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(54) WINDOW, DOOR OR SHUTTER FOR OUTDOOR AREAS, METHOD FOR THE MOUNTING THEREOF AND LOCKING ASSEMBLY FOR LOCKING A PANEL TO A LOAD-BEARING FRAME OF SAID WINDOW, DOOR OR SHUTTER

(57) Window/door/shutter for outdoor areas comprising a load-bearing frame (2) and a panel (3) housed in a perimeter seat (22) of the load-bearing frame (2) and fixed thereto by means of locking means (5). The latter comprise a plurality of locking elements (50) fixed along the extension of the load-bearing frame (2) and provided with a fixing portion (53) mechanically fixed to the load-bearing frame (2) by means of a fixing screw (54), and with a retention portion (55) placed as an extension of the fixing portion (53) and projecting above the external face (31) of the panel (3) in order to retain it constrained to the load-bearing frame (2). On the external surface (52) of each said locking element (50), a first coupling portion (56) and a guide groove (57) are provided. The aforesaid locking means (5) also comprise a cover profile (6) placed to cover the front external face (20) of the load-bearing frame (2) above the locking elements (50), and provided with a second coupling portion (60) mechanically engaged with the first coupling portion (56) of the locking elements (50), and with a connection portion (61) inserted in the guide grooves (57) of the locking elements (50).

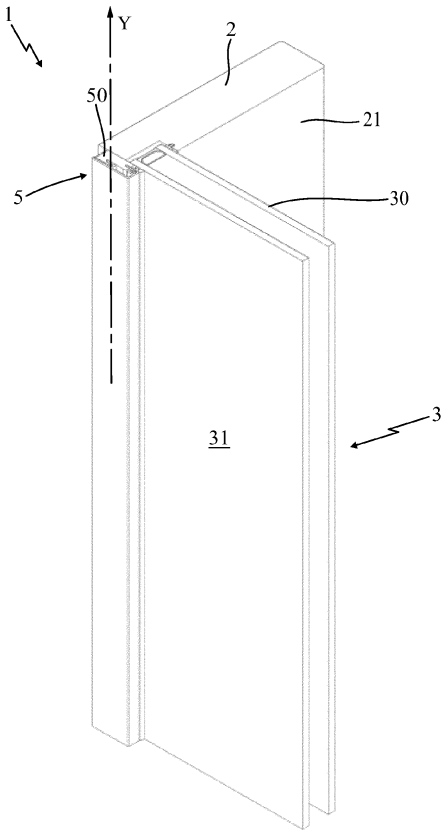

Fig. 1

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Description

Field of application

[0001] The present invention refers to a window/door/shutter for outdoor areas, to a method for mounting said window/door/shutter as well as to a locking assembly for locking a panel to the load-bearing frame of the window/door/shutter, according to the preamble of the corresponding independent claims.

[0002] The present window/door/shutter is generally inserted in the industrial field of production of windows/doors/shutters, in particular for glass facades, or facades provided with a succession of glass windows, usually fixed.

[0003] The window/door/shutter, object of the present invention, is therefore advantageously employable for closing an architectural opening made in a load-bearing structure of a building and is inserted as stated in the industrial field of production of windows/doors/shutters.

State of the art

[0004] Windows/doors/shutters have been known for some time, in particular advantageously employable for closing architectural openings made on load-bearing structures of buildings, for example constituted by a window or by a French window, provided with a load-bearing frame closed by a glass panel mechanically retained with the load-bearing frame by means of locking means.

[0005] According to the conventional technique closest to the present invention, the windows/doors/shutters have a fixed load-bearing frame rigidly anchored to the walls of a building which supports a glass panel.

[0006] The load-bearing frame carries out a double function, i.e. the function of fixing to the walls, usually for example by means of brackets inserted in the walls and fixed with screws to the load-bearing frame, and the function of facing the panel by means of suitable shaped parts thereof. For example, in the case of fixed wing, the frame has a portion usually shaped as a step in order to define a seat adapted to receive the fixed wing, for example obtained with only the glass panel.

[0007] In the case of a movable wing, also the fitting must be arranged on the frame in order to support the wing, i.e. for its movement for example with tilt-and-turn hinges, hanging hinges, top hung hinges, and the abutments must also be arranged for the closure bolts.

[0008] In addition, the load-bearing frame must resist the mechanical stresses transmitted by the panel and the thermal stresses and the moisture stresses transmitted by the external environment.

[0009] The aforesaid multiple functions, to which the load-bearing frame is subjected, require the latter to have a high mechanical strength for fixing to the walls and for the panel, as well as preferably have a coating in order to resist weathering agents.

[0010] A window/door/shutter is in particular known from the patent EP 3321464 for closing an architectural opening, which comprise a load-bearing frame in which an annular seat is obtained that is adapted to receive a panel, in particular made of glass, fixable by means of locking means. The latter comprise a plurality of locking elements fixable along the load-bearing frame. Also provided is a covering frame, constituted by a closed loop frame that is snap-engageable on the locking elements. For such purpose, the covering frame has, at its interior, a cavity delimited by two edges which are engaged in two corresponding elastic wings of the locking elements. More in detail, each wing of the locking elements has a concave sliding surface, on which the respective edge of the closed-loop-shaped covering frame slides.

