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(54) Door / window with structural glass panel and method for the assembly thereof

(57) Door/window with structural glass panel comprising a frame (2) and a glass panel (3) provided with an internal sheet (5) housed in a perimeter seat (30) of the frame (2) and with an external sheet (6) fixed to the internal sheet (5) by means of a perimeter cord (7) made of sealant material. The external sheet (6) is extended outside the double glazing (9) defined by the two sheets for at least one projecting portion (60) to partially or totally cover the external face (2") of the frame (2). A check device (11) is provided for fixing the glass panel (3) to the frame (2) comprising an elongated profile (12) interposed between the external face (2") of the frame (2) and the projecting portion (60) of the external sheet (6). Such elongated profile (12) is provided with a support portion (13) defining a concavity (14), in which the perimeter edge (6"') is housed of the external sheet (6). Fixing means (4) are also provided for fixing an anchorage portion (15) of the elongated profile (12) to the external face (2") of the frame (2). The elongated profile (12) is also provided with a first and a second abutment wall (150, 151), respectively in abutment against the external face (2") of the frame (2) and against the internal surface (6') of the projecting portion (60) of the external sheet (6), which by means of the aforesaid abutments determine the distance between the frame (2) and the glass panel (3). The fixing means (4) comprise at least one bracket (16) provided with a base (17) fixed to the external face (2") of the frame (2), and at least one coupling body (19) projecting from the base (17) towards the glass panel (3), separated from the latter and from the second abutment wall (151) and engaged with the anchorage portion (15).

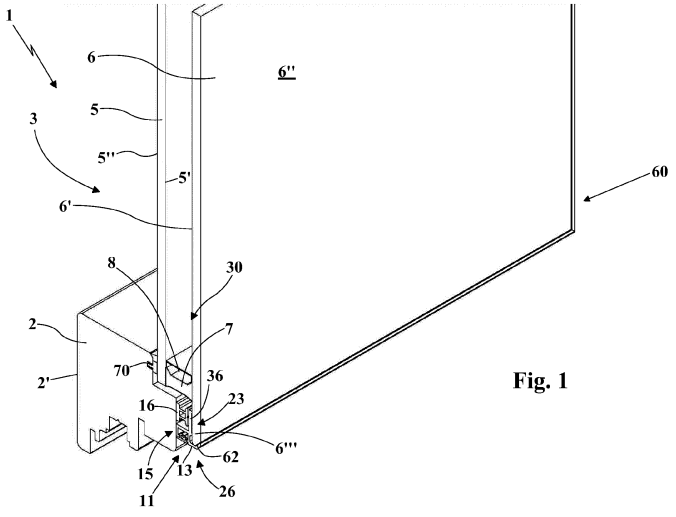

Fig. 1

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Description

Field of application

[0001] The present invention refers to a door/window with structural glass panel as well as to a method for the assembly thereof, according to the preamble of the respective claims 1 and 10.

[0002] The door/window and the method pertaining thereto are generally inserted in the field of production of windows, doors, French windows or the like provided with frames made of wood, PVC or aluminum, with a glass panel fixed having a sheet that partially externally covers the same frame.

State of the art

[0003] It is known to obtain doors/windows formed by a support frame made of wood, PVC or aluminum provided with a perimeter seat in which a glass panel is housed. The latter is fixed in the aforesaid perimeter seat by means of gluing, by means of gaskets and usually by means of glazing beads, generally mounted on the frame at the external face of the door/window.

[0004] The glass panel is preferably obtained with two or more coupled glass sheets, separated from each other by double glazing, in order to improve the thermal insulation.

[0005] As is known, doors/windows have been recently developed, for purely aesthetic and architectural reasons, that are also provided with a so-called "structural" glass panel, i.e. suitable for being at least partially frontally fixed to the frame, in a manner so as to conceal the latter in at least one part thereof, by placing a glass sheet entirely in view. Such doors/windows no longer employ glazing beads but are fixed by means of gluing in particular in order to resist stresses transverse to the position of the doors/windows.

[0006] In particular, it is known to arrange an open perimeter seat on the frame, such seat obtained with a step-like recess obtained starting from the external face of the frame.

[0007] In this case, the glass panel of structural type is provided with two sheets separated by a double glazing and joined together by a silicone cord. The internal sheet of the glass panel is intended to be inserted in the perimeter seat of the frame whereas the external sheet, larger than the internal sheet, perimetrically projects to at least partially cover the external face of the frame.

[0008] A layer of structural glue or sealant interposed between the glass panel and the frame is aimed to firmly fix together these two components.

[0009] In order to safely ensure the fixing of the glass panel to the frame over time, in particular with reference to stresses transverse to the position of the door/window, retention devices have been designed that are mounted on the frame, such devices coming to complete the sealant action.

[0010] For such purpose, a support device is known that is constituted by a shaped lamina, which is fixed by means of screws to the lower crosspiece of the frame and is provided with a shelf-like projecting portion, on which the most external glass sheet rests. Operatively, the lamina is fixed to the frame at the seat adapted to receive the internal sheet of the glass panel, before the latter is positioned on the frame and hence before the external glass panel is frontally glued to the frame.

[0011] The aforesaid shaped lamina contributes to supporting the glass panel on the frame, which consequently does not exclusively burden the sealant glue cord that joins the sheets, even if it does not offer any mechanical strength with respect to the transverse stresses, i.e. with respect to stresses orthogonal to the lying plane of the glass panel, in particular directed towards the door/window exterior.

[0012] Therefore, such stresses, if sufficiently high to overcome the force of adhesion of the sealant glue that structurally joins the external sheet to the frame may force the panel out of the frame itself with dangerous consequences.

[0013] For the purpose of overcoming this drawback, devices have been developed for retaining the structural glass panels firmly anchored to the frame, even resisting stresses transverse to the lying plane of the doors/windows.

[0014] For example, known from the patents GB 2323116 and GB 2238340 are doors/windows with devices mounted thereon for retaining a glass panel anchored to the frame; each device comprises a bracket, intended to be fixed to the frame by means of screws, and a retention element, couplable with such bracket for retaining the glass panel anchored to the frame with respect to stresses transverse to its lying plane.

[0015] More particularly, the bracket is mounted in the seat of the frame, resulting interposed between the perimeter edge of the panel and the bottom of the seat, whereas the retention element is constituted by an L-shaped lamina having a first portion mechanically coupled to the bracket in an adjustable manner, and a second portion, orthogonal to the first, adapted to transversely retain the glass panel.

[0016] Also known from model application No. IT PD 2010U00025, on behalf of the same applicant, is a door/window with structural glass panel having check devices mounted thereon for retaining the panel fixed to the frame.

[0017] Each check device comprises a bracket fixed to the frame by means of screws, and a check member constituted by a shaped lamina provided with a check portion, intended to abut against an external perimeter portion of the external sheet of the glass panel, and with a coupling portion mechanically connected to the bracket by means of anchorage means and connected to the check portion by means of a support portion intended to receive the thickness of the external glass sheet in abutment.

[0018] The doors/windows with structural glass panels employing the abovementioned check devices of known type do not have references for their precise positioning and fixing to the frame; they are also not very reliable, and in particular have the drawback of being externally visible and hence rather aesthetically unpleasant.

[0019] In addition, it should be observed that the doors/windows with structural glass panels of known type still require the use of a layer of sealant material, which is interposed during production between the frame and the glass panel with the object of resisting the transverse stresses that could otherwise make the panel exit from the seat of the frame. Such sealing operation of course has the drawback of involving a cost that affects the overall price of the production process.

[0020] It should be observed that the methods for the assembly of the doors/windows with structural glass panels of known type that are currently employed have proven to be particularly difficult, requiring numerous adjustment operations and as a result obtaining doors/windows of quality that varies depending on the ability of the employed personnel.

[0021] Known from the patent DE 9104769 U1 is a door/window with structural glass panel provided with a check device for fixing a glass panel to the frame comprising an elongated profile at least partially interposed between the external face of the frame and the projecting portion of the external sheet of the glass panel and provided with an abutment portion defining a concavity, in which the perimeter edge is housed of the external sheet of the glass panel; and with an anchorage portion in a single body with the abutment portion. Fixing means are also provided for fixing the anchorage portion of the elongated profile to the external face of the frame comprising a bracket fixed to the frame and acting as a spacer for the glass panel with respect to the frame.

[0022] Such door/window has the drawback of defining the position of the glass panel with respect to the frame not in a fixed manner by means of a single element, but rather in an imprecise manner by means of the space subtended between two different elements, i.e. the abutment portion of the elongated profile on one side and the bracket of the fixing means on the other side.

