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(54) **Wooden window frame**

(57) Close to the hinges (3) the frame has a metal section (4,5) protecting the wood against attempts to split it, and the shielding wall (41,51) of that section is placed along the side member of the frame closer to the external

face of the window than the fasteners (31) fixing the hinge (3), while the transverse wall (42,52) perpendicular to the shielding wall of the section is placed on the side of that surface of the frame, on which the hinge assembly is fixed.

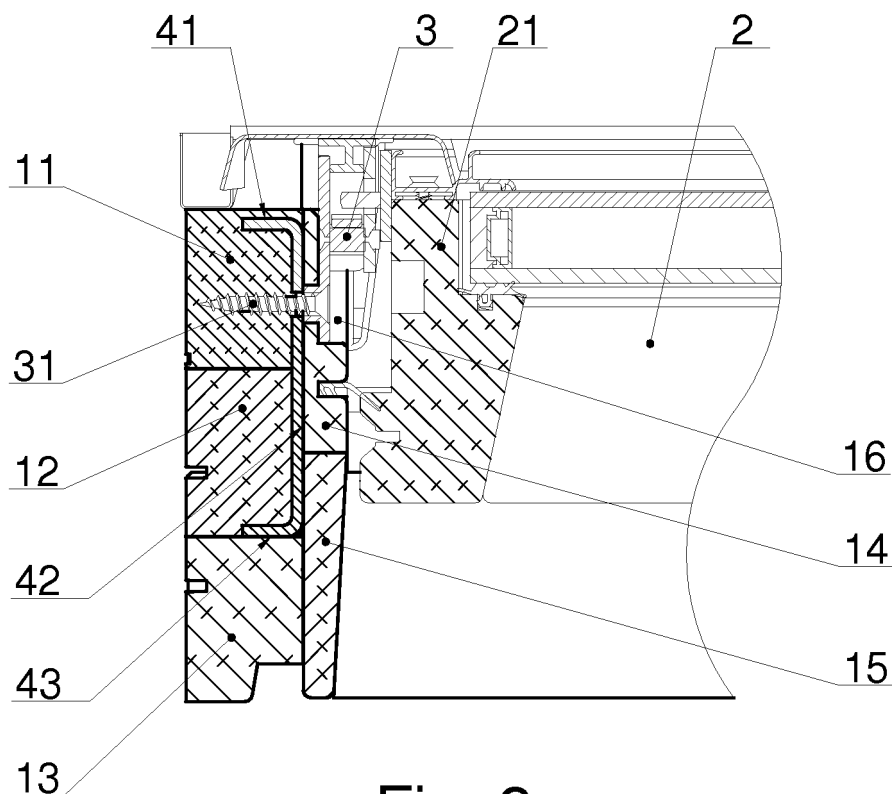


Fig. 2

Description

[0001] Subject of the invention is a wooden window casing, particularly a casement frame, having hinges on one pair of opposing members of it, connecting the frame with the sash of that window, which is a turning one. The solution can also be applied in the sash frame. The frame according to the invention is intended mainly for roof windows.

[0002] Known are roof windows with wooden frames and a sash opened by turning it about a horizontal axis in the central part of the window. The sash is connected with the window frame by hinges fixed to the side members of the frame at half-length of these members or slightly closer to the upper transverse member of the frame. The hinges are fixed to the window frame by wood screws. Such fixing does not protect against breaking in through the window into the house, because it is easy to splinter the frame wood using a common tool like a chisel or a screw driver, and to remove the hinges forcing the screws fixing them to the frame.

[0003] The essence of the invention consists in providing the window frame, particularly a roof window frame, having hinges fixed to its side members connecting the window frame with the sash opened by moving it about a horizontal axis, with a metallic angle bar mounted close to the hinges, which protects the wood against attempted cleavage aiming at breaking into the house through that window. The shielding wall (leg) of the angle bar is placed along the side member of the frame, closer to the external face of the window than the intermediate fasteners, advantageously screws, fixing the hinges, while the transverse wall (angle leg) is located on that side of the frame, on which the hinge assembly is fixed.