[0011] In operation, the closed loop covering frame is mounted on the load-bearing frame by means of an orthogonal thrust action exerted on the same covering frame from the outside towards the interior and against the load-bearing frame, so as to snap engage the covering frame to the locking elements; in such operation, the edges of the covering frame are connected to the elastic wings of the locking elements.

[0012] A further example of window/door/shutter with locking elements analogous to those of the above-described type is described in the patent DE 102017101003.

[0013] The windows/doors/shutters of known type described in brief up to now have in practice demonstrated that they do not lack drawbacks.

[0014] The main drawback of such known windows/doors/shutters lies in the fact that the locking means, configured as described above, limit the possibilities of application of the windows/doors/shutters to the cases in which the size of the building wall does not interfere with the covering frame during the operations of its mounting.

[0015] This circumstance requires having to leave the entire covering frame visible, which might not be entirely appreciable from an architectural standpoint in accordance with specific design requirements.

Presentation of the invention

[0016] In this situation, the problem underlying the present invention is therefore that of overcoming the drawbacks manifested by the solutions of known type, by providing a window/door/shutter for outdoor areas, a method for the mounting thereof and a locking assembly, which allow a panel, in particular made of glass, of the window/door/shutter to be easily mounted on a load-bearing frame associated with the structure of the building.

[0017] Such object is advantageously obtained by means of a window/door/shutter and a locking assembly having the characteristics reported in the characterizing part respectively of claims 1 and 11, which, in particular, provide for: multiple locking elements each provided with at least one first coupling portion projecting as a bracket

parallel to the lying plane of the window/door/shutter towards the panel of the latter, and with a guide groove extended parallel to the lying plane of the window/door/shutter towards the panel of the latter; and at least one cover profile provided with a second coupling portion projecting as a bracket parallel to the lying plane of the window/door/shutter in the direction opposite the panel of the latter, and with a connection portion extended parallel to the lying plane of the window/door/shutter in the direction opposite the panel of the latter. Such characteristics allow, in particular, mounting the cover profile with movement parallel to the lying plane of the window/door/shutter.

[0018] A further object of the present invention is to provide a window/door/shutter for outdoor areas, provided with means for locking a cover profile thereof to the load-bearing frame with the cover profile having limited size.

[0019] A further object of the present invention is to provide a window/door/shutter for outdoor areas, as well as a locking assembly for locking the glass panel of the window/door/shutter to the load-bearing frame which allow a quick and safe substitution of the glass panel.

[0020] A further object of the present invention is to provide a window/door/shutter for outdoor areas which is provided with means for locking the panel to the load-bearing frame that are extremely simple and not costly to attain.

[0021] A further object of the present invention is to provide a window/door/shutter for outdoor areas which allow an operator to carry out the maintenance thereof in a quick, easy and totally safe manner.

[0022] A further object of the present invention is to provide a window/door/shutter for outdoor areas which is aesthetically appreciable, minimizing the size of the cover profile.

Brief description of the drawings

[0023] The technical characteristics of the present invention, according to the aforesaid objects, can be clearly seen in the contents of the below-reported claims and the advantages thereof will be more evident in the following detailed description, made with reference to the enclosed drawings, which represent several merely exemplifying and non-limiting embodiments of the invention, in which:

- figure 1 shows a perspective view of a window/door/shutter for outdoor areas, object of the present invention, illustrated only at a portion thereof at an upright;
- figure 2 shows the window/door/shutter for outdoor areas of figure 1 in a cross section view at the aforesaid upright;
- figure 3 shows a perspective view of a detail of the window/door/shutter for outdoor areas relative to a locking element of provided locking means;
- figure 4 shows the window/door/shutter for outdoor areas of figure 1 in a first mounting step, in which the locking elements of figure 3 are fixed with a screw to the load-bearing frame;
- figure 5 shows the window/door/shutter of figure 4 in a mounting step with the mounting elements rotated in order to define their position on the load-bearing frame;
- figure 6 shows the window/door/shutter of figure 4 in a second mounting step, in which the panel is inserted in a seat of the load-bearing frame;
- figure 7 shows the window/door/shutter for outdoor areas of figure 6 with the locking elements which are rotated by 90 degrees for the retention of the panel in the seat of the load-bearing frame;
- figure 8 shows the window/door/shutter for outdoor areas of figure 6 in a perspective view with the panel inserted in the seat and the locking elements rotated;
- figure 9 shows the window/door/shutter for outdoor areas of figure 6 with the cover profile which is engaged to the locking elements by means of advancement substantially coplanar with the lying plane of the window/door/shutter;
- figure 10 shows the window/door/shutter for outdoor areas of figure 9 in a cross section view at the aforesaid upright with the cover profile in a step of engaging with the locking elements;
- figure 11 shows a perspective view of the window/door/shutter for outdoor areas with the panel mounted on the load-bearing frame at the end of the mounting;
- figure 12 shows the window/door/shutter for outdoor areas, object of the present invention, at the start of an operation of dismounting with a wrench tool engaged with a locking element;
- figure 13 shows an enlarged detail of figure 12;
- figure 14 shows a cross section view of the window/door/shutter for outdoor areas of figure 12 with the wrench tool engaged with the locking element visible;
- figure 15 shows the window/door/shutter for outdoor areas, object of the present invention, following the rotation of the locking element by the wrench tool;
- figure 16 shows the window/door/shutter for outdoor areas, object of the present invention, with the cover profile partially hidden in a wall niche.

