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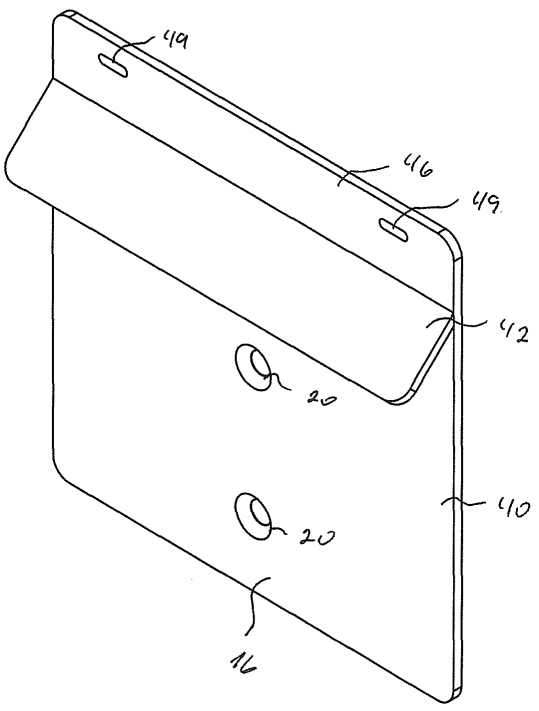
(54) Fittings for fastening and support of cabinets to a wall and method for securing cabinets to the wall

(57) The present invention relates to fittings for fastening and support of cabinets or furniture to a wall, and to a method to secure cabinets or furniture for wall-mounting, by which wall-mounting secures the cabinets or furniture by fastening means for secure both for vertical and horizontal forces, where a support is mounted at the wall, where the support comprises a first slanting top pointing upwards and towards the cabinet or furniture, and where the cabinet or furniture comprises a second slanting protrusion where the slanting protrusion are pointing downwards and towards the wall. It is the object of the invention to perform a high load fastening to a wall of wall-mounted cabinets or furniture in a fast and reliable way. This can be achieved if the second slanting top protrusion is formed at a fitting, where the fittings are fastened to the upper back of the cabinet or furniture, where the fittings comprises a top protrusion, where the top protrusions are placed in slit formed at the back of the top, where the top protrusion is accommodating vertical and horizontal forces.

Fig 9



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Description

Field of the Invention

[0001] The present invention relates to fittings for fastening and support of cabinets or furniture to a wall, which cabinet comprises at least a top and a bottom, which fittings are carried by a wall-mounted support, which wall-mounted support comprises a first slanting surface, which first slanting surface is directed upwards and towards the cabinet, which fittings comprises a second slanting surface, which first and second slanting surface are supporting the cabinet.

[0002] The present invention further relates to a method to secure cabinets or furniture for wall-mounting, by which wall-mounting the method to secure the cabinets or furniture comprises fastening means for secure both for vertical and horizontal forces, by which method a support is mounted at the wall, where the support comprises a first slanting top pointing upwards and towards the cabinet or furniture, and where the cabinet or furniture comprises a second slanting protrusion where the slanting protrusion are pointing downwards and towards the wall.

Background of the Invention

[0003] EP 1535539 concerns a method and apparatus for manufacturing a wall-hung, i.e. suspended cabinet, such as in particular a kitchen cabinet, comprising two side walls and a back wall, all of which are provided in a vertical arrangement, two horizontal enclosing walls, i.e. an upper wall or ceiling and a lower wall or bottom, and possibly at least a front closing door, said cabinet being provided with cabinet suspending, i.e. wall-hanging means adapted to link up with a support rail that is generally attached to a wall of the kitchen. Said cabinet suspending means are simply fitted by insertion in respective accommodating recesses provided by boring or milling in the side walls, where the side edges of the back wall of the cabinet are able to pass through them.

[0004] EP 0418769 concerns a fitting for hanging cabinets or hanging shelves, having adjusting means for the multi-dimensional cabinet alignment, the fitting being arranged concealed in a recess in the rear wall of the cabinet formed by projecting side wall parts of the furniture, the fitting is attached in a positionally centred manner to the projecting side wall part. The adjusting means are provided in such a way that they are accessible from the side of the fitting facing away from the hanging cabinet. It is achieved by this measure that, in addition to easy pre-assembly of the fitting, which can also be carried out by machine, it is also possible to adjust the fitting easily when the cabinet is demounted. The adjustability of the fitting from the outside affords the advantage that the rear wall of the cabinet does not have to be provided with any kind of access openings for the adjusting screws, thus not impairing the visual impression.

[0005] US4323213 concerns a suspension fitting for cabinets to be hung on a wall includes a supporting member, who is fastened to the piece of furniture and a suspension member displaceably mounted in the supporting member and adapted to rest in a hook in the wall. A disc with a spirally extending member is provided for displacing the suspension member. The fitting is mounted on the outside of the cabinet directly at the rear wall and is elongated vertically.