Presentation of the invention

[0023] Main object of the present invention is therefore to remedy the drawbacks manifested by the solutions of known type, by providing a door/window with structural glass panel which can be reliably used to safely retain the structural glass panel firmly anchored to the frame, and which does not require the use of devices for retaining the panel to the frame, damaging the aesthetics of the door/window.

[0024] Further object of the present invention is to provide a door/window with structural glass panel which employs check devices that are not particularly visible according to a front view.

[0025] Further object of the present invention is to provide a door/window with structural glass panel which allows retaining the glass panel on the frame in a precise and reliable manner, independent of the ability of the operators who assemble the door/window.

[0026] Another object of the present invention is to provide a door/window with structural glass panel which optimally resists stresses transverse to the lying plane of the door/window.

[0027] Further object of the present invention is to provide a door/window with structural glass panel which employs check devices for the glass panel that can be easily mounted on the frame of the door/window.

[0028] Further object of the present invention is to provide a door/window with structural glass panel which employs check devices that are easy to mount on the frame of the door/window.

[0029] Further object of the present invention is to provide a method for the assembly of a door/window with structural glass panel which is simple and quick to obtain.

[0030] Further object of the present invention is to provide a method for the assembly of a door/window with structural glass panel which does not require particularly specialized personnel and which allows obtaining a door/window with constant quality standard.

Brief description of the drawings

[0031] The technical characteristics of the finding, according to the aforesaid objects, can be clearly seen in the contents of the below-reported claims and the advantages thereof will be clearer in the following detailed description, made with reference to the enclosed drawings, which represent a merely exemplifying and non-limiting embodiment thereof in which:

- figure 1 shows a perspective view of a cross section of a portion of the door/window with structural glass panel, object of the present invention;
- figure 2 shows a cross section view of the door/window with structural glass panel, object of the present invention;
- figure 3 shows a perspective view of a detail of the door/window with structural glass panel object of the present invention, relative to an elongated profile;
- figure 4 shows a perspective view of an enlarged detail of the door/window with structural glass panel object of the present invention, relative to a support bracket for the elongated profile;
- figure 5 shows an external perspective view of a portion of the door/window with structural glass panel object of the present invention, with an angular plate visible;
- figure 6 shows an internal perspective view of a detail of the door/window with structural glass panel, object of the present invention (the frame having been removed), with a support frame for a glass panel, formed by two elongated profiles joined by an angu-

lar plate;

- figure 7 shows a further internal perspective view of a detail of the door/window with structural glass panel object of the present invention (the frame having been removed), with the support frame of the glass panel formed by four elongated profiles joined by four angular plates;
- figures 8-12 show a cross section view of a section of the door/window illustrated in various steps of the assembly method, object of the present invention;
- figures 13, 14 and 15 show the door/window of the figures 8, 10 and 11 in corresponding perspective views.

Detailed description of a preferred embodiment

[0032] With reference to the enclosed drawings, the door/window with structural glass panel, object of the present invention, has been indicated in its entirety with the reference number 1.

[0033] Hereinbelow in the present description, reference will be made to a door/window 1, constituted in particular by a window, by a door, by a French window, by a skylight, or by similar frames; nevertheless, it is intended that, without departing from the protective scope of the present patent, the invention can refer to any one other type of door/window.

[0034] The door/window 1, object of the present invention, is formed in a *per se* conventional manner by a frame 2 made of wood, PVC or aluminum (but preferably wood) composed of four sections rigidly connected together at the four vertices V through *per se* conventional fixing means, such as brackets, screws, tie rods, tenons and pins etc., not described in detail since *per se* known to the man skilled in the art.

[0035] The frame 2 therefore assumes the conventional form of a rectangular frame having a closed perimeter extension, with the sections orthogonally joined together at the ends of the vertices of the frame. The latter defines an internal face 2' and an external face 2", substantially parallel to the lying plane of the door/window 1.

[0036] Such closed extension of the frame 2 delimits an opening which is engaged by a glass panel 3 of "structural" type, i.e. provided with quadrangular shape defined by four sides converging in corners placed at the vertices V of the frame 2.

[0037] The glass panel 3 is frontally fixed to the frame 2 and partially covers it, without requiring for the fixing to the frame 2, the use of glazing beads or retention seats for the perimeter edge of the panel closed on three sides, as will be described in more detail hereinbelow.

[0038] The frame 2 is provided with a perimeter seat 30, which is obtained at the external face 2" thereof. Such seat 30 is frontally open, i.e. in a direction orthogonal to the external face 2" of the frame 2, and towards the interior of the door/window i.e. in the direction of the opening delimited by the frame 2.

[0039] The seat 30 is advantageously defined by a step-like recess delimited by a base surface 30' which is extended starting from the external face 2" of the frame 2 in orthogonal direction towards the internal face 2' of the frame 2, and by a rear surface 30" which projects orthogonally upward from the base surface 30' parallel to the lying plane of the door/window 1.

[0040] In turn, the glass panel 3 comprises, also in a *per se* conventional manner, an internal sheet 5 and an external sheet 6, larger than the internal sheet 5 and fixed thereto by means of a perimeter cord 7 made of sealant material (e.g. structural silicone) as well as spaced from the same internal sheet 5 by means of a channel 8 defining at least one double glazing 9 together with the glass sheets 5,6.

[0041] Each sheet 5, 6 of the panel 3 is provided with an internal surface 5', 6' directed towards the interior of the double glazing, with an external surface directed outside the double glazing 5" 6" and with a perimeter edge 5"', 6"'.

[0042] The internal sheet 5 is housed in the aforesaid perimeter seat 30 of the frame 2, preferably with its perimeter edge 5"' in abutment against the aforesaid base surface 30' of the perimeter seat 30, advantageously with the interposition of an abutment plate 100 e.g. made of plastic material, and with the internal surface 5' of a peripheral portion 50 thereof in abutment against the rear surface 30" of the seat 30 preferably with the interposition of a first gasket 70.

[0043] The external sheet 6 has, as said, larger size than said internal sheet 5 such that it is peripherally extended outside the double glazing 9 for at least one projecting portion 60 thereof, which at least partially covers the external face 2" of the frame 2.

[0044] In accordance with the preferred embodiment illustrated in the enclosed figures, the external face 2" of the frame 2 is only partially covered by the projecting portion 60 of the external sheet 6 of the glass panel 3, a visible frame (made of wood, PVC or aluminum) therefore remaining at the more external perimeter margin of the door/window 1.

[0045] The glass panel 3 thus obtained is then fixed to the frame 2 by means of a check device 11, which will now be described with reference to the characteristics of the present invention.

[0046] The aforesaid check device 11 comprises, for each section of the frame 2, an elongated profile 12, substantially interposed between the external face 2" of the frame 2 and the internal surface 6' of the projecting portion 60 of the external sheet 6 of the glass panel 3.

[0047] More in detail, each elongated profile 12 comprises at least one first support portion 13, which is adapted to receive the perimeter edge 6"' of one side of the external sheet 6 of the glass panel 3.

[0048] Advantageously, the first support portion 13 defines a concavity 14, directed towards the opening of the frame 2, in which the perimeter edge 6"' is housed of the external sheet 6 of the panel 3.

[0049] Furthermore, each elongated profile 12 also

comprises an anchorage portion 15, which is in a single body with the support portion 13, and is fixed to the external face 2" of the frame 2 by means of fixing means 4. The latter are adapted to fix the anchorage portion 15 of the elongated profile 12 to the external face 2" of the frame 2.

[0050] According to the idea underlying the present invention, each elongated profile 12 also comprises a first abutment wall 150, which is in abutment against the external face 2" of the frame 2, and at least one second abutment wall 151, which is in abutment against the internal surface 6' of the projecting portion 60 of the external sheet 6.

[0051] The first and the second abutment wall 150, 151 are in a single body with the anchorage portion 15 and with the first support portion 13 and determine the distance between the frame 2 and the glass panel 3, allowing the stable and safe placement of the panel 3 directly on the frame 2 and thus also the perimetrical closure of the perimeter slit that remains defined therebetween.

[0052] In addition, according to the invention, the fixing means 4 comprise at least one bracket 16 provided with a base 17 fixed to the external face 2" of the frame 2 and with at least one coupling body 19. The latter is obtained in a single body with its base 17, is extended therefrom towards the external sheet 6 of the glass panel 3 with at least one component orthogonal to the external face 2" of the frame 2 and orthogonal to the lying plane of the door/window 1, and is mechanically engaged with the anchorage portion 15 of the elongated profile 12. The coupling body 19 remains separated from the internal surface 6' of the external sheet 6 of the glass panel 3, not coming into contact therewith.