Detailed description of a preferred embodiment

[0024] With reference to the set of drawings, reference number 1 overall indicates the window/door/shutter for outdoor areas, object of the present invention.

[0025] The window/door/shutter for outdoor areas 1, object of the present invention, is operatively employable for adjustably closing an architectural opening made in a load-bearing structure of a building, for example in a building wall structure. Such opening can for example be a window, a door or a French window or other similar

windows/doors/shutters. Advantageously, the window/door/shutter for outdoor areas is suitable for attaining visible facades of buildings.

[0026] Such opening will preferably have quadrangular form, and more in detail rectangular or square form.

[0027] The window/door/shutter for outdoor areas 1, object of the present invention, can be advantageously employed for making single windows or continuous glass facades and associated with similar windows of the type with fixed wing, of the type with movable wing or even of the type with slidable wing.

[0028] The window/door/shutter for outdoor areas 1, object of the present invention, comprises a fixed load-bearing frame 2 intended to be firmly fixed to the support structure of the building, for example by means of suitable shaped brackets inserted in the walls (or at a frame of the building), for making insulated windows as well as flanking windows within a context of continuous glass facades.

[0029] More in detail, the load-bearing frame 2 can be composed, in an entirely conventional manner, by four parts, two uprights and two crosspieces, susceptible of being fixed together at the respective ends in order to form four vertices of the frame, through fixing mean of per se conventional type such as brackets, screws, tenons, pins etc., not described in detail since they are per se known to the man skilled in the art.

[0030] The uprights and the crosspieces of the load-bearing frame 2 are advantageously made of wood and preferably have section with substantially quadrangular shape; also intended as included with such expression are geometries that differ from the perfectly square or rectangular geometric shape due to the presence for example of fixing grooves of shaped brackets for fixing to the load-bearing structure of the building constituted by its walls or by a frame, e.g. of steel beams.

[0031] The load-bearing frame 2 has an extension in a main longitudinal direction and therefore advantageously assumes, with its multiple parts assembled, the form of a rigid continuous frame that is advantageously quadrangular and preferably rectangular, and is dedicated to the static mechanical strength for supporting the window/door/shutter 1 and simultaneously it is very thin (narrow) since it is substantially formed by flat wood boards that define the above-indicated closed quadrangular perimeter extension.

[0032] The present window/door/shutter 1 also comprises a panel 3, in particular made of glass, fixed to the load-bearing frame 2 as better specified hereinbelow.

[0033] The glass panel 3 is advantageously has double-glazing form with at least two opposite glass panels separated by an empty/vacuum portion so as to provide good thermal insulation.

[0034] The window/door/shutter for outdoor areas 1, including its load-bearing frame 2 part and panel 3 part, separates an internal setting of a building from an external environment.

[0035] With respect to such reference, the load-bearing frame 2 has a front external face 20 parallel to the lying plane P of the window/door/shutter 1 and directed towards the external environment and a lateral internal face 21 directed towards the center of the window/door/shutter, i.e. towards the panel 3 and in a direction opposite the building wall.

[0036] The load-bearing frame 2 is then provided with a seat 22, advantageously perimetral, made as a step on the lateral internal face 21 up to the convergence of the front external face 20 and the lateral internal face 21.

[0037] In turn, the glass panel 3 is provided with an internal face 30 directed towards the rooms of the building, an external face 31 directed towards the external environment, and a peripheral edge 32, which is engaged within the perimeter seat 22 of the load-bearing frame 2, defines the thickness of the glass panel 3 and connects together the internal face 30 and the external face 31 of the same panel 3.

[0038] The window/door/shutter 1 also comprises, in a per se known manner, locking means 5, which are mechanically fixed to the load-bearing frame 2 and act against the glass panel 3 in order to retain it in the seat 22.

[0039] According to the idea underlying the present invention, such locking means 5 comprise a plurality of locking elements 50, fixed along the main extension of the load-bearing frame 2, for example at a pre-established distance from each other. By way of example, in figure 4, 3 locking elements 50 are provided for along the load-bearing frame of an upright.

[0040] According to the invention, each locking element 50 is provided with an internal abutment surface 51 and with an external surface 52, which is for example obtained with a front external surface 52' parallel to the abutment surface 51 and with a lateral external surface 52", placed to connect between the abutment surface 51 and the front external surface 52' and in particular orthogonal thereto.

[0041] Each locking element 50 is also provided with a fixing portion 53, mechanically fixed to the load-bearing frame 2 by means of at least one fixing screw 54 and with a retention portion 55, placed as an extension of the fixing portion 53 and projecting above the external face 31 of the panel 3 in order to retain it mechanically constrained to the load-bearing frame 2.

[0042] Advantageously, the fixing screw 54 is inserted in a hole made on the locking element 50 in a non-centered position with respect to its median axis parallel to the extension of the load-bearing frame 2 and moved in the direction opposite the panel 3 so as to define, with respect to the screw 54, a wider section directed towards the panel 3 itself.