[0006] US 3950049 concerns an apparatus for mounting cabinets such as kitchen cabinets is disclosed. In addition, apparatus to provide for the mounting of trim panels above cabinets is disclosed. The cabinet mounting structure disclosed includes interlocking channel apparatus for mounting cabinets to walls and apparatus for mounting one cabinet to another cabinet with an adjustable space between the cabinets. The structure disclosed for accommodating trim panels above the cabinets comprises channel apparatus having formed therein channels for slidably housing the trim panels. The apparatus of this invention provides for a complete cabinet installation.

[0007] US 4008872 concerns a module supporting system comprising a supporting structure having a front side provided with a horizontal groove therein, an upwardly facing hook within and extending longitudinally of the groove adjacent the bottom thereof and secured to the supporting structure, a module having a rear side adapted to abut the front side of the supporting structure, and a horizontally extending, downwardly facing hook secured to and projecting rearwardly from the rear side of the module, the downwardly facing hook being complementary to and interengageable with the upwardly facing hook, with the rear side of the module abutting the front side of the supporting structure. With this construction, the weight of the module is carried by the hooks without imparting any twisting forces to the hooks.

[0008] US 4342439 concerns an apparatus for temporarily hanging relatively heavy loads to be mounted upon a generally vertical wall surface to facilitate vertical and horizontal alignment and placement prior to permanent installation. The apparatus includes an elongate mounting strip which may be horizontally attached to a wall surface, said mounting strip having a plurality of slits fashioned inwardly along an edge thereof and thereby form a plurality of tab members across said edge. At least some of the tabs may be operable inclined outwardly from said generally flat mounting strip such that a cabinet may engage the tabs and thereby hang from the elongate mounting strip in a plumb posture for lateral positioning prior to permanent mounting upon the wall surface.

[0009] This document describes a temporarily fastening of cabinets, and further fastening of the cabinets are to be performed after alignment of the cabinets.

Object of the Invention

[0010] It is the object of the invention to perform a high load fastening to a wall of wall-mounted cabinets or fur-

niture in a fast and reliable way.

Description of the Invention

[0011] The object of this invention can be achieved if fittings as described in the preamble to claim 1 is modified by temporarily mounting the fittings by fastening means to the cabinet or furniture, which fittings comprises an upwards directed top protrusion, which top protrusion is placed in a slit in the top, which top protrusion placed in the slit carries the cabinet in vertical and horizontal direction.

[0012] By temporarily mounting the fittings correctly in the slit, it can be achieved that vertical as well as horizontal forces are accommodated by the top protrusion. Because this top protrusion is placed in a slit nearly as high as possible in the back of a cabinet or furniture, the torque that is achieved if the cabinet or furniture are stressed by extra load, e.g. in the form of a person sitting on the cabinet or furniture, the torque that is usually increasing and often is the reason for pulling out fastening means, this torque is the force that is achieved by heavy load on cabinet or furniture that is transmitted from the fitting to the support which is mounted on the wall behind the cabinet or furniture. If this support is sufficiently secured to the wall, the cabinet or furniture can tolerate the load of a person standing or sitting on the opposite side where most of the load is acting at the front of the top. The fittings are very easy to place on the backside of the cabinet or furniture and because these fittings are placed at the back they will be totally hidden and will not be visible from the front end of the cabinet or furniture. The combination of the fitting and the top protrusion of the fitting that are in fixed relation to a slit in the top of the cabinet or furniture is a highly effective way of fixation all kinds of wall-mounted cabinets. E.g. mounting a new kitchen where a lot of modules are to be hanging, this invention could be used. By this invention it should be possible to construct a hanging kitchen where an opening between the floor and the lower parts kitchen module would be possible.

[0013] The cabinet or furniture can comprise a back, which back is placed in slits in at least a top and a bottom section of the cabinet, which fittings are mounted at the back of the cabinet, which top protrusions of the fittings are placed in the slit, which slit also support the back. In a situation where a cabinet of furniture comprises a back, this back is often placed in slits in top and bottom. In this situation, this invention could be very useful in a simple manner because the only change of the product that is necessary is to increase the slit so it can accommodate as well the back and the top protrusion of the fitting. In this way this new fitting can be used in existing products which are only to be modified slightly.

[0014] In an alternative embodiment of the invention the fittings can comprise a side flange which side flange comprises at least one hole for fastening means for fastening the side flange to a side of the cabinet. In a cabinet or furniture where the back leaves the necessary space for the fittings, the side sections are probably continuing into touch of the wall. Therefore, it will be possible to e.g. place screws in the fittings into holes in the sides. In this way, it can be achieved if the holes are drilled in a previous operation that it can be secured that the side fittings are placed correctly at the back of the cabinet of furniture. In operation, the screws inserted into the side of the fittings and further into the side walls of the cabinet or furniture will increase the stiffness of the product. And in a situation where an overload is present, this overload situation can be partly accommodated through the screws and into the fittings.

