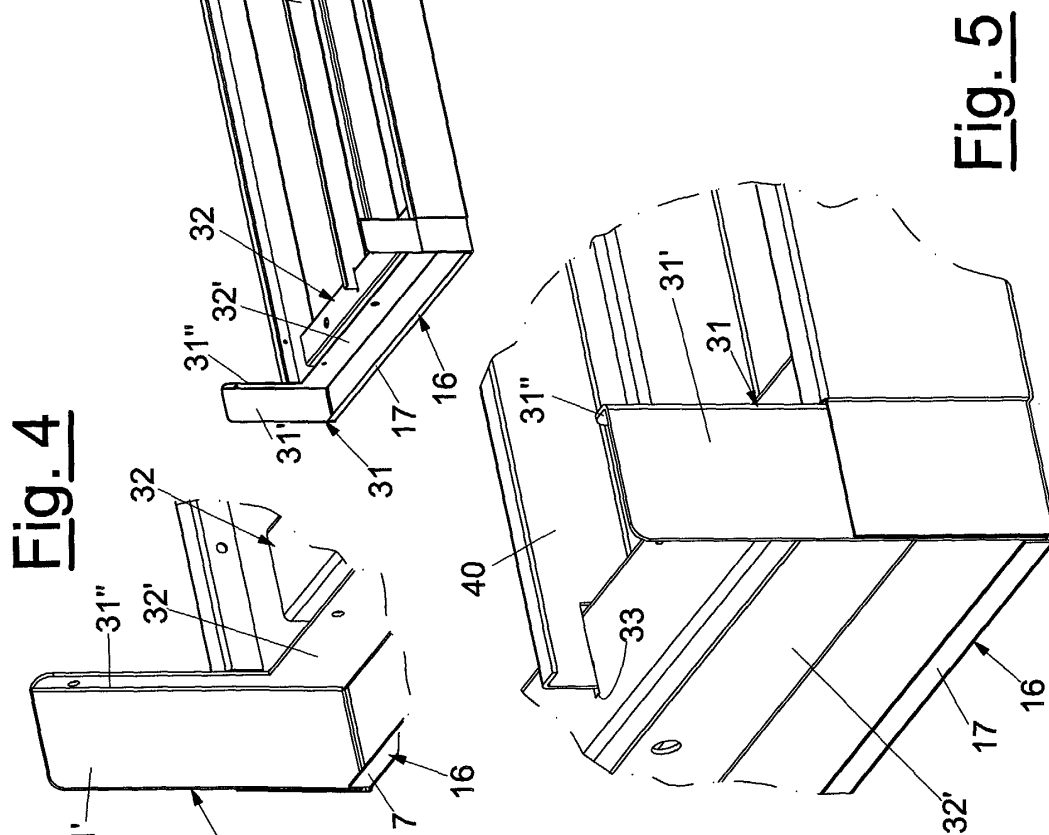
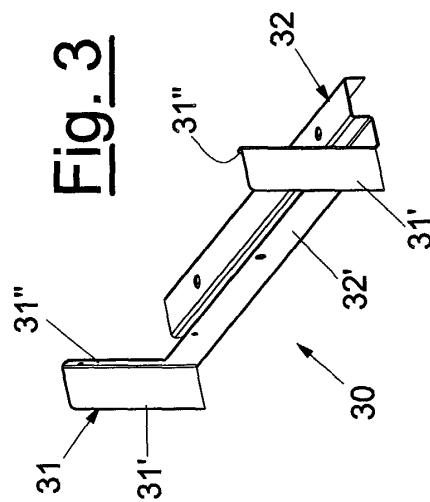
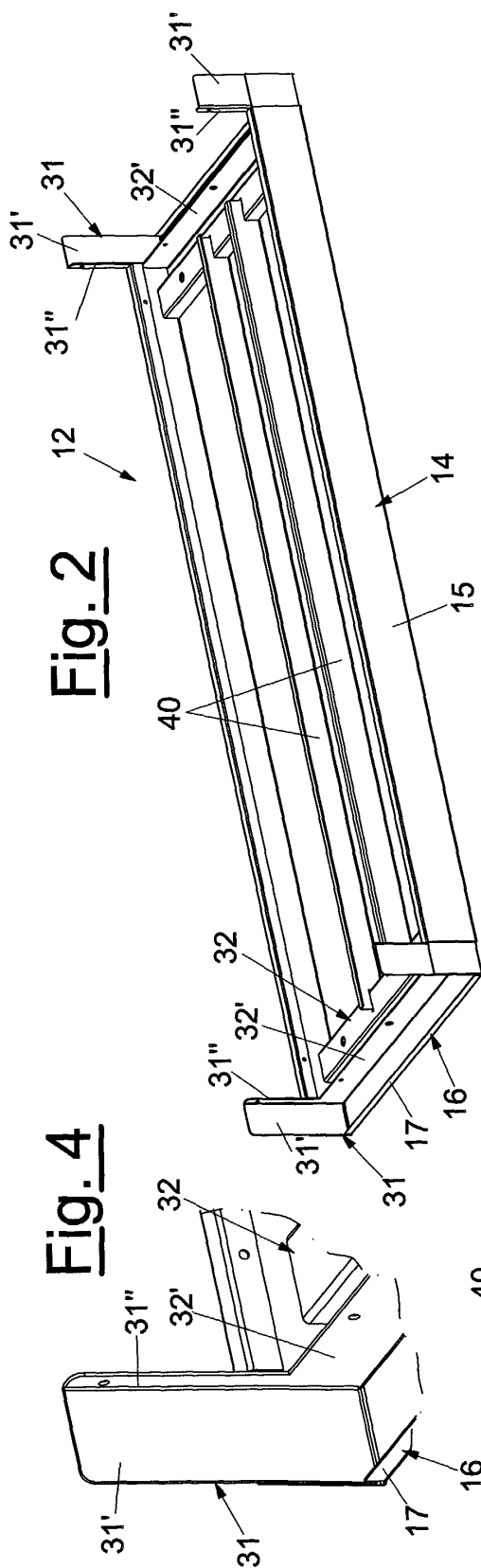