[0043] Advantageously, the fixing screw 54 has its longitudinal axis arranged orthogonal to the lying plane P of the window/door/shutter 1 and, in particular, is constrained to the corresponding locking element 50 in a manner such that the latter can be rotated around the longitudinal axis of the fixing screw 54 itself (as described hereinbelow). Suitably, each locking element 50 is con-

strained to the load-bearing frame 2 by means of a single corresponding fixing screw 54.

[0044] The internal contact surface 51 of each locking element 50 is in abutment against the front external face 20 of the load-bearing frame 2 and against the external face 31 of the panel 3.

[0045] In accordance with the present invention, on the external surface 52 of each locking element 50, at least one first coupling portion 56 and at least one guide groove 57 are provided. More in detail, the first coupling portion 56 is provided on the front external surface 52' parallel to the abutment surface 51, while the guide groove 57 is made on the lateral external surface 52" at the internal side directed towards the panel 3.

[0046] The locking means 5 according to the invention also comprise at least one cover profile 6, which has a main extension along a longitudinal direction Y. Multiple cover profiles 6 are advantageously provided for, e.g. two uprights and two crosspieces, arranged along the perimeter of the window/door/shutter to cover the front external face 20 of the load-bearing frame 2 (usually with rectangular frame form) and to be arranged on the external face 52 of the locking elements 50.

[0047] The locking means 5 can also comprise, in a per se known manner, at least one sealing layer 500 inserted in the seat 22 of the load-bearing frame 2 in order to fix the peripheral edge 32 of the panel 3 to the load-bearing frame 2 itself.

[0048] More in detail, each cover profile 6 is provided with at least one second coupling portion 60, which can be mechanically engaged to the first coupling portion 56 of the locking elements 50 by means of elastic deformation of at least one of the aforesaid two coupling portions 56, 60.

[0049] In addition, the cover profile 6 is also provided with at least one connection portion 61 susceptible of being inserted in the guide grooves 57 of the locking elements 50.

[0050] Preferably the cover profile 6 is flush with the lateral surface 52" of the locking element 5 on the side opposite that of the panel 3.

[0051] Advantageously, the first coupling portion 56 of each locking element 50 is in the form of a tab projecting as a bracket parallel to the lying plane P of the window/door/shutter and directed towards the interior of the window/door/shutter 1 itself, i.e. towards the panel 3. Preferably, each locking element 50 comprises two tabs 56 which are projecting as a bracket parallel to each other and spaced from an opening 7, in particular U-shaped, for the access of the fixing screw 54.

[0052] The latter is susceptible of traversing the opening 7 during the mounting of the locking elements 50 on the load-bearing frame 2, as indicated in figure 4.

[0053] In turn, the second coupling portion 60 of the cover profile 6 is advantageously in the form of a first shaped rib which is extended longitudinally along the main extension of the cover profile 6 and is projecting as a bracket parallel to the lying plane P of the window/door/shutter 1 towards the outside of the window/door/shutter 1 itself.

[0054] Preferably, the aforesaid first coupling portion 56 and second coupling portion 60 have two shaped portions, in particular at the free ends thereof, e.g. with hook form, engageable with each other with shape engagement by means of elastic deformation of at least one of these. Advantageously, the first coupling portion 56 of the locking element 50 will be deformed since the latter is made of plastic material and integral in its different abovementioned portions.

[0055] The guide groove 57 is made on the lateral external surface 52" of the locking element 50 at the internal side directed towards the panel 3 and is extended preferably parallel to the lying plane P of the window/door/shutter 1 starting from an access mouth directed towards the panel 3 of the window/door/shutter 1 itself.

[0056] The connection portion 61 of the cover profile 6 is in the form of a second rib which is extended parallel to the lying plane P of the window/door/shutter 1 in the direction opposite the panel 3 of the window/door/shutter 1 itself.

[0057] The internal abutment surface 51 of the retention portion 55 of each locking element 50 rests on the external face 31 of the panel 3 by means of a seal 8 inserted in a longitudinal groove 62 made at the internal edge towards the panel 3 of the cover profile 6.

[0058] Therefore, each cover profile 6 also projects above the external face 31 of the panel 3, contributing to its retention in the seat 22 of the load-bearing frame 2.

[0059] Each cover profile 6 is advantageously constituted by a metal section, e.g. made of aluminum, which is preferably obtained via extrusion with its above-indicated ribs made in a single body. The different cover profiles 6 employed for covering the annular frame of the load-bearing frame 2 are separately mounted on the locking elements 50 to preferably form two uprights and two crosspieces.

[0060] Also forming the object of the present invention is a locking assembly 100 for locking a panel 3 to a load-bearing frame 2 of a window/door/shutter 1.