[0004] The window frame according to the invention is mostly a frame having its side members consisting of several strips glued together, which are located along the side member of the frame, i.e. side by side when viewed in the cross-section of that member, where at least one internal strip is located across the main plane of the window frame on that side of the frame, on which the hinge assembly is fixed. In such case, the transverse wall (angle leg) of the bar is being placed in a recess as deep as the side wall (angle leg) of the bar is thick, the recess being made in the external strip of the side member of the window frame, at its internal face, i.e. on the side of the hinge. The transverse wall (leg) of the angle is covered by the internal wooden strip of the side member of the window frame.

[0005] The shielding wall (shielding leg) of the angle bar is advantageously placed in the recess machined in the side member of the frame, accessible from the side of the frame surface on which the hinge assembly is fixed. In the case of the window frame, it is the internal side of the frame. Due to that, and also to covering the transverse wall (angle leg) of the bar by the internal strip of the side member of the window frame, the bar is concealed inside wooden elements. In another variant of locating the

shielding wall (leg) of the bar, it is not placed within the wooden members of the frame but abuts to the frame surface on the external side. Such location of the shielding frame can be used both for a bar the transverse wall (leg) of which is covered by a wooden element of the frame, as for a bar with the transverse wall (leg) abutting to the frame surface.

[0006] In the first variant of the invention, the bar is a channel bar, advantageously a roll formed shape. Its fixing wall (flange), parallel to the shielding wall (flange), is more distant from the external face of the window than the fasteners fixing the hinges. The fixing wall (flange) of the channel bar is advantageously placed in a cavity cut in the side frame member on that face of the frame, on which the hinge assembly is fixed; in the case of a window frame, it is the internal side of the frame. The channel bar is provided with openings in its wall perpendicular to the shielding wall (i.e. in the web), in a cavity housing the transverse wall, and the external strips of the side member of the window frame are provided in the cavity containing the transverse wall of the channel with tenons mating with these openings. The tenons of the external strips of the side element of the window frame abut to the internal strip of the internal strip of the side element of the window frame to which the face surfaces of the tenons are glued. It is advantageous to have the openings in the transverse wall (web) of the channel in form of polygons, especially rectangles. This makes it possible to machine the tenons simply by milling grooves between them. Upon fitting the bar into the wooden frame, these grooves contain the sections of the transverse wall (web) left between the holes for the tenons of the frame.

[0007] In the second variant of the invention, the bar is an angle section, advantageously a rolled formed shape, having a shielding wall (leg) and a wall (leg) perpendicular to it. The transverse wall (leg) is fixed to the side member of the frame by fasteners, advantageously screws. Additionally, the angle bar can have in its transverse wall (leg) catches penetrating into the wooden strips of the side member of the frame. These catches can either be pins fitting into holes bored in the frame, or teeth driven into the wooden strips.

[0008] The angle has openings in its wall (leg) transversal to its shielding wall (leg), and the external strips of the side member of the window frame have tenons in the recess housing the transverse wall (leg) of the bar, the tenons mating with the openings. The tenons on the external strips of the side member of the window frame abut with their face surface to the inner strip of the side member of the window frame, with which strip the face surfaces of the tenons are glued. It is advantageous to have the openings in the transverse wall (leg) of the bar in form of polygons, especially rectangles, as in the first variant of the invention.

[0009] In the third variant of the invention, the bar is also an angle, advantageously a roll formed shape. In its wall (leg) transverse to the shielding wall (leg), the bar has a cut-out or several cut-outs, which are open on the

side of the edge opposite to the shielding wall (leg). The recess made in the external strips of the side member of the window frame containing the transverse wall (leg) of the bar has a form fitting to the cut-out in that wall (leg), and the protruding parts of the external strips of the side element of the window frame abut with their face surfaces to the inner strip of the side member of the window frame, to which strip they are glued.