Fig. 1



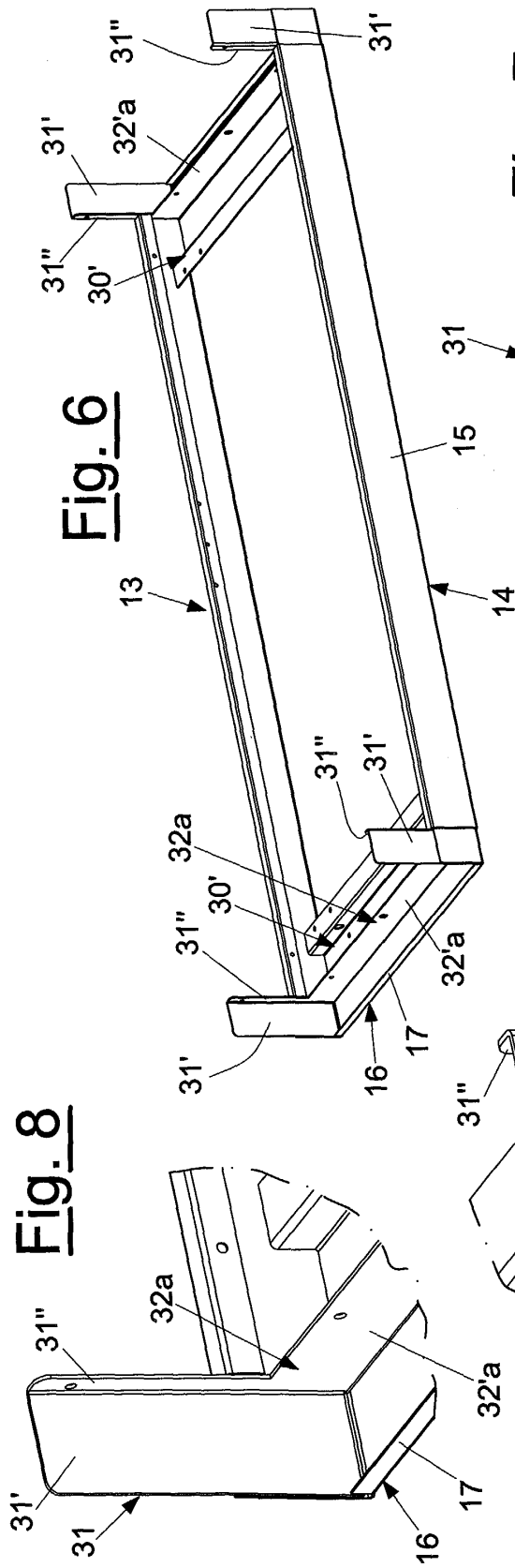


Fig. 7

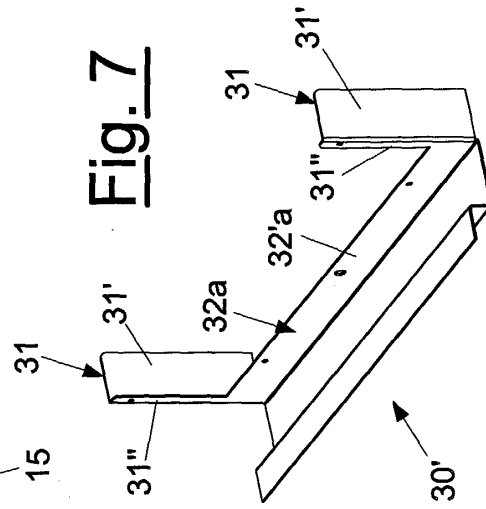


Fig. 9