[0015] It is preferred that the fittings comprise a vertical section, which vertical section at the top forms the top protrusion, which fitting comprises a slanting protrusion, which slanting protrusion is welded towards the vertical section. If smaller production series are to be produced, it is highly effective to start up with a basic plate and then by welding fasten the slanting protrusion to the basis plate. In this way, a small number of fittings can be produced in a highly effective manner.

[0016] The fittings can be form by folding a peace of metal into the vertical section, the top protrusion, and the slanting protrusion. If higher numbers of fittings are to be used, the fittings could probably be produced in a cheaper way if the fitting is produced out of one piece of metal which piece of metal by folding is formed into the vertical section and after one further bending forms the slanting protrusion. By this process the top protrusion will probably be formed of a double layer of material. These two layers of materials will automatically be secured if the top protrusion is operating in a slit where it is impossible for the two pieces of metal to separate. For further securing the two pieces of metal against each other, it is possible by electric point welding to fix the two surfaces to each other.

[0017] The fittings can be formed by moulding. It is also possible by moulding to form fittings as described in this invention. E.g. by press moulding of aluminium it is possible to produce a high number of identical fittings to a very low price. It will as an alternative to moulding aluminium be possible to use other metals or metal alloys. As an alternative to metals, it is possible also by pressure moulding to form a fitting in a plastic material. This plastic material could be reinforced by means of carbon fibres or by means of glass fibres. In this way a plastic fitting can be achieved having the same properties as can be achieved by means of metal.

[0018] The fittings can also be formed by extrusion. By extrusion the fittings could be produced in a long row, which later on are to be cut into pieces. Extrusion can be performed in aluminium or aluminium alloys or extrusion can be formed in a high number of plastics. Especially if plastic is used, this plastic can be reinforced by adding fibres, e.g. in form of carbon fibres or glass fibres.

[0019] The object of this invention can be achieved by a method as described in the preamble to claim 8 if the

second slanting protrusion is formed at a fitting, where the fittings are fastened to the upper back of the cabinet or furniture, where the fittings comprises a top protrusion, where the top protrusions are placed in a slit formed at the back of the top, where the top protrusion is accommodating vertical and horizontal forces.

[0020] By this method a highly effective way of fastening cabinets or furniture to a wall it is achieved. The forces generated if the cabinet or furniture is loaded by e.g. a person sitting at the outer edge of the cabinet or furniture, the forces are accommodated just in the uppermost corner where e.g. the torque is reduced because the forces are accommodated nearly where the forces are generated. Therefore, the fittings can be used where fastening of cabinets or furniture is performed, these fittings will increase the maximum load that can be tolerated at the cabinets or furniture.

Description of the Drawing

[0021]

Figure 1 shows an exploited view of a possible embodiment for the invention.
Figure 2 shows the same cabinet as figure 1, but now the cabinet is assembled.
Figure 3 shows an enlarged view of the fitting.
Figure 4 shows an enlarged view of the fitting placed in relation to a cabinet.
Figure 5 shows a cabinet seen from the back.
Figure 6 shows the same embodiment as the figure 5 but now seen in a sectional view from the side.
Figure 7 shows a further enlarged view of the fitting.
Figure 8 shows a further enlarged view of a part of figure 7.
Figure 9 shows a central fitting.
Figures 10 and 11 show outer fittings.

Detailed Description of the Invention

[0022] Figure 1 shows an exploited view of a possible embodiment for the invention, where a cabinet or furniture 2 is to be fixed to a wall. The cabinet or furniture 2 comprises two sides 4, a bottom 6 and a top 8 and a top support 9. The side 4 comprises drilled holes 5 for screws. In figure 1 is further indicated a wall support 12 and fittings 14, 16 and 18. The fittings comprise holes 20 for fastening means 22 and 24. The wall support 12 comprises holes 30 for screws 32 in order to fastening the wall support at the wall. The fittings 14, 16 and 18 comprise a vertical body 40 ending in a top protrusion 46 and the slanting protrusion 42. The fittings 14 and 18 comprise further a flange 44.

[0023] Figure 2 shows the same cabinet as figure 1, but now the cabinet is assembled. Figure 2 shows the cabinet 2, which cabinet has sides 4 and a bottom 6. Further is shown a top 8 and a top support 9. Further is shown a back 10 and placed at the back 10 is shown fittings 14, 16 and 18. The fitting 16 has fastening means 24 indicated and the fitting 18 has fastening means 20.

[0024] Figure 3 shows an enlarged view of the fitting 18 placed at the corner of the back of the cabinet 2. The fitting 18 comprises a vertical section 40, a perpendicular flange 44 which comprises holes for screws 20.