[0061] Such assembly 100 is intended to be mounted on a window/door/shutter 1 of the above-described type, regarding which therefore the same reference numbers will be maintained hereinbelow in order to facilitate the description. Therefore, the window/door/shutter 1 comprises the load-bearing frame 2 having the above-considered front external face 20, parallel to the lying plane P of the window/door/shutter 1, lateral internal face 21, directed towards the interior of the window/door/shutter 1 and the perimeter seat 22 made as a step at the convergence of the front external face 20 and the lateral internal face 21. The window/door/shutter also comprises the panel 3 provided with the internal face 30, with the external face 31 and with the peripheral edge, which connects the internal 30 and external 31 faces and is engaged within the perimeter seat 22 of the load-bearing frame 2.

[0062] The assembly 100 according to the present invention then comprises a plurality of locking elements 50, of the above-described type, i.e. fixable along the load-bearing frame 2 and each provided with the internal abutment surface 51, with the external surface 52, with the fixing portion 53 mechanically fixable to the load-bearing frame 2 by means of at least the fixing screw 54, as well as with the retention portion 55 placed as an extension of the fixing portion 53 and susceptible of projecting above the external face 31 of the panel 3 in order to retain the latter constrained to the load-bearing frame 2.

[0063] The internal abutment surface 51 of each locking element 50 is intended to abut against the front external face 20 of the load-bearing frame 2 and against the external face 31 of the panel 3. On the external surface 52 of each locking element 50, at least the first coupling portion 56 and the guide groove 57 are provided.

[0064] The assembly 100 also comprises at least one cover profile 6 with longitudinal main extension, susceptible of being arranged to cover the front external face 20 of the load-bearing frame 2 above the locking elements 50, and is provided with the second coupling portion 60 mechanically engageable with the first coupling portion 56 of the locking elements 50 by means of elastic deformation of at least one of said first and second coupling portions 56, 60.

[0065] The cover profile 6 is also provided with the connection portion 61 susceptible of being inserted in the guide grooves 57 of the locking elements 50.

[0066] The locking elements 50 and the cover profile 6 of the assembly 100 described above can also be advantageously provided with the particular characteristics described above with reference to the window/door/shutter 1.

[0067] Also forming the object of the present invention is a method for mounting a window/door/shutter 1 intended to be mounted in an architectural opening of a building in order to separate an internal setting from the external environment, in accordance with the above-reported description of the window/door/shutter, regarding which the same reference numbers will be maintained hereinbelow for the sake of description simplicity.

[0068] The method, object of the present invention, then comprises a step of arranging a load-bearing frame 2, for example in the form of a closed loop frame composed of two uprights and of two crosspieces firmly fixed to the structure of the building, e.g. by means of brackets.

[0069] A step is then provided for fixing the locking elements 50 by means of fixing screws 54 on the front external face 20 of the load-bearing frame 2 along its main longitudinal extension, advantageously spaced from each other and with a number thereof designed for supporting the panel 3.

[0070] Subsequently, it is possible to insert the panel 3, in particular made of glass, within the provided perimeter seat 22 of the load-bearing frame 2.

[0071] At this point, the locking elements 50 are rotated by pivoting on the screw 54 and advantageously by employing a wrench tool 80 provided with a head that is shaped with respect to the locking element 50 so to be able to rotate it. Due to such rotation, advantageously by 90 degrees, the retention portion 55 of the locking elements 50 is brought into abutment above the external face 31 of the panel 3.

[0072] The insertion of the cover profiles 6, i.e. their mounting, is actuated with movement parallel to the lying plane P of the window/door/shutter 1 so that the connection portion 61 thereof is inserted in the guide grooves 57 of the locking elements 50 and the second coupling portion 60 thereof is mechanically engaged with the first coupling portion 56 of the locking elements 50 by means of elastic deformation of one of the aforesaid first and second coupling portions 56, 60.

[0073] It would in fact not be possible to mount the cover profile 6 in the form of a continuous annular frame given that the insertion movement of an upright or of a crosspiece would be opposite that of the opposite upright and crosspiece. Hence, the cover profiles 6 are mounted separately to form the uprights and the crosspieces for covering the frame of the load-bearing frame 2.

[0074] The mounting of the cover profiles 6 by means of a movement thereof parallel to the lying plane P of the window/door/shutter allows inserting the same cover profiles 6 in niches 90 made in the building wall or more generally made in the load-bearing structure of the building. The cover profiles 6 are in this manner covered by the building wall for an internal portion thereof, since the building wall can be extended up to the internal edge 59 of the reception seat 22 for the panel 3 to cover their external portion, as indicated in figure 16. Due to the present invention, the visible surface of the cover profiles 6 may therefore be limited, offering greater versatility in the architectural design of the facades.

[0075] The above-described mounting method can advantageously provide for a step of substituting the panel 3, for example in case of breakage, with another new panel by means of set forth hereinbelow.

[0076] Initially, a step is provided for rotating the locking elements 5, advantageously by means of the wrench tool 80 which is inserted after having removed the seal 8 below the relative cover profile 8 on at least three sides around the locking element, for example with quadrangular plan form (and hence with a wrench tool with corresponding form).

[0077] Such rotation ends when the retention portion 55 of the locking elements 50 no longer projects above the external face 31 of the panel 3 and is superimposed on the front external face 20 of the load-bearing frame 2 so as to completely free the panel 3.