[0010] In the fourth variant of the invention, the bar is a channel, identical with the channel of the first variant, and is also fitted in the same way in the wooden strips of the frame. In its wall (web) transversal to the shielding wall (flange), the channel has a cut-out or cut-outs (like in the angle bar of third variant), open on the edge opposite to the shielding wall (leg). These cut-out in their application in variant four are extended to the wall (flange) parallel to the edge parallel to the transverse wall (web). The recess made in the external strips of the side member of the frame containing the transverse wall (web) of the channel has a shape fitting to the cut-out in that wall, and the protruding parts of the external strips of the side member of the frame entering into the cut-out in the transverse wall (web) abut with their face surfaces to inner strip of the side member of the frame, to which they are glued.

[0011] In the fifth variant of the invention, the bar is also a channel, as in variant one and four. Its transverse wall (web) is not covered by the wooden strip of the side member of the frame, but remains exposed. In that case, the transverse wall (the web) has no holes or cut-outs, because they are unnecessary.

[0012] In the sixth variant of the invention the bar is an angle, as in variant two and three. Its transverse wall (leg) is not covered by a wooden strip of the side member of the frame, but remains exposed. In that case, the transverse wall (the leg) has no holes or cut-outs, because they are unnecessary.

[0013] The improvement in applying the invention consist in increasing the resistance of the window frame to attempts to split its wooden elements, by which an unauthorized person could get to the screws fixing the hinges and break them out. This increases the anti-burglar safety of roof windows.

[0014] The subject of the invention is described by examples of execution in the drawing, the particular figures of which represent:

- Fig. 1 - a roof window frame reinforced by a channel bar - in axonometric view, with part section,
- Fig. 2 - the cross-section view of the central part of the side member of the window frame (shown in Fig. 1), reinforced by a channel bar,
- Fig. 3 - a detail of the central zone of the side member of the window frame of Fig. 1 - in axonometric view from the internal side of the window frame,
- Fig. 4 - the cross-section of the central zone of the side member of the window frame, reinforced by an angle bar, and

Fig. 5 - the reinforcing angle bar from Fig. 4, in axonometric view.

[0015] Example 1. The wooden roof window frame is a frame consisting of two side members 1, of the transversely arranged upper member 1 g, and the bottom one 1 d. Each side member 1 of the window frame is made up of several glued external wooden strips arranged lengthwise, namely the external upper strip 11, the external middle strip 12 and the external bottom strip 13. The side elements 1 of the window frame consist also of internal strips - the internal upper strip 14 and the internal bottom strip 15, glued to the external strips of the side frame member.

[0016] The terms "external" and "internal" applied here and in Example 2 refer to the side of the member versus the window frame, and not to the inside or outside face of the window in the building. The strips of the side member located at the outside of the building are named the "upper" ones, because in a window fitted into the roof they are actually on the upper side.

[0017] The window with the window frame has also a sash 2 opened by turning it about a horizontal axis, which is connected with the window frame 1 by the turning hinges 3, each of them having an arched guide and an arched slide contained in the guide. The hinges are located in the central zone of the window frame between its side members 1 and the sash frame 21 of the sash 2; for each hinge, there are recesses made in both window frames. In the window frame 1 there is a recess 16 for the hinge guide, and in the sash frame 2 there is a recess for the arched hinge slide.

[0018] Close to the turning hinge 3, in the wooden elements of the side member of the window frame 1, is placed a metal section, which in this example is a channel 4 of roll formed shape, placed along the side member of the window frame. The shielding wall (the flange) 41 of the channel 4 is placed parallel to the main plane of the window frame in a narrow recess cut in the external upper strip 11, due to which that wall (flange) is concealed in the wooden structure. The perpendicular transverse wall (web) 42 of the channel 4 is placed in a recess, the depth of which corresponds to the thickness of that wall (web), made in the external upper strip 11 and the external middle strip 12 of the side member 1 at the inner side of the window frame. The fixing wall (flange) 43 of the channel 4, parallel to the shielding wall (flange) 41, is placed in a recess made at the inner side of the window frame, on the joint of the external middle strip 12 and the external bottom strip 13 of the side member 1 of the window frame.