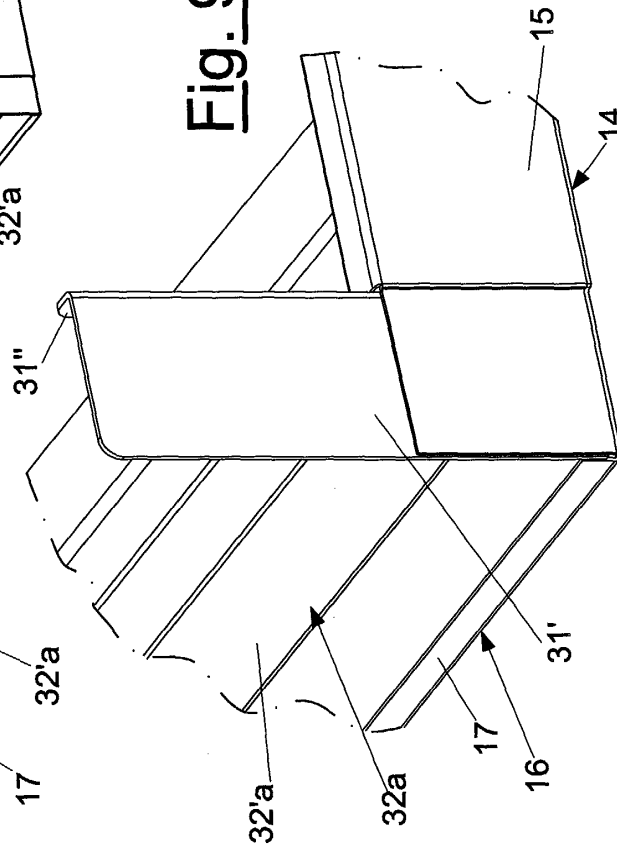


Fig. 8

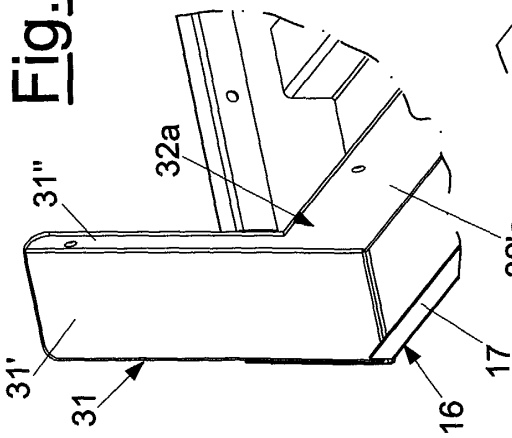


Fig. 12