[0053] Advantageously, the coupling body 19 faces the second abutment wall 151 and preferably remains separated from the internal surface of such second abutment wall 151.

[0054] On such matter, it is specified that in figure 2 the coupling body 19 approaches the second abutment wall 151, even if it advantageously remains separated therefrom, as stated. More particularly, preferably the coupling body 19 has a head wall 17' opposite the base wall 17 (and connected to the latter by means of connector portions 17" with second holes 20 as specified below), which preferably remains separated from the second abutment wall 151.

[0055] In any case, the external sheet 6 of the glass panel 3 is only retained by the elongated profile 12 and not by the bracket 16 and by the perimeter cord 7 made of sealant material of the glass panel 3.

[0056] Advantageously, the anchorage portion 15 is interposed between the frame 2 and the internal surface 6' of the external sheet 6 and is preferably extended orthogonal to the position of the door/window 1, i.e. orthogonal both to the external sheet 6 of the panel 3 and to the external face 2" of the frame 2.

[0057] The anchorage portion 15 terminates at its ends with the aforesaid first and second wall 150, 151 and, abutting against the aforesaid external face 2" of the frame 2 and internal surface of the external sheet 6, it functions as a spacer between the frame 2 and the panel 3.

[0058] More in detail, advantageously, the base 17 of the bracket 16 is fixed to the external face 2" of the frame 2 by means of one or more first screws 18 inserted in corresponding first holes 10 obtained on such base 17 and engaged in the frame 2 (and advantageously in the wood of the frame).

[0059] The aforesaid coupling body 19 of the bracket 16 is provided with one or more second holes 20, in which second screws 21 are correspondingly inserted that are engaged in retention relationship with the anchorage portion 15 of the elongated profile 12.

[0060] The aforesaid engagement of the second screws is advantageously obtained by means of third holes 22 obtained in the aforesaid anchorage portion 15 of the elongated profile 12 for the insertion of the aforesaid second screws 21.

[0061] The first screws 18 are extended orthogonally to the lying plane of the panel 3 with the heads that are abutted against the base 17 of the brackets 16 and with the shank that is inserted in the first holes 10 of the same bases, being engaged via screwing in the frame 2 (and advantageously in the wood of the frame).

[0062] The second screws 21 are extended parallel to the lying plane of the panel 3, preferably with the heads that are abutted against the anchorage portion 15 of the elongated profile 12 and with the relative shanks that are inserted in the third 22 and second 20 holes, aligned with each other and respectively obtained on the same anchorage portion 15 and in the coupling body 19 of the brackets 16.

[0063] Advantageously, the second 20 and the third 22 holes are both threaded so as to prevent the elongated profile 12 and the brackets 16 from moving close to each other following the tensioning of the second screws 21.

[0064] Preferably, such second 20 and third 22 holes are threaded by the penetration of the second screws 21. Preferably, the second holes 20 are obtained starting from an integral profile by means of the second screws 21 suitably provided with self-threading or self-perforating tips, which are preferably guided in their penetration also by an abutment wall 17' facing the elongated profile 12 and placed at the external end of the coupling body 19 of the bracket 16.

[0065] The anchorage portion 15 of the elongated profile 12 preferably delimits the bottom of a longitudinal groove 26, in which the heads of the second screws 21 are inserted. The same groove 26 is advantageously closed by a second gasket 71 and is also delimited by the same second abutment wall 151, which is placed in abutment against the external face 2" of the frame 2, and by a peripheral portion 28 of the second abutment wall 151, opposite and parallel to the aforesaid first abutment wall 150 and facing the internal surface 6' of the external sheet 6.

[0066] More in detail, the aforesaid bracket 16 is extended parallel to the elongated profile 12 and it too is constituted by an elongated element that is extended substantially for the entire extension of the elongated profile 12 itself, and is preferably made of a rigid plastic material such as polyamide, preferably, or of a metallic material, such as an aluminum extrusion. Otherwise, a plurality of brackets 16 can be provided, spaced from each other along the perimeter extension of the frame 2 and aligned parallel to the elongated profile 12.

[0067] Functionally, the first support portion 13 allows retaining the glass panel 3 mechanically constrained to the frame 2, resisting the stresses transverse to the lying plane of the door/window 1. Indeed, for such purpose, the external sheet 6 of the panel 3 is constrained to the frame with respect to movements transverse to the lying plane of the door/window 1 due to the engagement of its perimeter edge 6"' in the concavity 14 of the first support portion 13 of the elongated profile 12 and/or, as explained hereinbelow, also by means of an adhesive sealant layer 36 interposed between the second abutment wall 151 of the elongated profile 12 and the internal surface 6' of the external sheet 6 of the panel 3.

[0068] Furthermore, the same first support portion 13 of the elongated profile 12, in the part arranged on the lower crosspiece of the frame 2, participates together with the perimeter cord 7 made of sealant material in supporting the glass panel 3, preventing the latter from exclusively burdening the sealant cord 7 interposed between the two glass sheets 5 and 6, i.e. allowing the sizing of such cord with limited thickness, e.g. on the order of 8 mm.

[0069] According to a further advantageous characteristic of the present invention, the check device 11 also comprises an angular plate 80 provided with two arms 81 having a first end 82 in common and a second end 83 susceptible to being engaged in retention relationship with the lateral terminations of pairs of elongated profiles 12 converging towards a vertex of the door/window 1.

[0070] Preferably, the perimeter edge 6"' of the external sheet 6 of the glass panel 3 has a tapered form advantageously obtained with at least one first tilted face 61 obtained in the thickness of the perimeter edge 6" of the external sheet of the panel 3.

[0071] In turn, the concavity 14 of the first support portion 13 of the elongated profile 12 is counter-shaped with respect to the tapered form of the perimeter edge 6"' of the external sheet 6 of the panel 3 and hence advantageously has a second tilted face 62 which is opposite the first 61 of the perimeter edge 6"' of the external sheet 6.

[0072] Advantageously, arms 81 of each angular plate 8 are provided at the free end with shaped appendages 84, which are susceptible to being engaged in retention relationship with the grooves 26 of pairs of elongated profiles 12 converging towards a vertex of the door/window, at the lateral terminations of the same elongated profiles 12.

[0073] The arms 81 of the angular plate 8 are provided with second abutment portions 85, which are placed as a continuation of the first abutment portions 13 of the elongated profiles when the plates are coupled to converging pairs of elongated profiles 12. In this manner, the first and the second abutment portions 13, 85, aligned with each other in the two orthogonal directions of the plate 80, are adapted to receive the perimeter edge 6"' of two sides converging in a vertex of the external sheet 6 of the glass panel 3.

[0074] Advantageously, the second support portions define, like the first 13, a concavity 14 directed towards the opening of the frame 2, in which the perimeter edge 6"' is housed of the external sheet 6 of the panel 3.

[0075] In accordance with an advantageous characteristic of the present invention, in order to correctly maintain the elongated profile 12 in the desired position during the step of its fixing to the brackets 16 (as well as in order to increase the mechanical support force for the panel 3), at least one layer made of adhesive sealant material 36 is provided, interposed between the second wall 151 and the internal surface 6' of the external sheet 6 of the glass panel 3 and longitudinally delimited by at least one transverse rib 24, which is extended from the second abutment wall 151 towards the panel 3, abutting against the internal surface 6' of the same external sheet 6.

[0076] In this case, therefore, the second abutment wall 151 of the elongated profile 12 is in abutment against the internal surface 6' of the external sheet 6 of the glass panel 3 by means of an interposed layer made of adhesive sealant material 36 associated therewith.

[0077] In accordance with the embodiment illustrated in the enclosed figures, two layers 36 made of sealant material are provided, including a first more internal layer contained in a first chamber delimited by two ribs 24 - of which one is intermediate with respect to the extension of the second abutment wall 151 (opposite the anchorage portion 15 with respect to the same second abutment wall 151) and one is at the more internal end (more towards the interior of the panel in the direction opposite the edge) of the second abutment wall 151 - and a second more external layer (i.e. more towards the edge of the panel 3) contained in a second chamber and delimited by the same intermediate rib 24 and by the transverse rib which at the same time comes to form the first support portion 13. In this case, the intermediate rib 24 acts as a separator element between the two chambers as well as an intermediate support element for the elongated profile, advantageously placed at the anchorage portion 15.

[0078] Also forming an object of the present invention is a method for mounting a door/window, advantageously but not exclusively obtained according to the above-described characteristics; hereinbelow, the same reference numbers will be maintained for descriptive ease.

[0079] Such method comprises the operating steps described hereinbelow.