[0019] The transverse wall (the web) 42 of the channel 4 is covered by the inner upper strip 14 and a part of the inner bottom strip 15 of the side member of the window frame. Due to placing that wall (web) in a recess, its surface on the inner side of the window frame remains on the joint of the external and internal strips of the side member 1 of the window frame. In the transverse wall

(web) 42 of the channel bar are made rectangular openings 44, through which pass the tenons 17 of the external upper strip and the tenons 18 of the external middle strip 12. The face surfaces of the tenons 17 and 18 abut to the inner upper strip 14, and those of the tenon 18 also partly to the inner bottom strip 15, to which strips the face surfaces of the tenons 17 and 18 are glued. In the transverse wall (web) 42 of the channel are also made round holes 45 for the screws 31 fastening the turning hinge 3 to the side member 1 of the window frame.

[0020] Example 2. The wooden roof window frame is a frame consisting of two side members 1 and of the transversely arranged upper and bottom member. Each side member 1 of the window frame is made up of several glued wooden strips arranged lengthwise (like in example 1), namely the external upper strip 11, the external middle strip 12 and the external bottom strip 13, as well as of the internal upper strip 14 and the internal bottom strip 15. The roof window with the window frame has also a sash 2, connected with window frame 1 by the turning hinges 3, which are located in the central zone of the window frame between its side members 1 and the sash frame 21 of the sash 2, as in the first example of execution.

[0021] Close to the turning hinge 3, in the wooden elements of the side member of the window frame, there is a metal section, which in this example is a roll formed angle, placed along the side member 1 of the window frame. The shielding wall (leg) 51 of the angle 5 is placed parallel to the main plane of the window frame, adhering to the upper surface of the external upper strip 11. The perpendicular transverse wall (leg) 52 of the angle is placed in a recess, the depth of which corresponds to the thickness of that wall (leg), made at the inner side of the window frame in the external upper strip 11 and the external middle strip 12 of the side member of the window frame.

[0022] The fixing wall (leg) 52 of the angle 5 is covered by the internal upper strip 14 and part of the internal bottom strip 15 of the side member of the window frame, and due to placing that wall (leg) in a recess, its surface on the internal side of the window frame remains on the joint of the external and internal strips of the side member of the window frame 1. In the transverse wall (leg) 52 are made cut-outs 53, which are open at its bottom edge, and the recess made for the wall (leg) 52 in the external upper strip and the external middle strip 12, has a shape fitting to these cut-outs. The parts of the external segments 11 and 12 protruding through these cut-outs 53 are glued on their face surfaces with the internal upper segment 14 and bottom segment 15. The transverse wall (leg) 52 is also provided with rectangular openings 54, through which pass the tenons of the external strips (as in the first example of execution), glued with their face surfaces to the internal strips.

[0023] The angle bar 5 is fixed to the side member 1 of the window frame by screws 55 passing through the holes 56 made in the bottom part of the transverse wall

(leg) 52, and it has also catches 57, which are driven into the wooden strips of the frame at the time of its assembly. The angle is additionally fixed by the screws 58 passing through the holes 59 in the shielding wall (leg) 51. The angle bar 5 is also provided with round holes 45 for the screws fixing the turning hinge to the side member of the window frame, which are located in the transverse wall (leg) 52 as in the channel bar of the first example of execution.