[0078] Then, the separation of each cover profile 6 from the locking elements 50 takes place by means of the exit of their connection portion 61 from the guide grooves 57 of the locking elements 50 and by means of disengagement of their second coupling portion 60 from the first coupling portion 56 of the locking elements 50,

in the latter case due to an elastic deformation of at least one from between the first and the second coupling portions 56, 60.

[0079] According to the invention, the step of separation of each cover profile 6 from the locking elements 50 is determined by the same rotation of the locking elements 50 due to the interference of the profile of their guide grooves 57 against the edge of the connection portion 61 of the cover profile 6.

[0080] Advantageously, the guide grooves 57 are constituted by a transverse notch which is extended from the two internal and external sides of the locking elements 50 (i.e. respectively directed towards the panel and opposite the panel) parallel to the front edge of the connection portion 61 of the cover profile 6. Therefore, the rotation of the locking elements 50 determines the rotation of the relative guide grooves 57 which, by rotating, bring their bottom to project more towards the panel 3 so as to force the disengagement of the second coupling portion 60 of the corresponding cover profile 6 from the first coupling portion of the locking elements 50 as well as the exit of the connection portion 61 of the cover profile 6 from the same guide grooves 57 of the locking elements 50.

[0081] Hence, with the single operation of rotation of the locking elements 50, one is able to free the panel 3 both from the locking elements 50 and from the corresponding cover profile 6.

[0082] Advantageously, the locking elements 50 are provided with a template 58, projecting from their internal abutment surface 51 and susceptible of defining the correct distance at which to position the locking elements 50 along the load-bearing frame 2. In other words, the template 58 allows easily aligning the locking elements 50. The template 58 is in particular obtained in the form of an elastic tab and is susceptible of being bent on the internal abutment surface 51, remaining flush therewith when the locking element 50 is arranged with its retention portion 55 contained in the load-bearing frame 2.

[0083] Initially, therefore, the step of fixing the locking elements 50 by means of the fixing screws 54 is obtained by arranging the locking elements 50 with their retention portions 55 projecting beyond the internal edge 59 of the convergence of the front external face 20 and of the lateral internal face 21 of the load-bearing frame 2, i.e. towards the area which will then be occupied by the panel 3 in order to allow the template 58 to project and rest on such internal edge 59 of the frame 2.

[0084] After having defined the position of the locking elements 50 due to the template 58, and after having fixed the locking elements with the template 58 in abutment against the internal edge 59, a rotation of the locking elements 50 is provided with the wrench tool 80 in order to bring the retention portions 55 to return on the front external face 20 of the load-bearing frame 2, so as to be able to insert the glass panel 3 in the seat 22 of the load-bearing frame 2 itself.

[0085] The window/door/shutter thus conceived therefore attains the pre-established objects.

Claims

1. Window/door/shutter (1) for outdoor areas, which is intended to be mounted in an architectural opening of a building in order to separate an internal setting from the external environment, which comprises:

- a load-bearing frame (2) having:
  - a front external face (20), parallel to the lying plane (P) of said window/door/shutter (1),
  - a lateral internal face (21), directed towards the interior of the window/door/shutter (1);
  - a perimeter seat (22) made as a step on the lateral internal face (21) up to the convergence of the front external face (20) and of the lateral internal face (21);
- a panel (3) provided with an internal face (30), an external face (31) and a peripheral edge (32), which connects said internal face (30) and said external face (31) and is engaged within the perimeter seat (22) of said load-bearing frame (2);
- locking means (5) fixable to said load-bearing frame (2) and acting on said panel (3) in order to retain it in said seat (22);

wherein said locking means (5) comprise a plurality of locking elements (50) fixed along said load-bearing frame (2), each provided:

- with an internal abutment surface (51) and with an external surface (52);
- with a fixing portion (53) mechanically fixed to the load-bearing frame (2) by means of at least one fixing screw (54);
- with a retention portion (55) placed as an extension of said fixing portion (53) and projecting above the external face (31) of said panel (3) in order to retain the latter constrained to the load-bearing frame (2); the internal abutment surface (51) of each said locking element (50) being in abutment against the front external face (20) of said load-bearing frame (2) and against the external face (31) of said panel (3); on the external surface (52) of each said locking element (50), at least one first coupling portion (56) and at least one guide groove (57) being provided;

- said locking means (5) also comprising at least one cover profile (6), which has a longitudinal main extension, placed to cover the front exter-

nal face (20) of said load-bearing frame (2) above said locking elements (50), and is provided with at least one second coupling portion (60) mechanically engaged with the first coupling portion (56) of said locking elements (50) by means of elastic deformation of at least one of said first and second coupling portion (56, 60), and with at least one connection portion (61) inserted in the guide grooves (57) of said locking elements (50);

said window/door/shutter (1) being **characterized in that**:

- said at least one first coupling portion (56) of each said locking element (50) is projecting as a bracket parallel to the lying plane (P) of said window/door/shutter (1) towards the panel (3) of said window/door/shutter (1);
- the second coupling portion (60) of said at least one cover profile (6) is projecting as a bracket parallel to the lying plane (P) of said window/door/shutter (1) in the direction opposite the panel (3) of said window/door/shutter (1);
- the guide groove (57) of each said locking element (50) is extended parallel to the lying plane (P) of said window/door/shutter (1) towards the panel (3) of said window/door/shutter (1);
- the connection portion (61) of said cover profile (6) is extended parallel to the lying plane (P) of said window/door/shutter (1) in the direction opposite the panel (3) of said window/door/shutter (1).