[0080] First of all, a step for fixing the brackets 16 to the frame 2 is provided, by means of the insertion of the first screws 18 in the first holes 10 obtained on the base

17 of the brackets and then the screwing thereof in holes obtained on the external face 2" of the four sections of the frame 2.

[0081] Then, there is a step for abutting the glass panel 3 in position against the frame 2, advantageously maintaining a horizontal position thereof, with the internal sheet 5 within the step of the frame 2 and in abutment against the first gasket 70.

[0082] At this point, there is a step for perimetrically mounting the elongated profiles 12 and the angular plates 80 on the frame 2, with the shaped appendages 84 of the arms 81 of the angular plates 8 which are coupled in retention relationship in the grooves 26 of the pairs of elongated profiles 12 converging towards a vertex of the door/window 1, and with the first and the second abutment portions 13, 85 that remain engaged by the perimeter edge 6"' of the external sheet 6 of the glass panel 3.

[0083] Beforehand, it is possible to obtain sections of support profiles for the panel, obtained with one or more elongated profiles 12 with one or more angular plates 80 associated at the ends, for a more facilitated composition of the support frame formed by angular plates 80 connected by the angular profiles 12 on the perimeter of the glass panel 3.

[0084] The method then comprises a step for fixing the elongated profiles 12 to the brackets 16 by inserting the second screws 21 in the second holes 20 of the coupling bodies of the brackets 16 as well as in the third holes 22 obtained in the anchorage portion 15 of the elongated profile 12.

[0085] The method preferably provides for closing the grooves 26, by engaging the second gasket 71 thereto.

Claims

1. Door/window with structural glass panel, comprising:

- a frame (2), in particular made of wood, having a perimeter extension, provided with an internal face (2') and an external face (2"), substantially parallel to the lying plane of the door/window (1), and with at least one perimeter seat (30) obtained at said external face (2");
- a glass panel (3) comprising at least one internal sheet (5) housed in said perimeter seat (30) and at least one external sheet (6), larger than said internal sheet, fixed thereto by means of a perimeter cord (7) made of sealant material and spaced from said internal sheet (5) by means of at least one channel (8) defining together with said sheets (5, 6) at least one double glazing (9), said external sheet (6) being extended outside said double glazing (9) for at least one projecting portion (60), which at least partially covers the external face (2") of said frame (2);
- check device (11) for fixing said glass panel (3) to said frame (2);

said check device (11) comprising:

- at least one elongated profile (12) at least partially interposed between the external face (2") of said frame (2) and the projecting portion (60) of said external sheet (6) of said glass panel (3) and provided with:
  - a first support portion (13) defining a concavity (14), in which the perimeter edge (6"') is housed of the external sheet (6) of said glass panel (3);
  - and at least one anchorage portion (15) in a single body with said first support portion (13);
- fixing means (4) for fixing the anchorage portion (15) of said elongated profile (12) to the external face (2") of said frame (2).

characterized in that said elongated profile (12) is also provided with

- at least one first abutment wall (150), which is in abutment against the external face (2") of the frame (2),
- at least one second abutment wall (151), which is in abutment against the internal surface (6') of the projecting portion (60) of said external sheet (6); said first and said second abutment wall (150, 151) being in a single body with said anchorage portion (15) and with said first support portion (13) and determining by means of said abutments the distance between said frame (2) and said glass panel (3);

- said fixing means (4) comprise at least one bracket (16) provided with a base (17) fixed to the external face (2") of said frame (2), and at least one coupling body (19) projecting from said base (17) towards the external sheet (6) of said glass panel (3), separated from said external sheet (6), and engaged with said anchorage portion (15).

2. Door/window according to claim 1, **characterized in that** the base (17) of said bracket (16) is fixed to the external face (2") of said frame (2) by means of one or more first screws (18) inserted in corresponding first holes (10) thereof, and said coupling body (19) is provided with at least one second hole (20) with a second screw (21) inserted that is engaged with said anchorage portion (15).

3. Door/window according to claim 2, **characterized in that** said anchorage portion (15) is extended between said first and second abutment wall (150, 151)

and is provided with at least one third hole (22), in which said second screw (21) is inserted for the fixing to the coupling body (19) of said bracket (16).

4. Door/window according to claim 1, **characterized in that** the first abutment wall (150) of said elongated profile (12) is in abutment against the internal surface (6') of the external sheet (6) of said glass panel (3) by means of a layer made of adhesive sealant material (36), in particular delimited by two transverse ribs (24), which are extended from said first abutment wall (150) and abut against the internal surface (6') of said external sheet (6).

5. Door/window according to claim 1, **characterized in that** said coupling body (19) is extended from said base (17) transverse to the lying plane of said door/window (1).

6. Door/window according to claim 1, **characterized in that** said bracket (16) is extended parallel to said elongated profile (12) substantially for the entire extension thereof.

7. Door/window according to claim 1, **characterized in that** it comprises a plurality of said brackets (16) spaced from each other and aligned parallel to said elongated profile (12).

8. Door/window according to claim 1, **characterized in that** said check device (11) also comprises an angular plate (80) provided with two arms (81) having a first end (82) in common and a second end (83) susceptible to being engaged in retention relationship with the lateral terminations of two said elongated profiles (12) converging towards a vertex of said door/window.

9. Door/window according to claim 8, **characterized in that** each said elongated profile (12) delimits a groove (26), the arms (81) of said angular plate (8) being provided at said free end with shaped appendages (84), which are susceptible to being engaged in retention relationship with the grooves (26) of two said elongated profiles (12) converging towards a vertex of said door/window, at said lateral terminations.

10. Door/window according to claim 8 or 9, **characterized in that** the arms (81) of said angular plate (8) are provided with second abutment portions (85), placed in continuation of the first abutment portions (13) of said elongated profiles and adapted to receive the perimeter edge (6"') of two sides converging in a vertex of the external sheet (6) of said glass panel (3).

11. Door/window according to claim 9, **characterized in that** the anchorage portion (15) of said elongated profile (12) delimits the bottom of said longitudinal groove (26), in which the heads of said second screws (21) are inserted.

12. Door/window according to claim 10, **characterized in that** the perimeter edge (6"') of the external sheet (6) of said glass panel (3) has tapered form, the first support portion (13) of said elongated profile (12) and the second support portion (85) of the arms (81) of said angular plate (8) are provided with a concavity (14) counter-shaped with respect to the tapered form of the perimeter edge (6"') of the external sheet (6) of said glass panel (3).

13. Door/window according to claim 1, **characterized in that** it comprises at least one layer made of adhesive sealant material (36) inserted in at least one chamber delimited by the internal surface (6') of said external sheet (6) and by said elongated profile (12) by means of said second abutment wall (151), and at least one transverse rib (24) which is extended from said second abutment wall (151) towards said glass panel (3) in abutment against the latter.

14. Door/window according to claim 1, **characterized in that** said coupling body (19) projects from said base (17) and faces said second abutment wall (151).

15. Method for the assembly of a door/window according to claims 2, 9 and 11, **characterized in that** it comprises:

- a step for fixing said brackets (16) by means of said first screws (18) on the external face (2") of the sections of said frame (2);
- a step for the horizontal abutment of said glass panel (3) against the frame (2);
- a step for mounting said elongated profiles (12) and said angular plates (80) perimetrically on said frame (2), with the shaped appendages (84) of the arms (81) of said angular plates (8) which are coupled in retention relationship in the grooves (26) of the pairs of elongated profiles (12) converging towards a vertex of the door/window (1), and with said first and second abutment portions (13, 85) engaged by the perimeter edge (6"') of the external sheet (6) of said glass panel (3);
- a step for fixing said elongated profiles (12) to said brackets (16) by means of said second screws (21).