Claims

1. A wooden window casing, particularly a casement frame, applied mainly in roof windows, the basic elements of which are the side members of the frame and the members transverse to them, usually perpendicular, having hinges on their side members connecting the window frame with the sash opened by turning it about a horizontal axis, the hinges being advantageously located in the central part of the side members of the frame between the window frame and the sash frame, advantageously fixed by screws, **characterized in that** close to the hinges (3) the frame has a metal section (4, 5) protecting the wood against attempts to split it, and the shielding wall (42, 51) of that section is placed along the side member of the frame closer to the external face of the window than the fasteners (31) fixing the hinge (3), while the transverse wall (42, 52) perpendicular to the shielding wall of the section is placed on the side of that surface of the frame, on which the hinge assembly is fixed.
2. A window frame according to claim 1, **characterized in that** the frame being a window frame has side members (1) consisting of several glued strips located side by side in the cross section of that member, with at least one internal strip (14, 15) being placed transversely to the main surface of the window frame on that side of its surface, on which the hinge assembly is fixed, and the transverse wall (42, 52) of the section is placed in a recess, the depth of which corresponds to the thickness of that wall, located on the internal side in external strips (11, 12, 13) of the side member of the window frame, and is covered by an internal strip (14, 15) of the side member of the window frame.
3. A window frame according to claim 1 or 2, **characterized in that** the shielding wall (41) of the section (4) is placed in a recess in the side member (1) of the frame, accessible from that side of that frame surface, on which the hinge assembly (3) is fixed.
4. A window frame according to claim 1, **characterized in that** the shielding wall (51) of the section (5) abuts to the surface of the frame at the external side of the

window.

5. A window frame according to claim 1 or 2 or 3 or 4, **characterized in that** the section in a channel, advantageously a roll formed shape, the fixing wall of which is located at a greater distance from the external side of the window than the fasteners fixing the hinges. 5
6. A window frame according to claim 5, **characterized in that** the fixing wall (43) is placed in a recess in the side element of the frame, located on that side of the frame surface, on which the hinge assembly is fixed. 10
7. A window frame according to claim 1 or 2 or 3 or 4, **characterized in that** the section is an angle bar (5), advantageously a roll formed shape, the wall (52) transverse versus its shielding wall (51) being fixed to the side member of the frame by intermediate fasteners, advantageously by screws (55). 15 20
8. A window frame according to claim 7, **characterized in that** the bar is provided in its wall (52) transverse versus the shielding wall with catches (57) penetrating into the material of the side member of the frame. 25
9. A window frame according to claim 2 or 3 or 4 or 5 or 6 or 7 or 8, **characterized in that** the section (4, 5) is provided with openings in its wall (42, 52) transverse versus the shielding wall, and the external strips of the side member of the window frame have, in the recess containing the transverse wall of the section, tenons entering into openings **in that** wall and abutting with their face surfaces to the internal strip of the side element of the window frame, to which strip the tenons of the external strips are glued. 30 35
10. A window frame according to claim 9, **characterized in that** the openings (44, 54) in the transverse wall (42, 52) of the section (4, 5) have the shape of polygons, advantageously rectangles. 40
11. A window frame according to claim 2 or 3 or 4 or 5 or 6 or 7 or 8, **characterized in that** the section (5) is provided in its wall (52) transverse versus the shielding wall (51), at the side opposite to the shielding wall, with a cut-out (53), and the recess, in the external strips of the side member of the window frame containing the transverse wall of the section, has a shape mating with the cut-out **in that** wall, while the protruding parts of the external strips of the side member of the window frame entering into the cut-outs in the transverse wall of the section abut with their face surface to the inner strip of the side member of the window frame, to which strip they are glued. 45 50 55

12. A window frame according to claim 11, **characterized in that** the cut-out in the section is also provided in the fixing wall, being an extension of the cut-out in transverse wall.