[0025] Figure 4 shows an enlarged view of the fitting 16 placed in relation to a cabinet 2. Figure 4 shows the top 8 and the top support 9 and screws 24 which are fixing the fitting 16 to the back 10. The fitting has a vertical section 40 and a slanting protrusion 42.

[0026] Figure 5 shows a cabinet 2 seen from the back, which cabinet comprises sides 4 and a bottom 6. Furthermore is shown a top 8 and a top support 9. At the back 10 fittings 14, 16 and 18 are seen. The fitting 16 comprises screws 24 for fixing the fitting 16 to the back 10. The fittings 14, 16 and 18 comprise a vertical section 40, a slanting protrusion 42 and a top protrusion 46.

[0027] Figure 6 shows the same embodiment as figure 5 but now seen in a sectional view from the side. The sectional view is made through the fitting 18. The fitting is fixed to the side by screws 20. The fitting comprises the vertical section 40 and the slanting protrusion 42 and the top protrusion 46.

[0028] Figure 7 shows a further enlarged view of the fitting 18. Figure 17 shows the back 10 and the fitting 18. The fitting 18 is fixed towards the side 4 by means of screws 20. The fitting 18 comprises a vertical body 40 and a perpendicular flange 44. Further is indicated the slanting protrusion 42 and the top protrusion 46.

[0029] Figure 8 shows a further enlarged View of a part of figure 7. In figure 8 is shown the back 10, the top support 9 and the vertical section 40 of the fitting 18 and the slanting protrusion 42 and the top protrusion 46. The top protrusion 46 is placed in a slit 48 which also comprises the uppermost part of the back 10.

[0030] Figure 9 shows a central fitting 16 which comprises fastening holes 20. The fitting comprises the vertical body 40, the slanting protrusion 42 and the top protrusion 46. The top protrusion 46 comprises openings 49.

[0031] Figures 10 and 11 show outer fittings. The fittings 14 and 18 comprises holes for fastening 20, both fittings comprises vertical sections 40, slanting protrusion 42 and top protrusion 46. Both top protrusions 46 are rounded at the corner 50 in order not to give any load near the corner of the top protrusion in the slit where the top protrusion will be placed in operation.

[0032] The fitting as shown at the drawings and mentioned in the description can be produced in different ways. The simplest way is of course to take a flat piece of steel and then by welding fixing the slanting protrusion to a plate. Another possibility is to form the fitting out of a longer piece of metal which can then be folded into the correct position. In an alternative embodiment moulding of the fitting is possible. Moulding can be performed in as well aluminium or other metal alloys or it could be performed in a plastic material. The plastic material could comprise enforcements in the form of fibres of carbon or

glass.

[0033] The use of a top protrusion 46 for caring a cabinet when the top protrusion 46 is placed in a slit 48 will result in a nearly perfect position for accommodating the forces that are generated if high load at the cabinet is generated. The cabinet could e.g. be placed at a wall in a very low position so that the top of the cabinet is forming a seat, then the cabinet has to be fixed to a wall in the way in which the load of one or more persons at the top of the cabinet can be accepted without pulling the cabinet in parts.

Claims

1. Fittings (14,16,18) for fastening and support of cabinets (2) to a wall, which cabinet (2) comprises at least a top (8) and a bottom (6), which fittings (14,16,18) are carried by a wall-mounted support (12), which wall-mounted support (12) comprises a first slanting surface , which first slanting surface is directed upwards and towards the cabinet (2), which fittings (14,16,18) comprises a second slanting protrusion (42), which first slanting surface and the second slanting protrusion (42) are supporting the cabinet (2), **characterized in, that** the fittings (14,16,18) are temporarily mounted by fastening means, which fittings (14,16,18) comprises an upwards directed top protrusion (46), which top protrusion (46) is placed in a slit (48) in the top (2), which top protrusion (46) is placed in the slit (48) carries the cabinet (2) in vertical and horizontal direction.

2. Fittings (14,16,18) according to claim 1, **characterized in, that** the cabinet (2) comprises a back (10), which back (10) is placed in slits (48) in at least a top (8) and a bottom section (6) of the cabinet (2), which fittings (14,16,18) are mounted at the back (10) of the cabinet (2), which top protrusions (46) of the fittings (14,16,18) are placed in the slit (48), which slit (48) also support the back (10).

3. Fittings (14,16,18) according to claim 1 or 2, **characterized in, that** the fittings (14,16,18) comprise a side flange (44) which side flange (44) comprise at least one hole (20) for fastening means (22) for fastening the side flange (44) to a side (4) of the cabinet (2).

4. Fittings (14,16,18) according to one of the claims 1-3, **characterized in, that** the fittings (14,16,18) comprise a vertical section (40), which vertical section (40) at the top forms the top protrusion (46), which fitting (14,16,18) comprises a slanting protrusion (42), which slanting protrusion (42) is welded towards the vertical section (40).