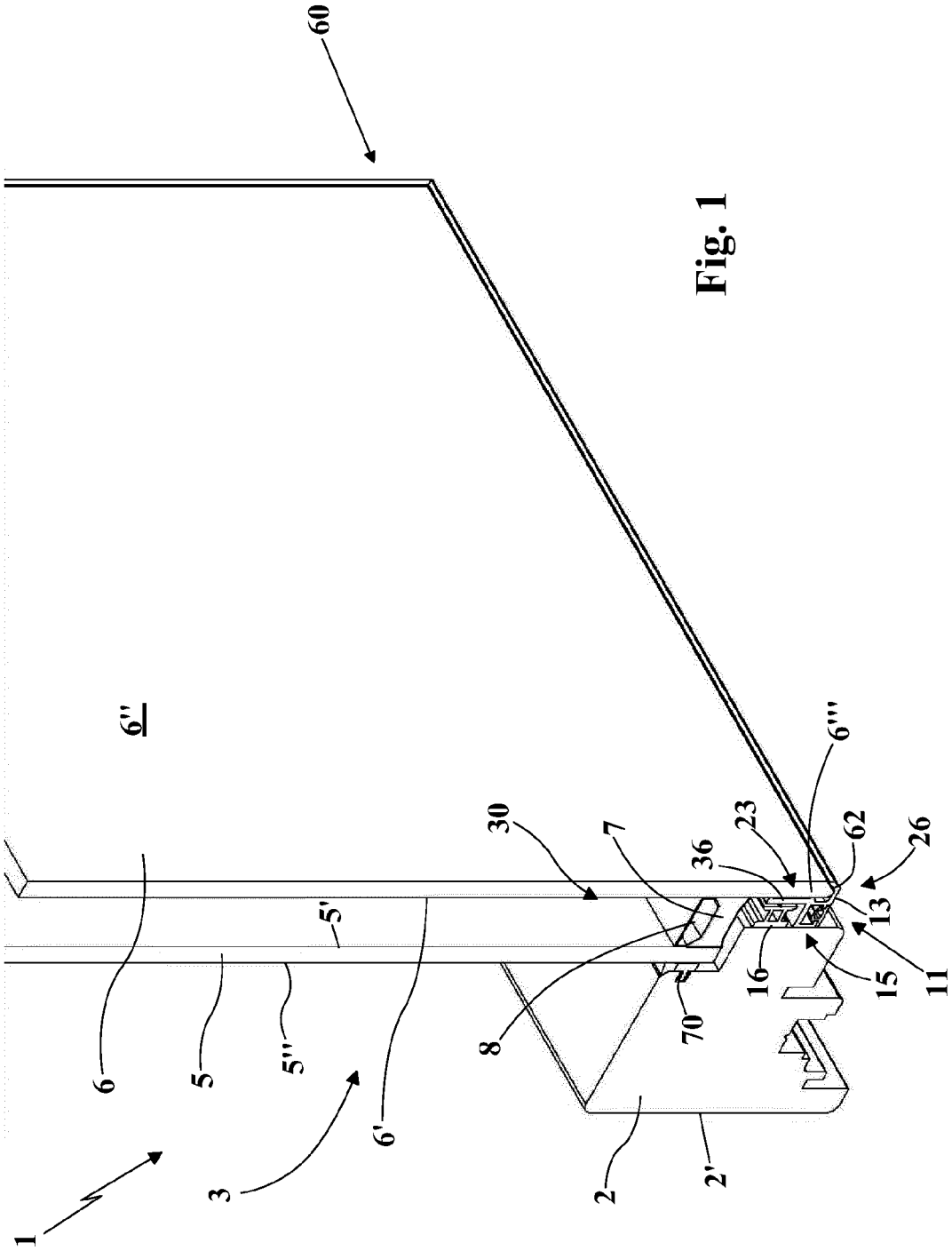


Fig. 1

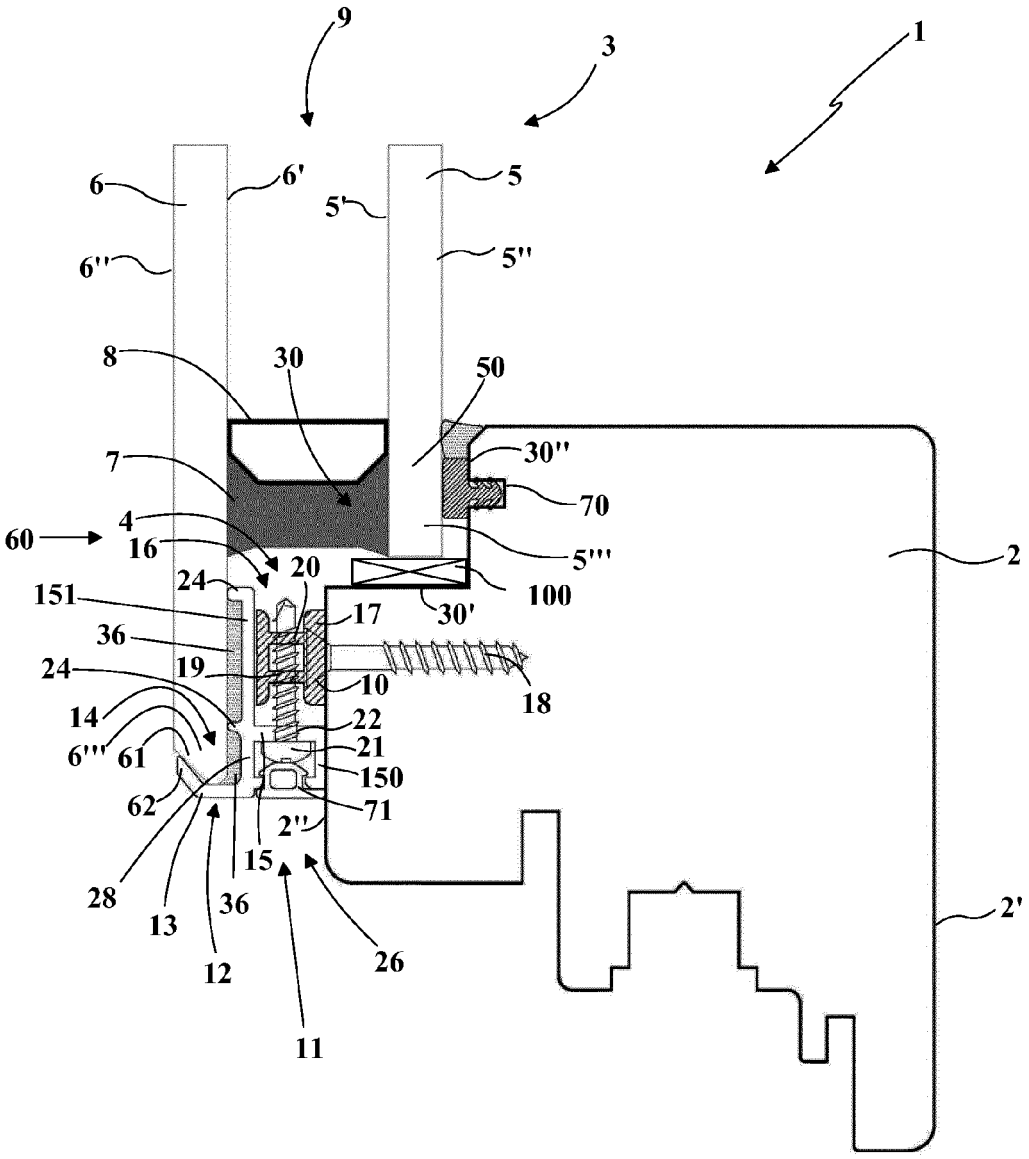

9
3
1
6
6'
5
5'
6''
5''
8
30
50
7
30''
70
4
60
16
20
5'''
2
24
100
151
17
30'
36
19
10
18
24
14
22
6'''
61
21
150
62
71
2''
15
28
13
36
12
26
11
2'