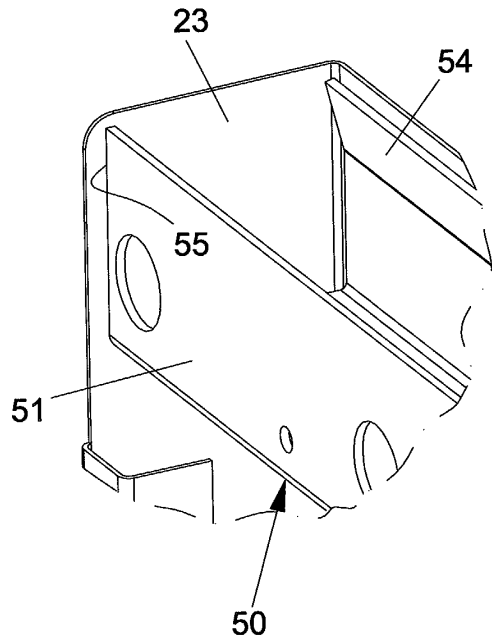


Fig. 10

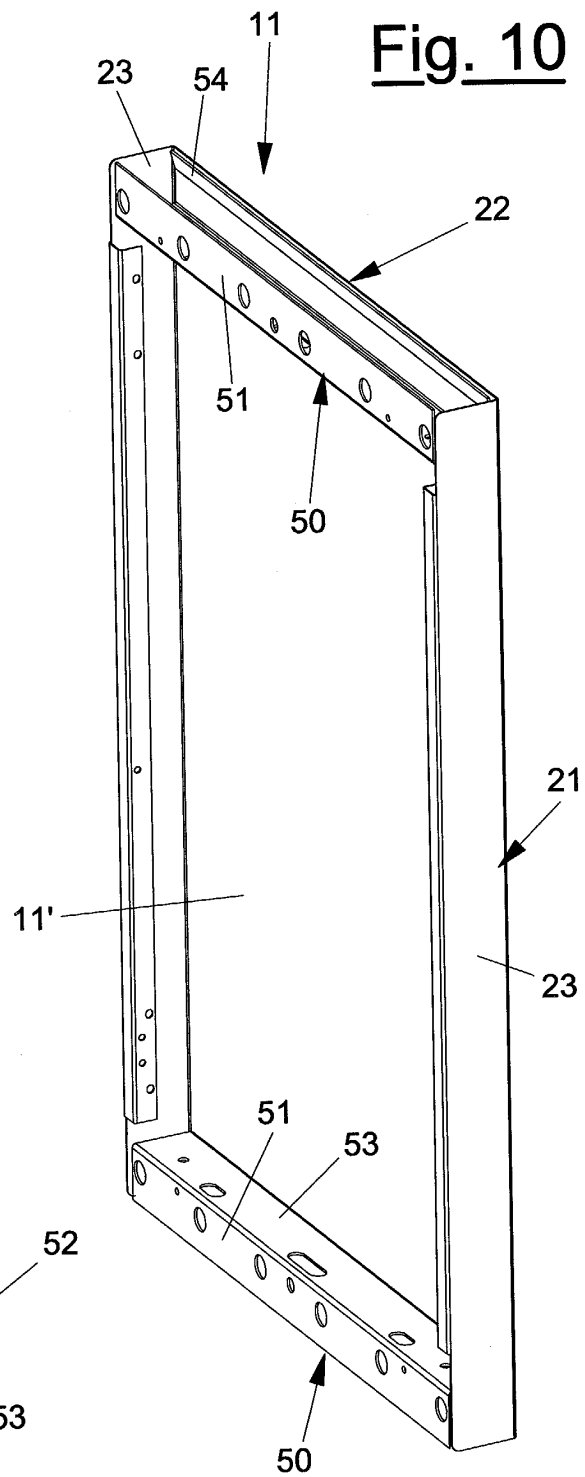
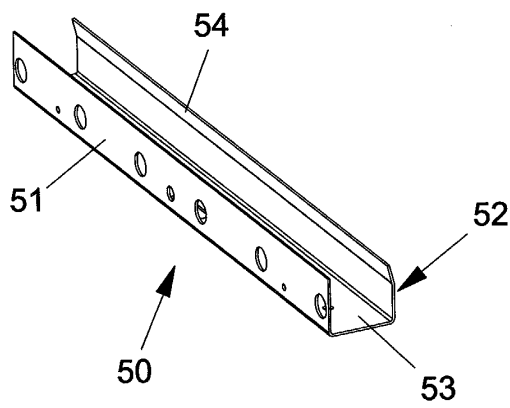