13. A window frame according to claim 11 or 12, **characterized in that** the cut-outs in the transverse wall of the section have the shape of polygons, advantageously rectangles

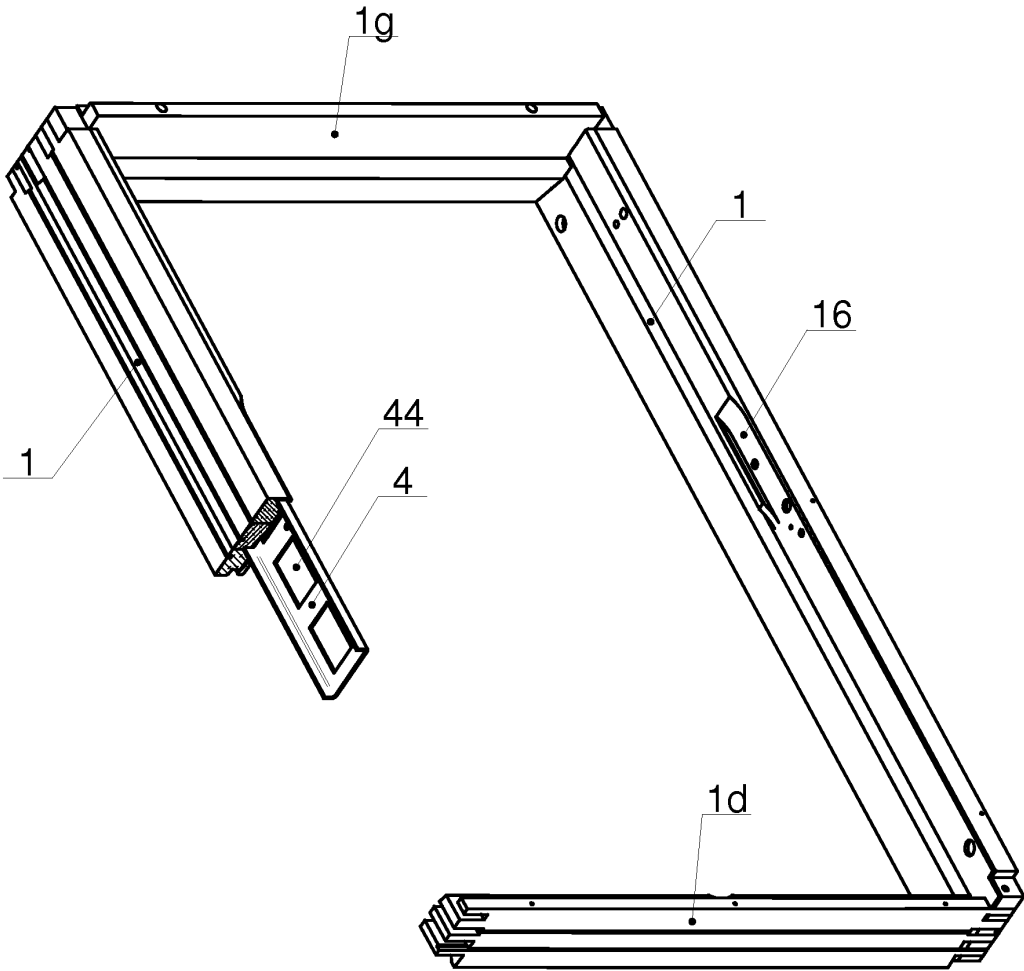


Fig. 1

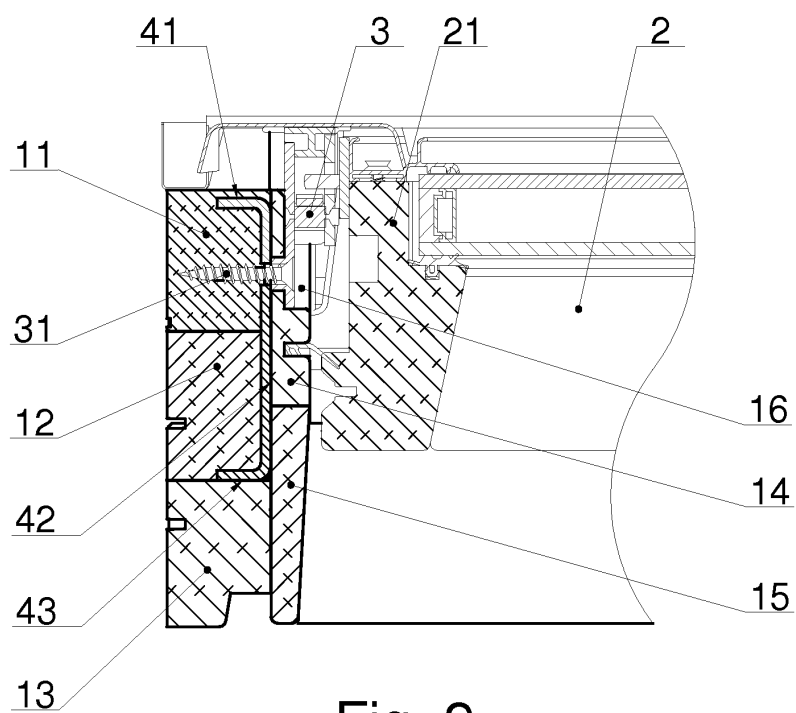


Fig. 2

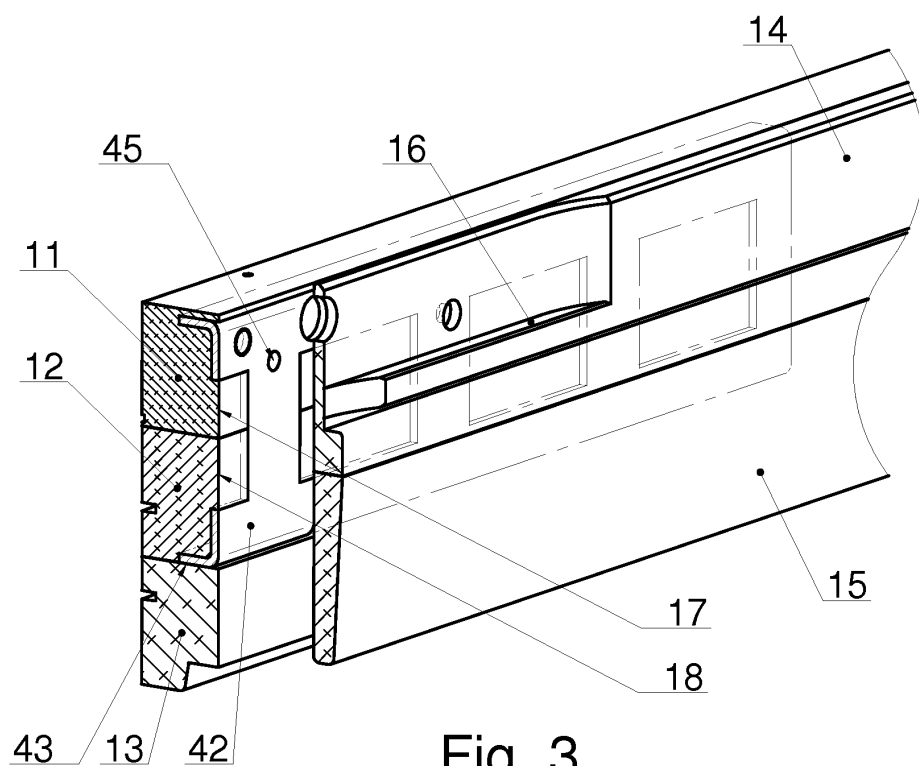


Fig. 3

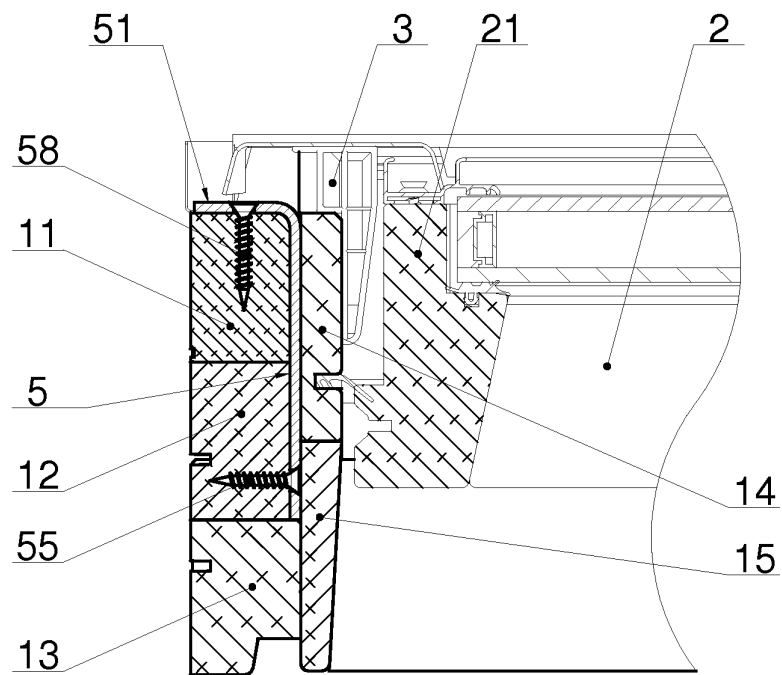


Fig. 4