Fig. 2

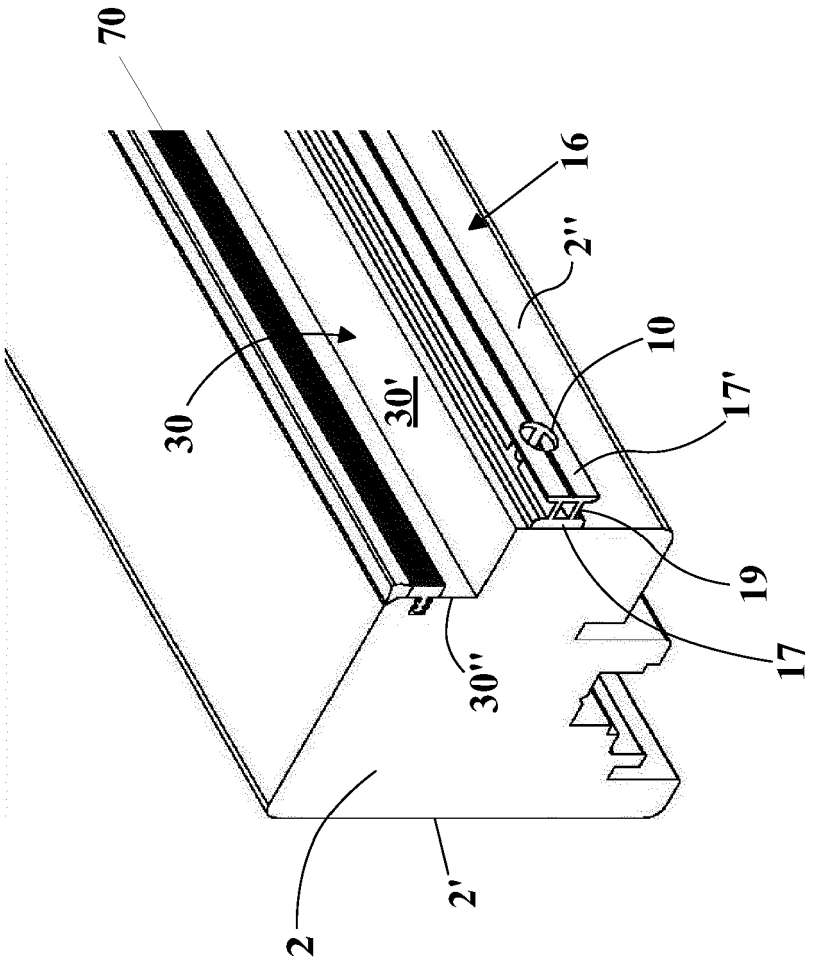


Fig. 3

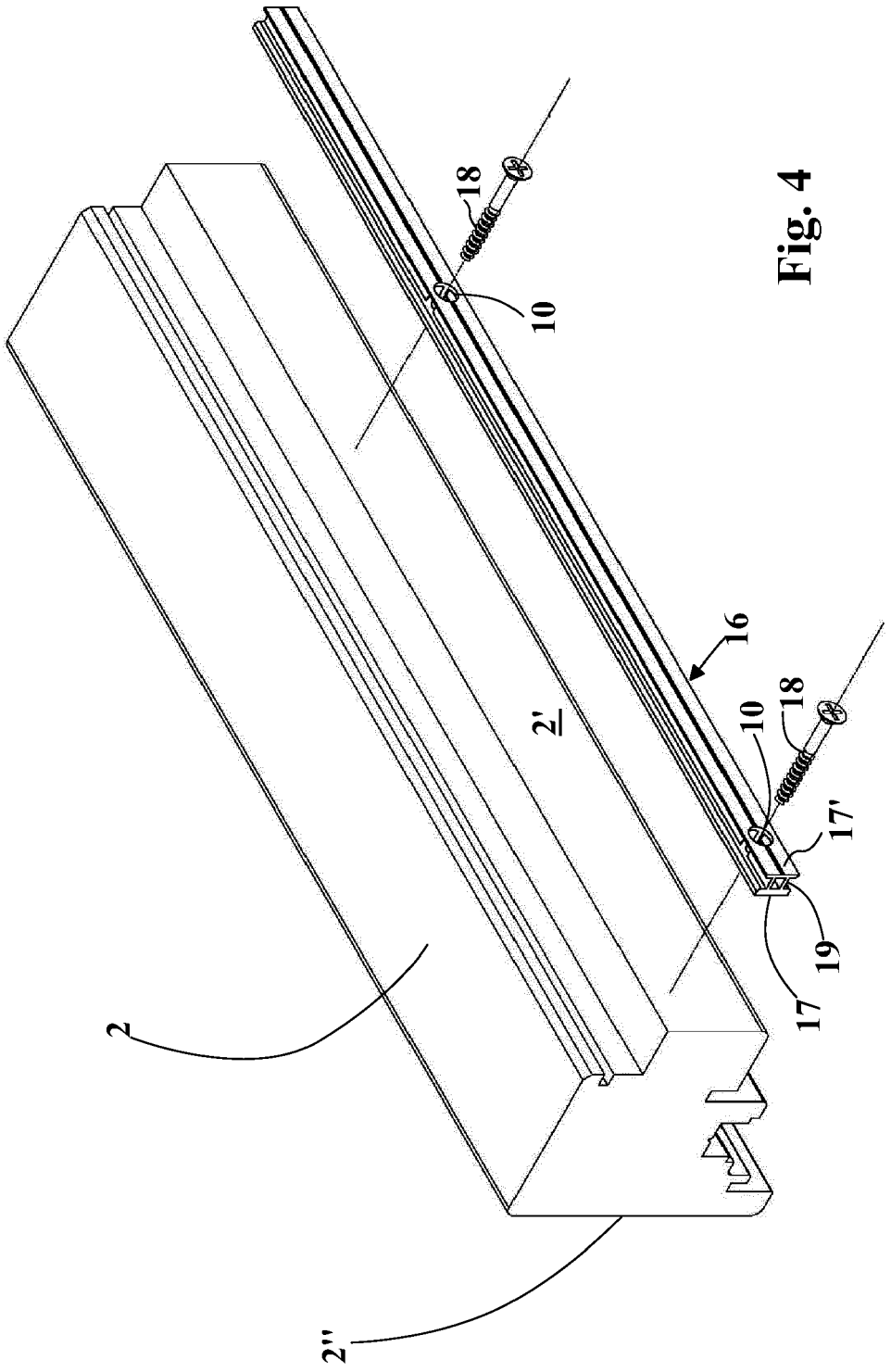


Fig. 4

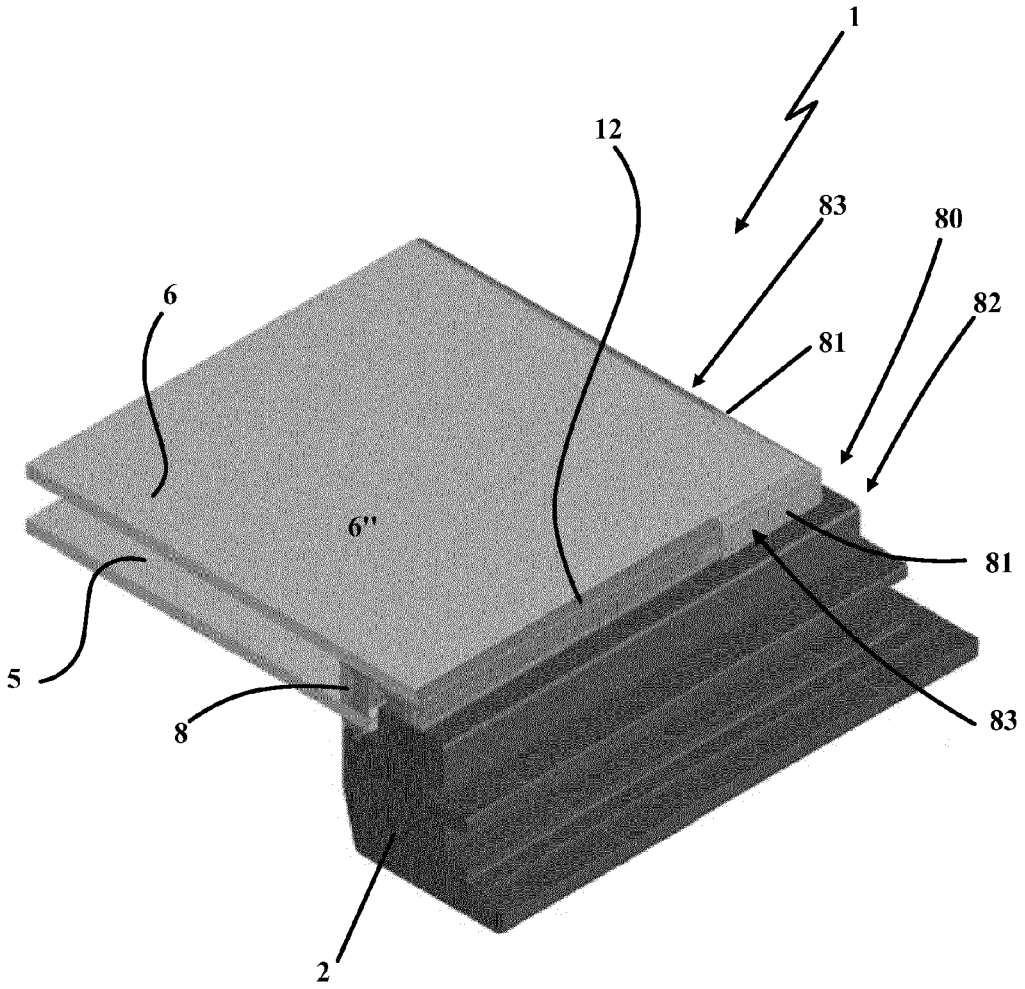


Fig. 5

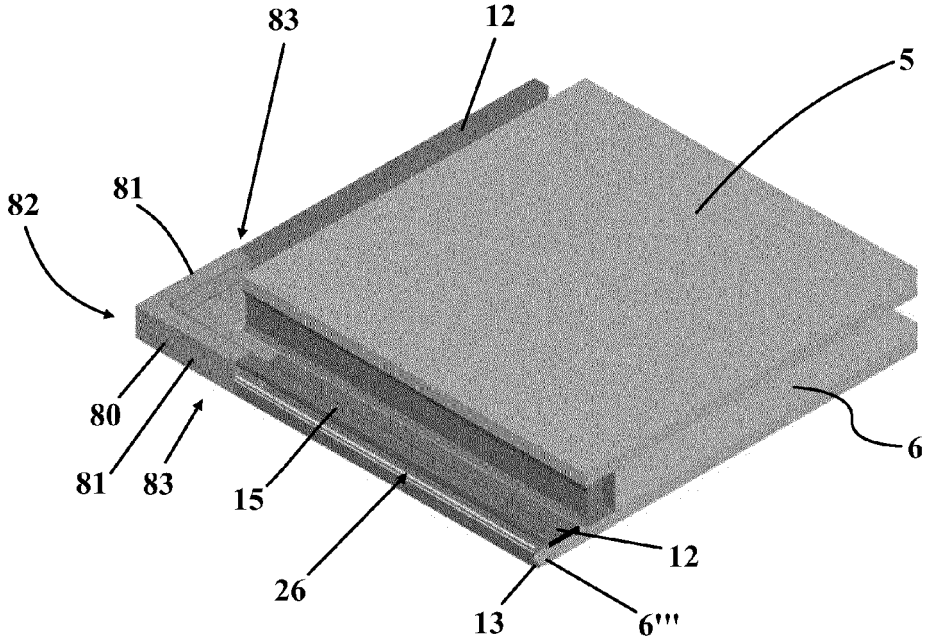