Fig. 11



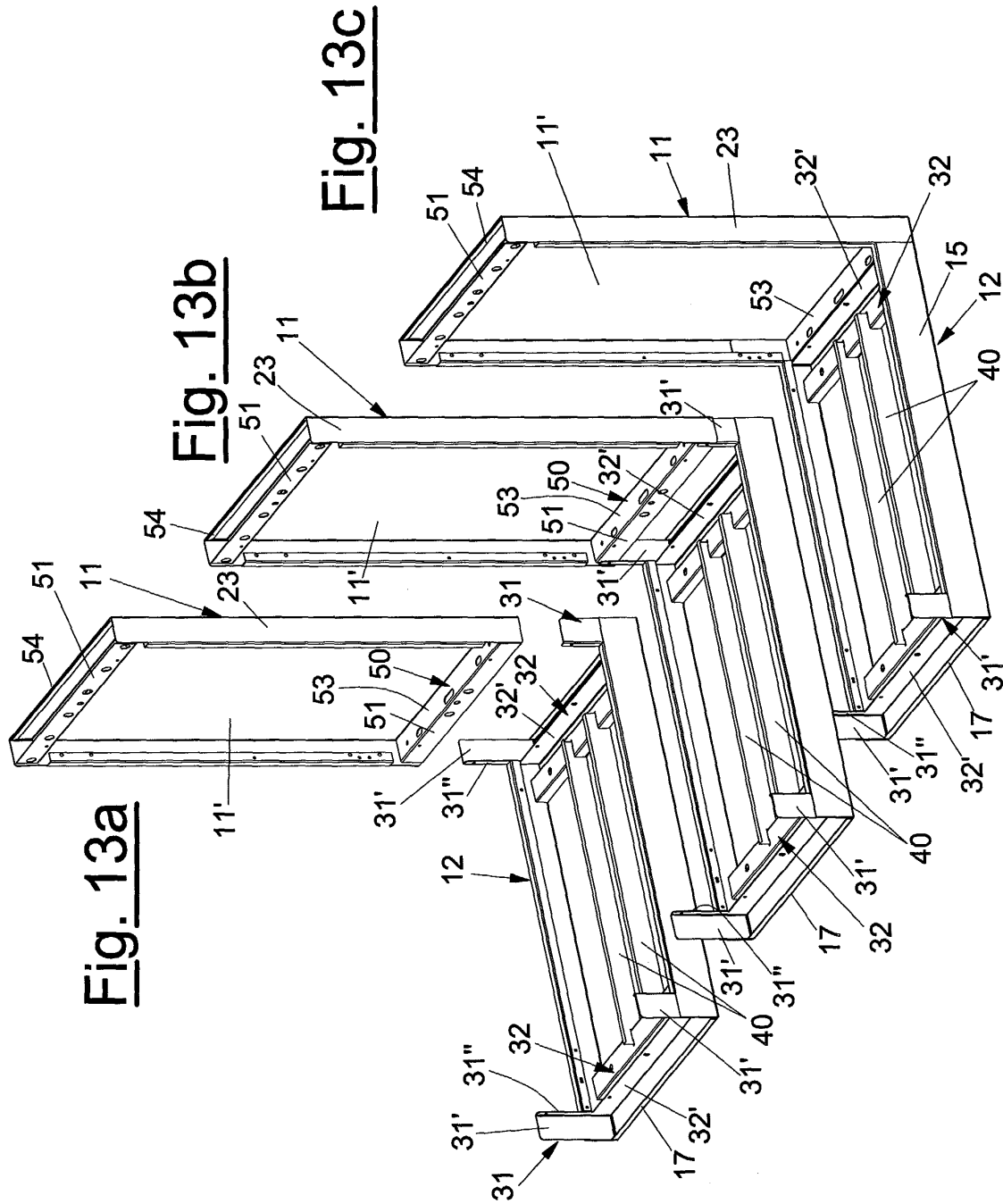


Fig. 15

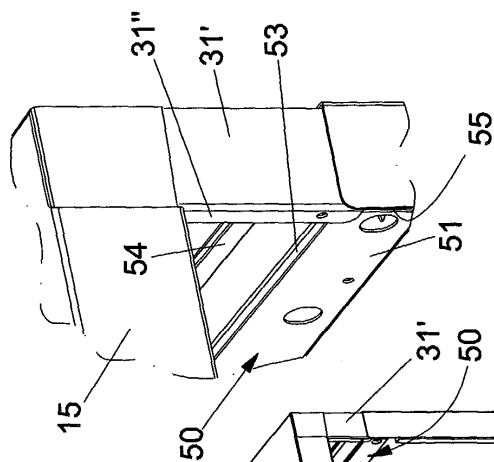


Fig. 14

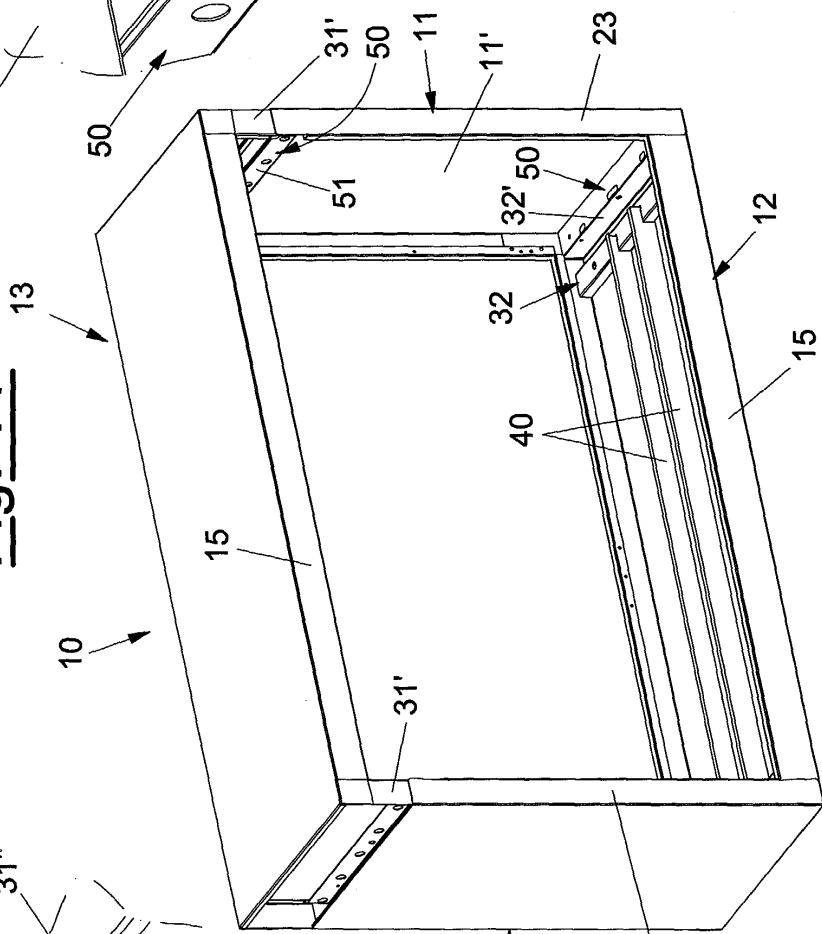
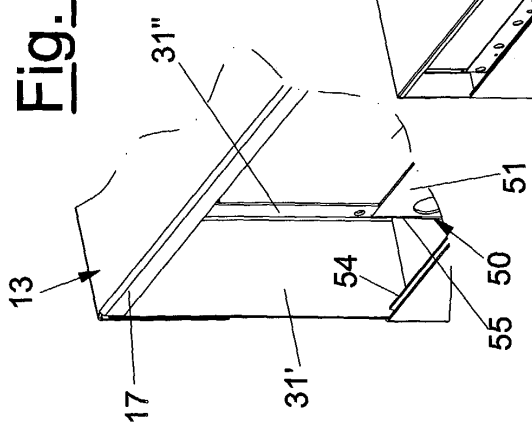


Fig. 16





European Patent
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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 9 June 2004	Examiner Jones, C
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 07 5228

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