5. Fittings (14,16,18) according to one of the claims 1-3, **characterized in, that** the fittings (14,16,18) are formed by folding a peace of metal into the vertical section (40), the top protrusion (46), and the slanting protrusion (42).

6. Fittings (14,16,18) according to one of the claims 1-3, **characterized in, that** the fittings (14,16,18) are formed by moulding.

7. Fittings (14,16,18) according to one of the claims 1-3, **characterized in, that** the fittings (14,16,18) are formed by extrusion.

8. Method to secure cabinets (2) or furniture's for wall-mounting, by which wall-mounting the method to secure the cabinets (2) or furniture comprise fastening means (14,16,18) for secure both for vertical and horizontal forces, by which method a support (12) is mounted at the wall, where the support comprises a first slanting top pointing upwards and towards the cabinet (2) or furniture, and where the cabinet (2) or furniture comprises a second slanting protrusion (42) where the slanting protrusion (42) are pointing downwards and towards the wall, **characterized in** the second slanting top protrusion (42) is formed at a fitting (14,16,18), where the fittings (14,16,18) are fastened to the upper back (9) of the cabinet (2) or furniture, where the fittings (14,16,18) comprise a top protrusion (46), where the top protrusions (46) are placed in slit (48) formed in the back of top (9), where the top protrusion (46) is accommodating vertical and horizontal forces.