2. Window/door/shutter (1) according to claim 1, **characterized in that** said at least one first coupling portion (56) of each said locking element (50) is in the form of a tab projecting with bracket parallel to the lying plane (P) of said window/door/shutter (1) towards the panel (3) of said window/door/shutter (1) itself.

3. Window/door/shutter (1) according to claim 2, **characterized in that** each said locking element (50) comprises two said projecting tabs with bracket parallel to each other and spaced from an opening (7) for the access of said fixing screw (54).

4. Window/door/shutter (1) according to claim 1, **characterized in that** the second coupling portion (60) of said at least one cover profile (6) is in the form of a first shaped rib which is longitudinally extended along the main extension of said cover profile (6) and is projecting with bracket parallel to the lying plane (P) of said window/door/shutter (1) in a direction opposite the panel (3) of said window/door/shutter (1) itself.

5. Window/door/shutter (1) according to claim 1, **characterized in that** said first coupling portion and said second coupling portion (56, 60) have two shaped portions mechanically engaged with each other with shape engagement by means of elastic deformation of at least one of said coupling portions (56, 60).

6. Window/door/shutter (1) according to claim 1, **characterized in that** said fixing screw (54) has a longitudinal axis orthogonal to the lying plane (P) of said window/door/shutter (1).

7. Window/door/shutter (1) according to claim 1, **characterized in that** the connection portion (61) of said cover profile (6) is in the form of a second rib which is extended perimetrically with respect to the lying plane (P) of said window/door/shutter (1) in a direction opposite the panel (3) of said window/door/shutter (1) itself.

8. Window/door/shutter (1) according to claim 1, **characterized in that** the internal abutment surface (51) of the retention portion (55) of each said locking element (50) rests on the external face (31) of said panel (3) by means of a seal (8).

9. Method for mounting a window/door/shutter intended to be mounted in an architectural opening of a building in order to separate an internal setting from the external environment, in accordance with any one of the claims 1 to 8, comprising the steps of:

- fixing said locking elements (50) by means of said fixing screws (54) on the front external face (20) of said load-bearing frame (2) along its main longitudinal extension;
- inserting said panel (3) within said seat (22);
- rotating said locking elements (50) by pivoting on said fixing screw (54), bringing said retention portion (55) thereof in abutment against the external face (31) of said panel (3);
- inserting each cover profile (6) with movement parallel to the lying plane (P) of said window/door/shutter (1) with its connection portion (61) which is inserted in the guide grooves (57) of said locking elements (50) and with its second coupling portion (60) which is mechanically engaged with the first coupling portion (56) of said locking elements (50) by means of elastic deformation of at least one of said first and second coupling portions (56, 60).

10. Method for mounting a window/door/shutter according to claim 9, which comprises a step of substituting said panel (3) with another new panel by means of:

- rotation of said locking elements (5) up to bringing said retention portion (55) thereof in super-

imposition on the front external face (20) of said load-bearing frame (2);
- separation of each said cover profile (6) by means of exit of the connection portion (61) of said cover profile (6) from the guide grooves (57) of said locking elements (50) and with disengagement of the second coupling portion (60) of each said cover profile (6) from the first coupling portion (56) of said locking elements (50) by means of elastic deformation of at least one of said first and second coupling portion (56, 60);

said separation step being determined during said step of rotation of said locking elements (50) by the interference of the profile of their guide grooves (57) against the connection portion (61) of each corresponding said cover profile (6).

11. Locking assembly (100) for locking a panel to a load-bearing frame of a window/door/shutter intended to be mounted in an architectural opening of a building in order to separate an internal setting from the external environment, said window/door/shutter (1) being of the type comprising:

- a load-bearing frame (2) having:

  - a front external face (20), parallel to the lying plane (P) of said window/door/shutter (1),
  - a lateral internal face (21), directed towards the interior of the window/door/shutter (1);
  - a perimeter seat (22) made as a step at the convergence of the front external face (20) and of the lateral internal face (21);

- a panel (3) provided with an internal face (30), an external face (31) and a peripheral edge, which connects said internal face (30) and said external face (31) and is engaged within the perimeter seat (22) of said load-bearing frame (2);

said assembly (100) comprising:

- a plurality of locking elements (50) fixable along said load-bearing frame (2), each provided:

  - with an internal abutment surface (51) and with an external surface (52);
  - with a fixing portion (53) mechanically fixable to the load-bearing frame (2) by means of at least one fixing screw (54);
  - with a retention portion (55) placed as an extension of said fixing portion (53) and susceptible of projecting above the external face (31) of said panel (3) in order to retain said panel (3) constrained to said load-bearing frame (2); the internal abutment surface (51) of each said locking element (50) being intended to abut against the front external face (20) of said load-bearing frame (2) and against the external face (31) of said panel (3); on the external surface (52) of each said locking element (50), at least one first coupling portion (56) and at least one guide groove (57) being provided;