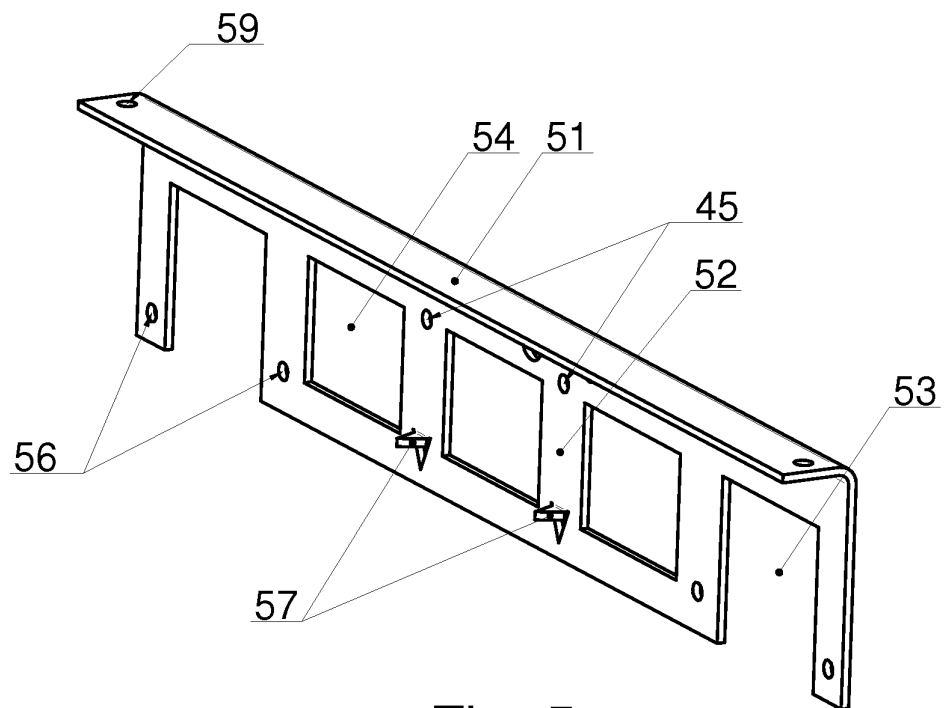


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 5338

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 548 443 A1 (CIPRIANO ROCCO [IT]) 30 June 1993 (1993-06-30) * the whole document *	1	INV. E06B5/11 E04D13/00 E05D7/082
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A	GB 1 473 570 A (ALBERTSSON H) 18 May 1977 (1977-05-18) * the whole document *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B E04D E05D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 February 2011	Examiner Merz, Wolfgang
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 17 5338

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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04-02-2011

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