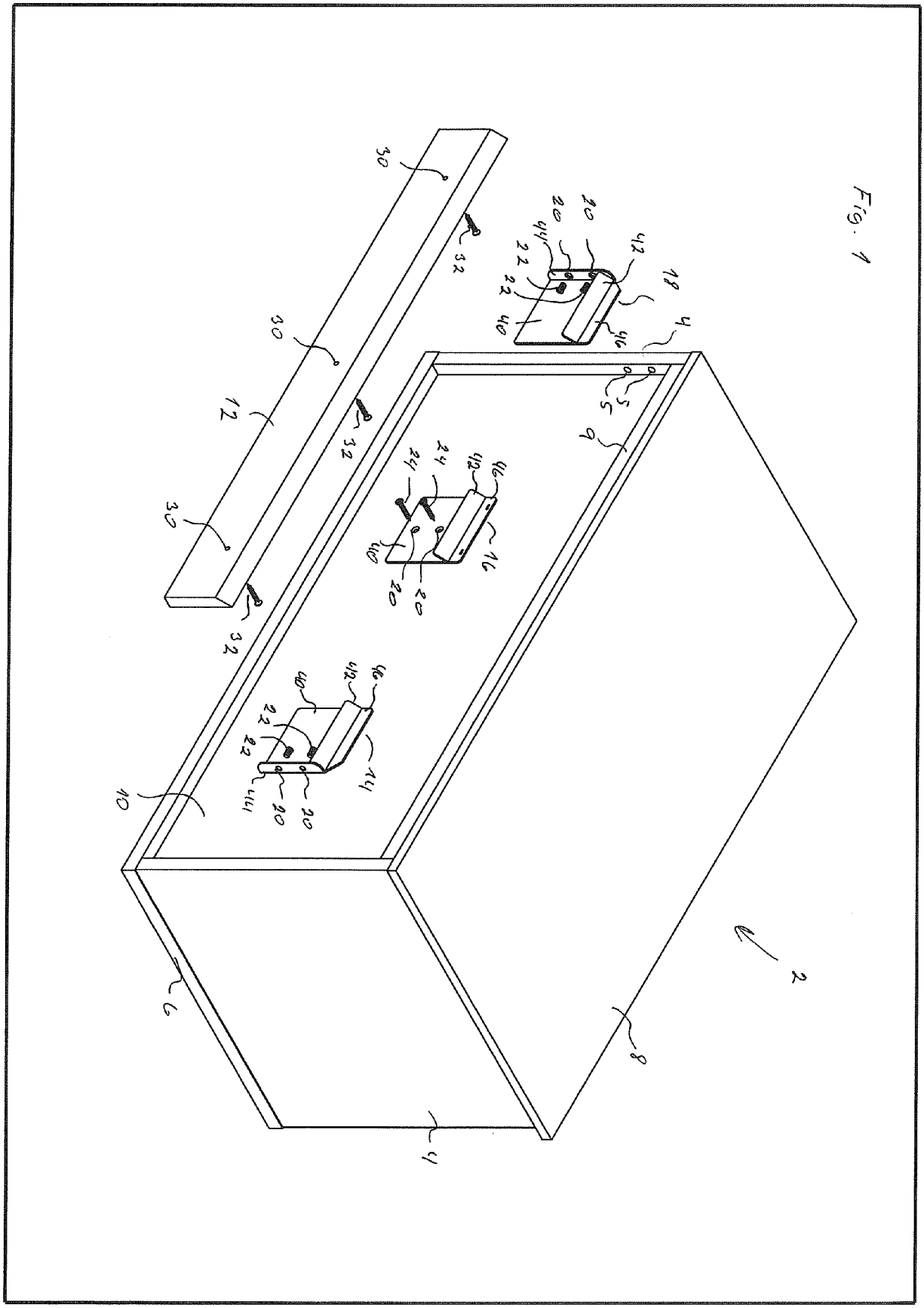

Fig. 1

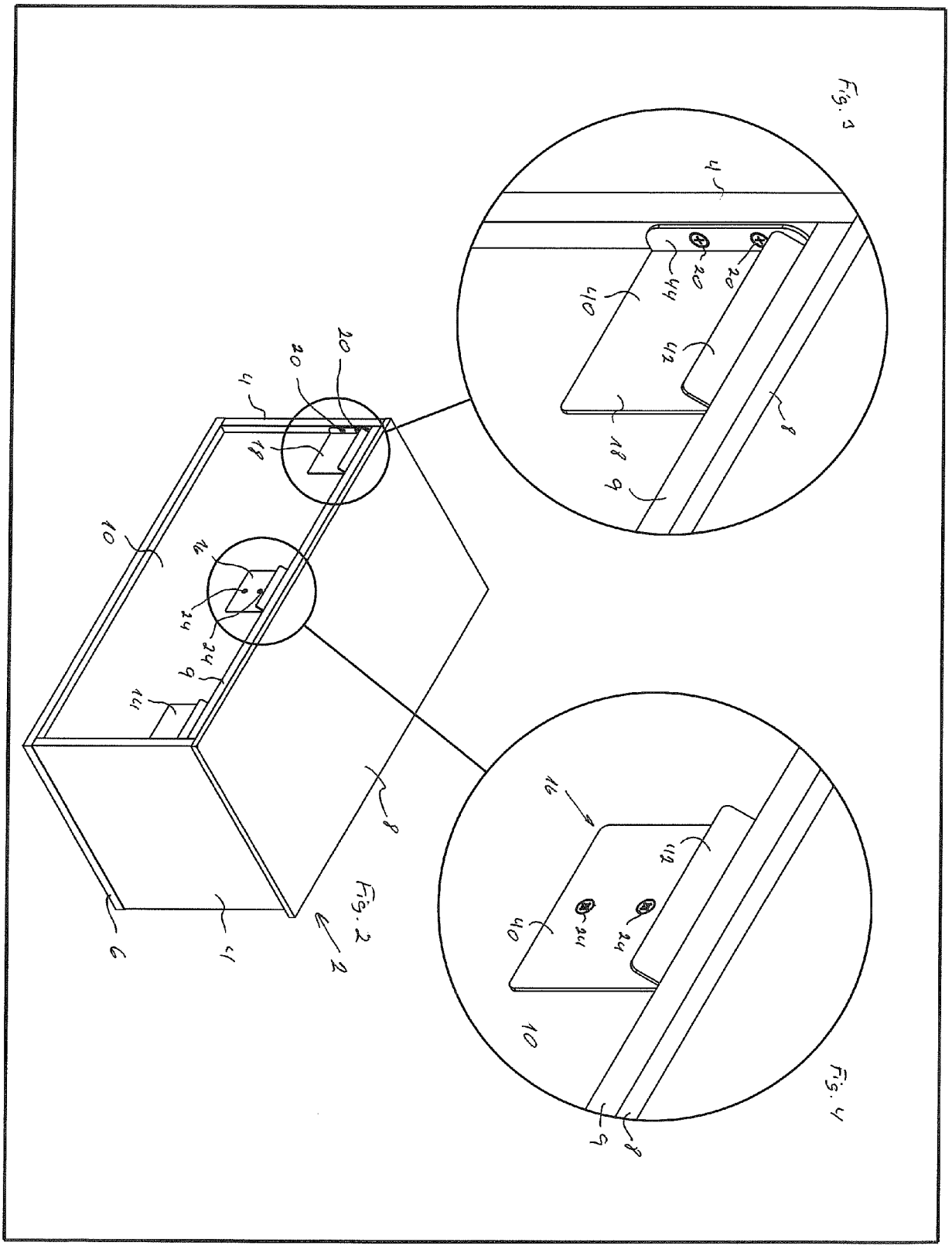
Fig. 1
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Fig. 4