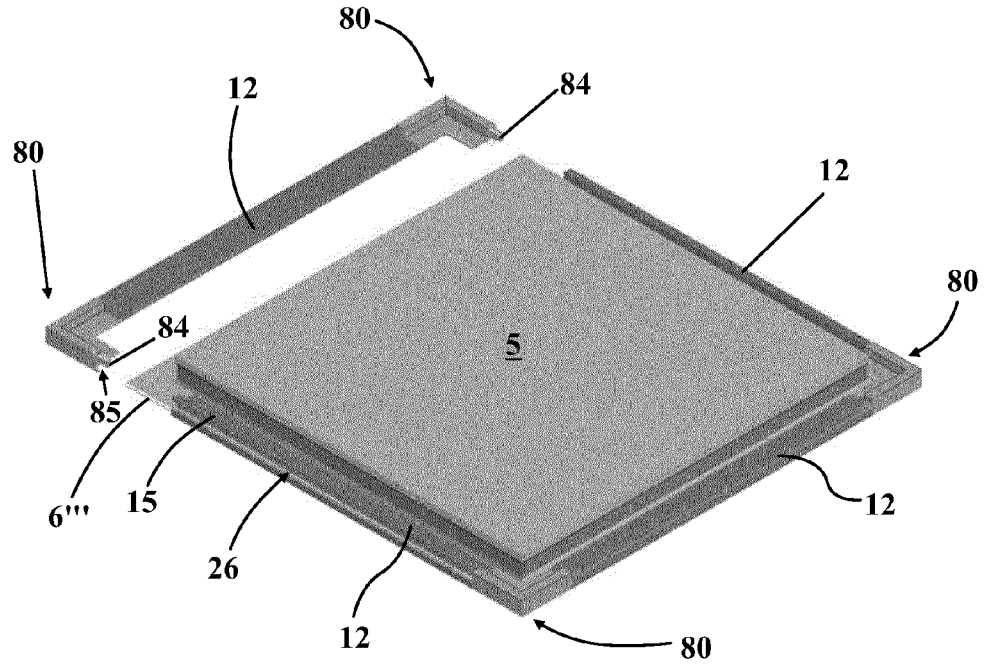

83
12
5
82
81
80
81
83
15
6
12
26
13
6'''

Fig. 6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84
80
12
80
84
5
85
6'''
15
26
12
12
80