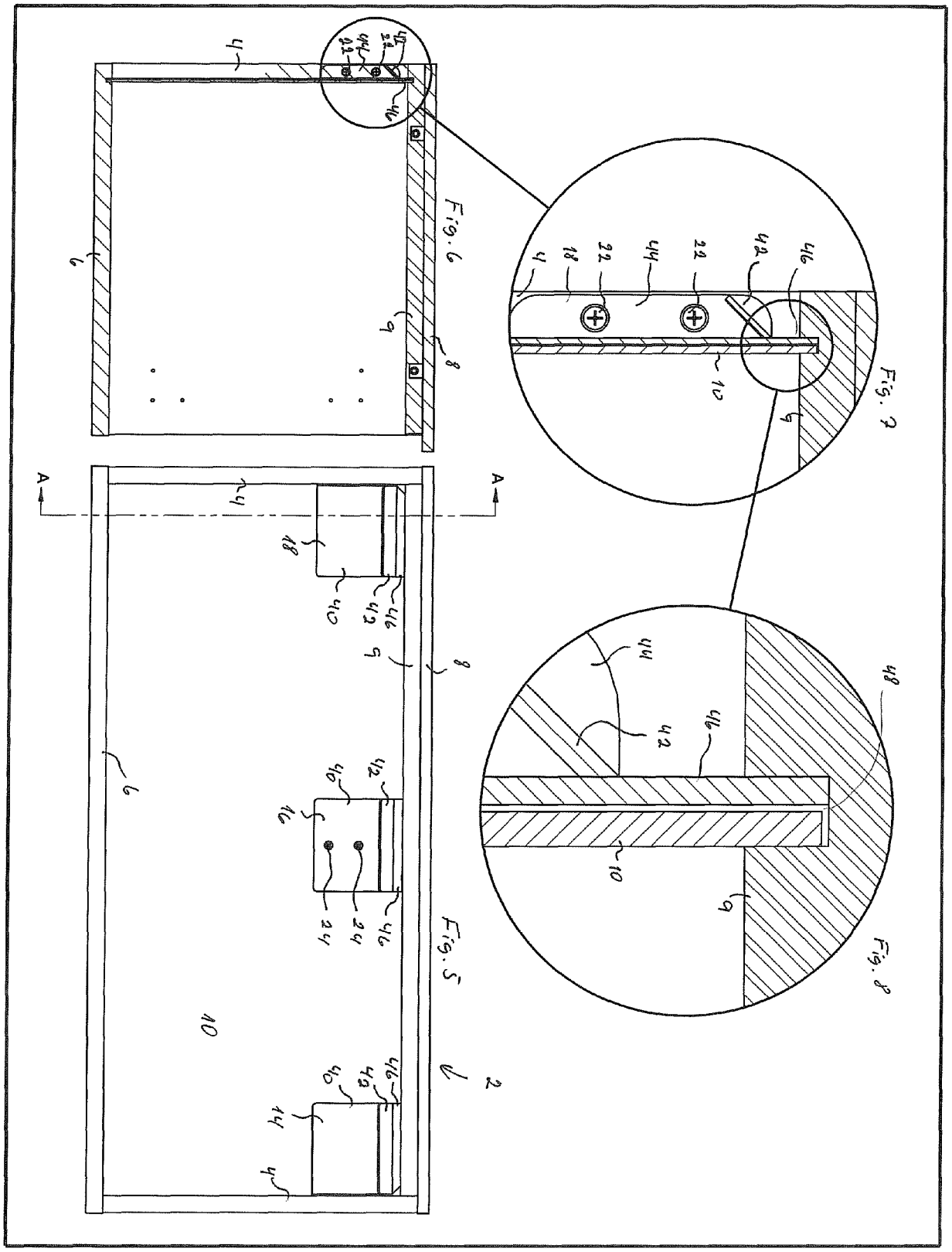

Fig. 6

Fig. 5

Fig. 2

Fig. 4

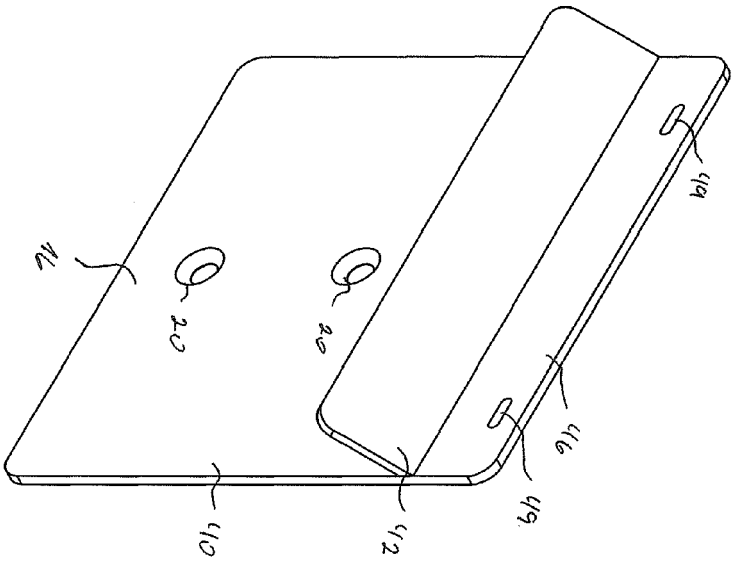

Fig 9

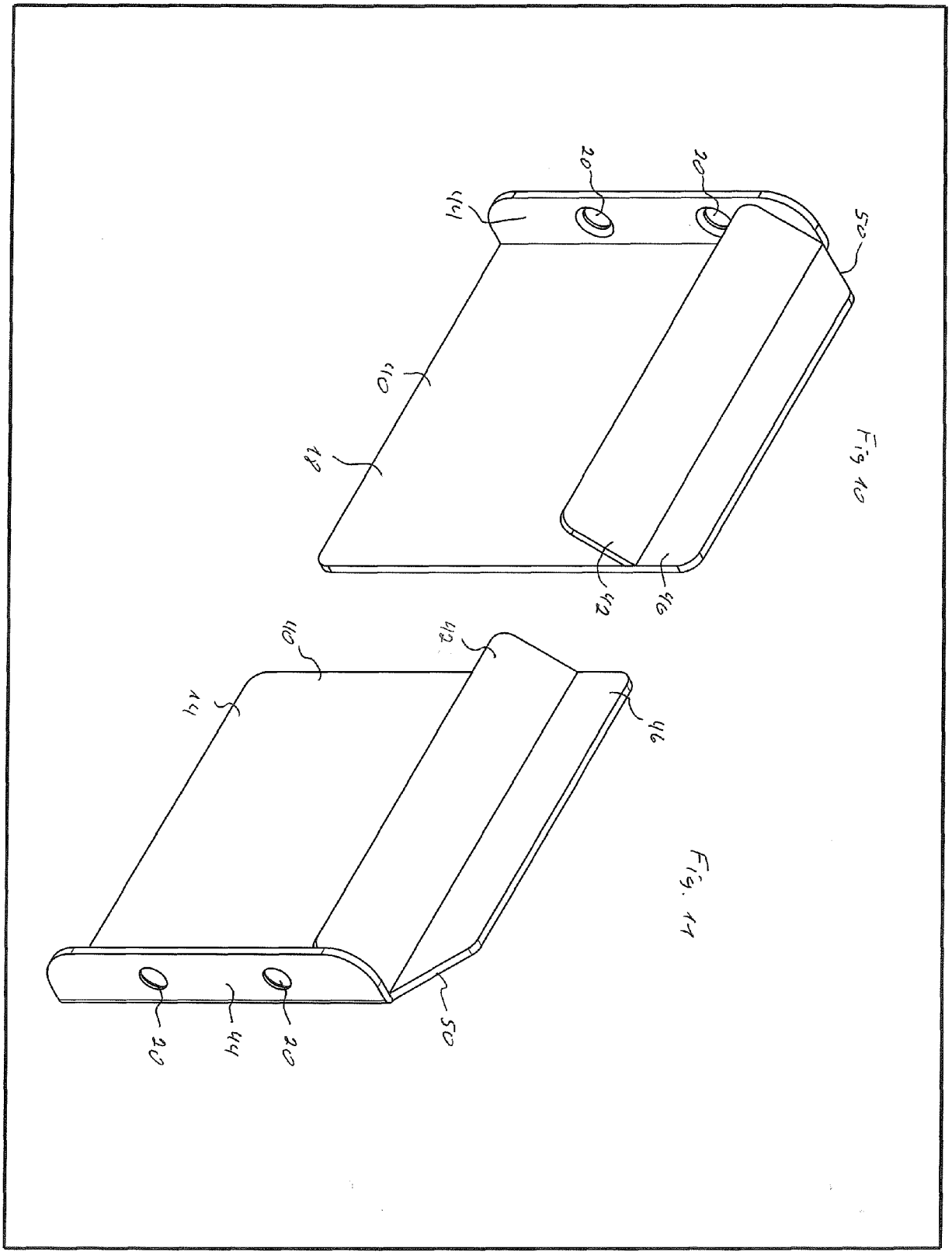
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Fig. 10
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Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 10 15 6823

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X A	US 2003/038222 A1 (HOLMES FREDERICK A [US]) 27 February 2003 (2003-02-27) * the whole document *	1,8 2-7	
A	DE 20 2008 013258 U1 (GRADINO E K [DE]) 8 January 2009 (2009-01-08) * abstract; figures *	1-8	
A	US 2006/243688 A1 (GILCREST JOEL P [US] ET AL) 2 November 2006 (2006-11-02) * abstract; figures *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC) A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 April 2010	Ottesen, Rune

CATEGORY OF CITED DOCUMENTS

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28-04-2010

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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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- US 3950049 A **[0006]**
- US 4008872 A **[0007]**
- US 4342439 A **[0008]**