Fig. 7

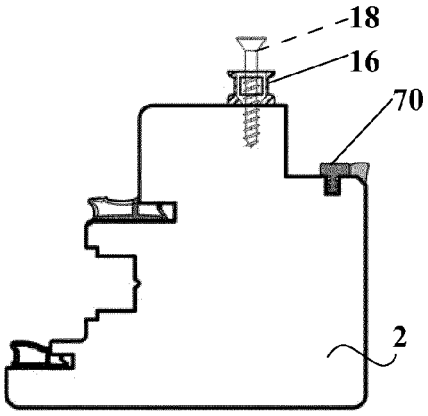

Fig. 8

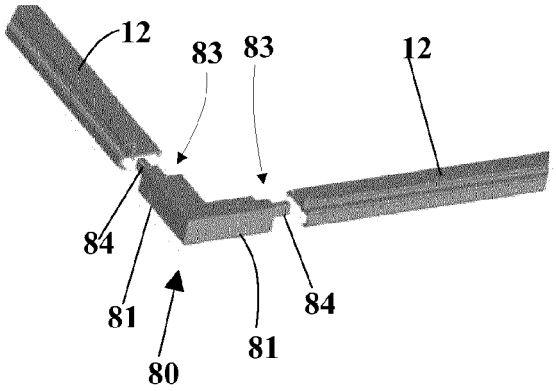

Fig. 9

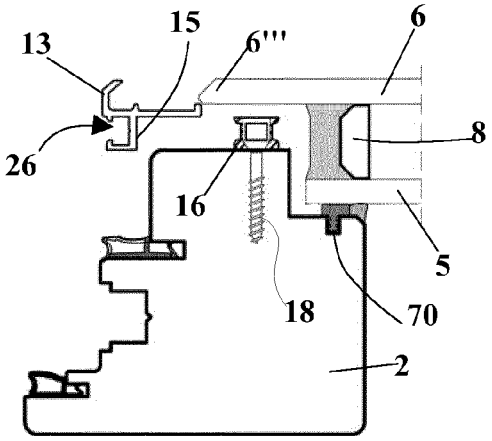

Fig. 10

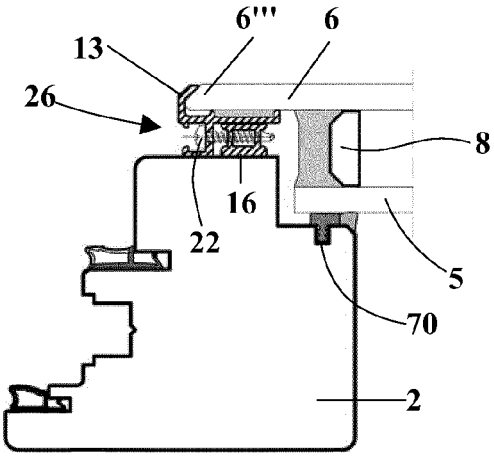

Fig. 11

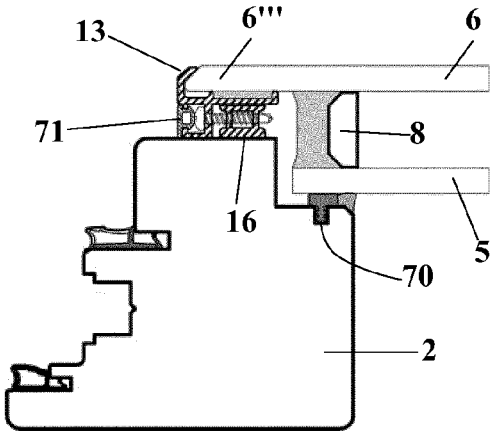

Fig. 12

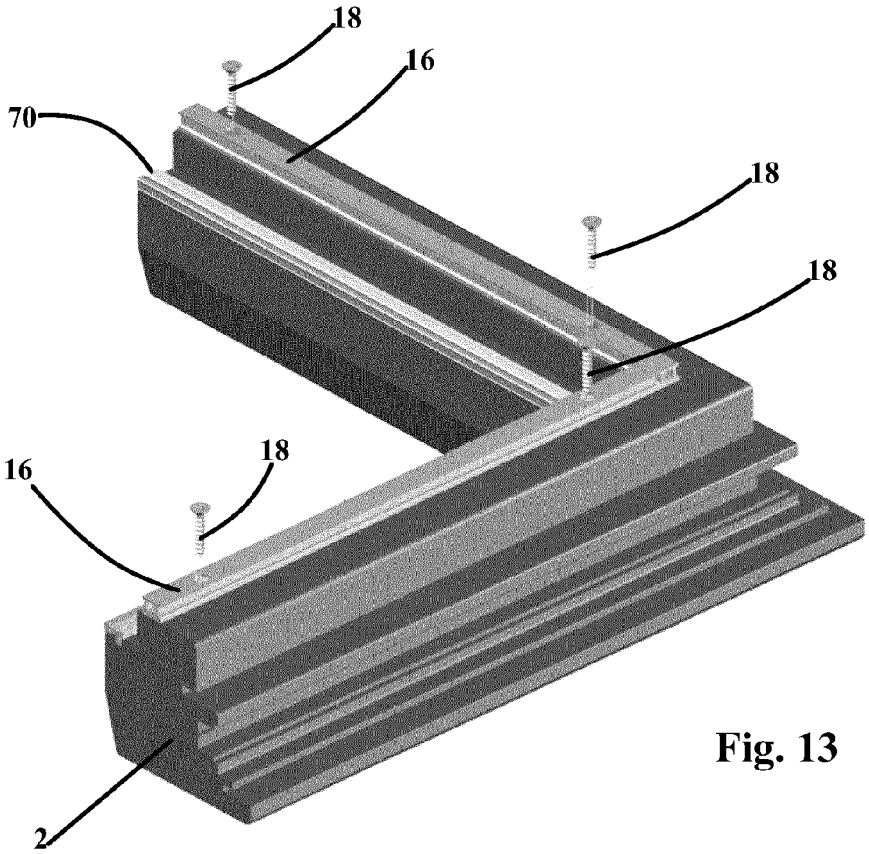

Fig. 13

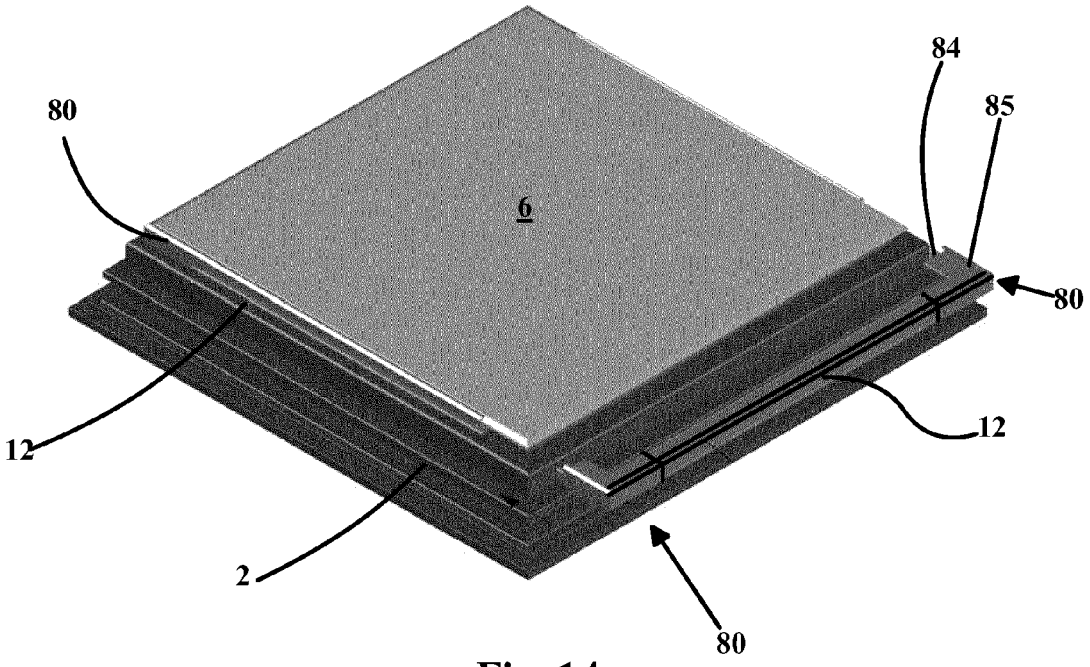

Fig. 14

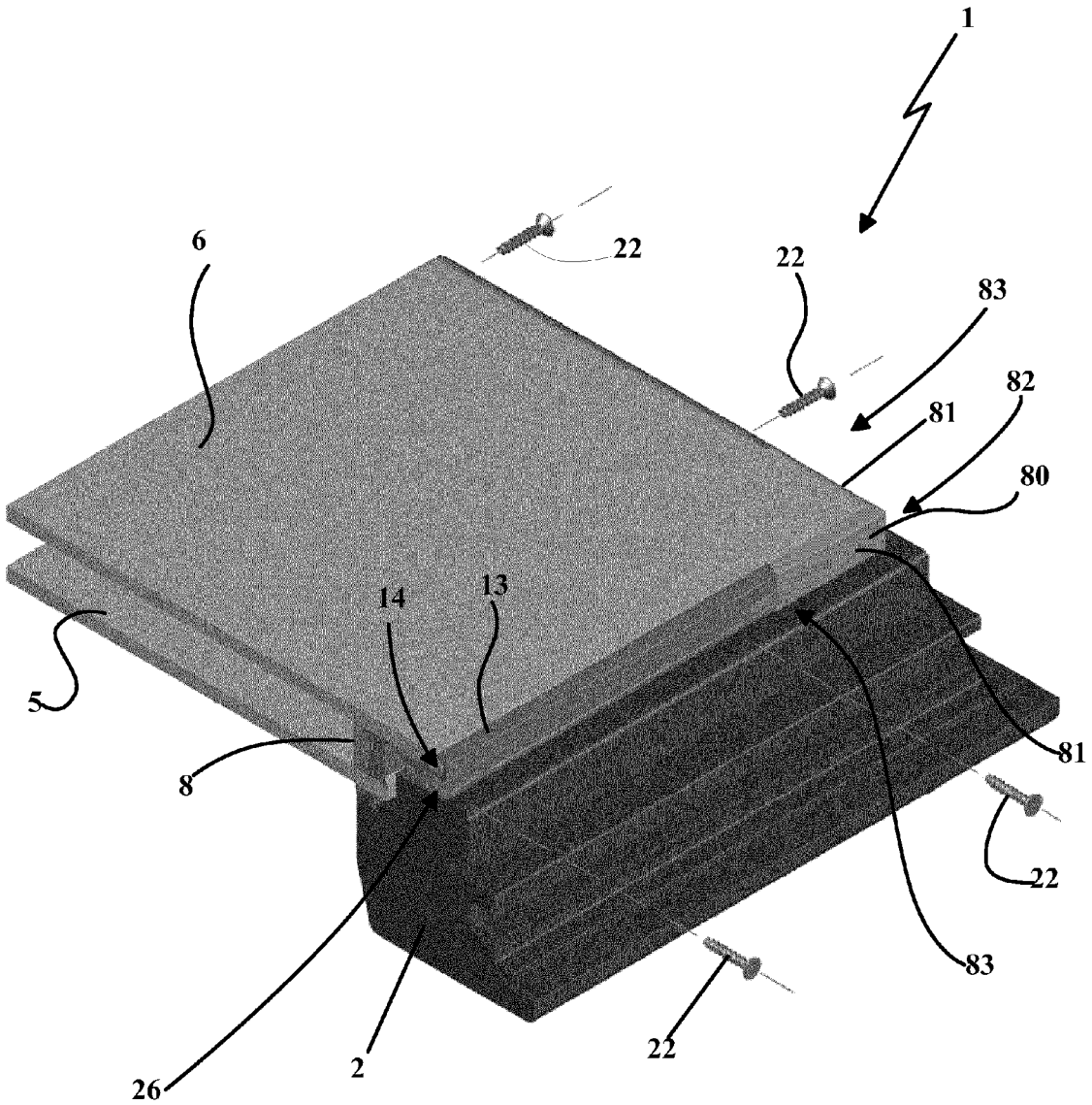

Fig. 15

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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 6224

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	DE 91 04 769 U1 (HOOGOVENS ALUMINIUM PROFILTECHNIK GMBH) 14 August 1991 (1991-08-14) * figure 3 * * page 6, line 1 - page 9, line 7 *	1-15	INV. E06B3/66 E06B3/58 E06B3/54 E06B3/30 E06B3/964
A	AT 3 076 U2 (FLECK ERWIN [AT]) 27 September 1999 (1999-09-27) * figure 5 * * page 2, line 1 - page 3, line 21 * * page 7, line 7 - page 10, line 11 * * page 10, line 28 - page 12, line 4 *	1-15	
A	DE 100 59 849 A1 (RAICO BAUTECHNIK GMBH [DE]) 31 May 2001 (2001-05-31) * figures 6,7,8 *	1	
A	US 4 357 744 A (MCKENZIE EVERETT R ET AL) 9 November 1982 (1982-11-09) * figure 2 * * abstract *	8-15	

TECHNICAL FIELDS SEARCHED (IPC)
E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	26 August 2013	Blancquaert, Katleen

CATEGORY OF CITED DOCUMENTS

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26-08-2013

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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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