- at least one cover profile (6) with longitudinal main extension, susceptible of being arranged to cover the front external face (20) of said load-bearing frame (2) above said locking elements (50), and provided with at least one second coupling portion (60) mechanically engageable with the first coupling portion (56) of said locking elements (50) by means of elastic deformation of at least one of said first and second coupling portion (56, 60), and with at least one connection portion (61) susceptible of being inserted in the guide grooves (57) of said locking elements (50);

said assembly (100) being **characterized in that**, with said locking elements (50) and said at least one cover profile (6) in a position mounted on said window/door/shutter (1):

- said at least one first coupling portion (56) of each said locking element (50) is projecting as a bracket parallel to the lying plane (P) of said window/door/shutter (1) towards the panel (3) of said window/door/shutter (1);
- the second coupling portion (60) of said at least one cover profile (6) is projecting as a bracket parallel to the lying plane (P) of said window/door/shutter (1) in the direction opposite the panel (3) of said window/door/shutter (1);
- the guide groove (57) of each said locking element (50) is extended parallel to the lying plane (P) of said window/door/shutter (1) towards the panel (3) of said window/door/shutter (1);
- the connection portion (61) of said cover profile (6) is extended parallel to the lying plane (P) of said window/door/shutter (1) in the direction opposite the panel (3) of said window/door/shutter (1).

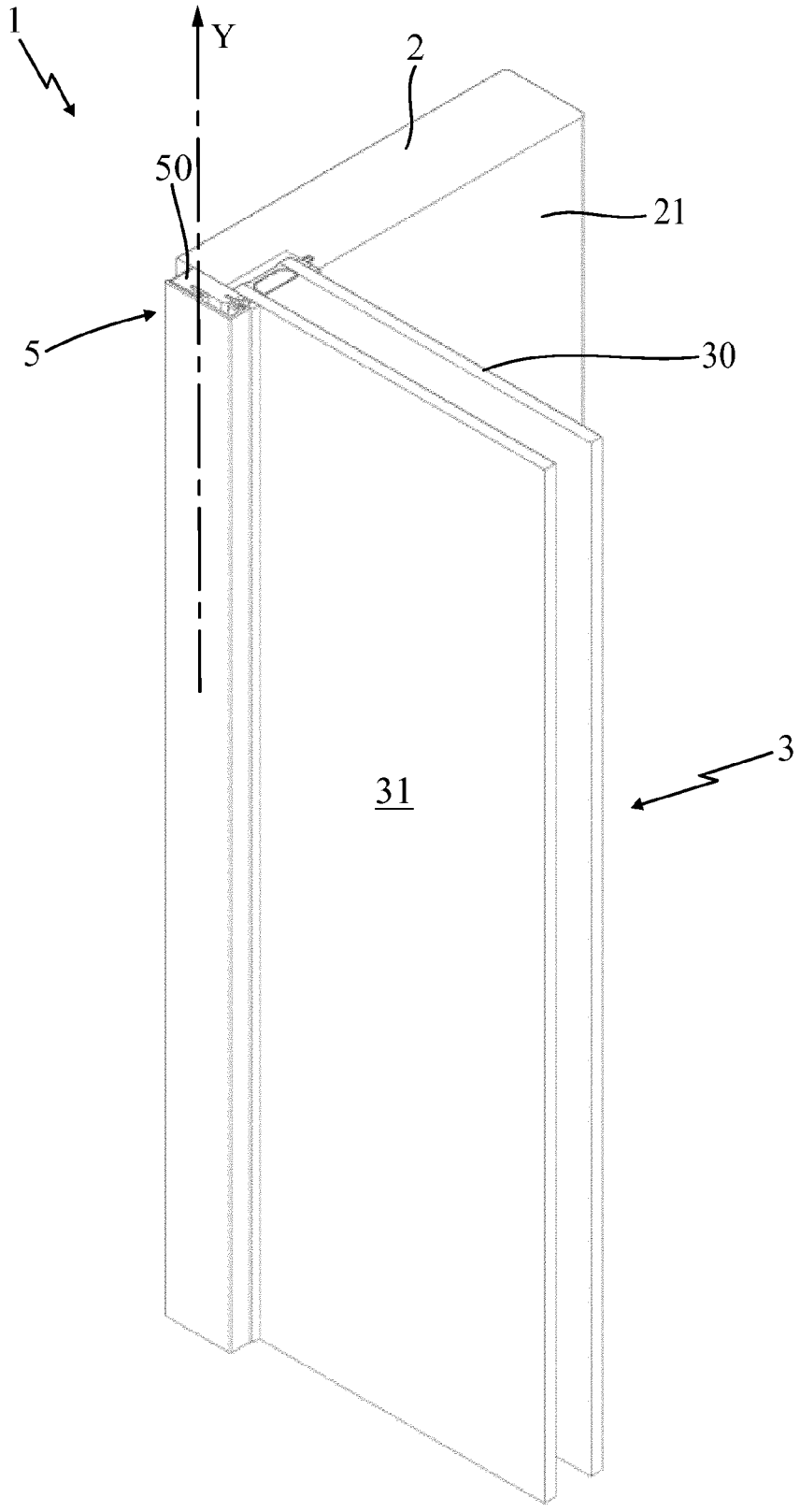

Fig. 1

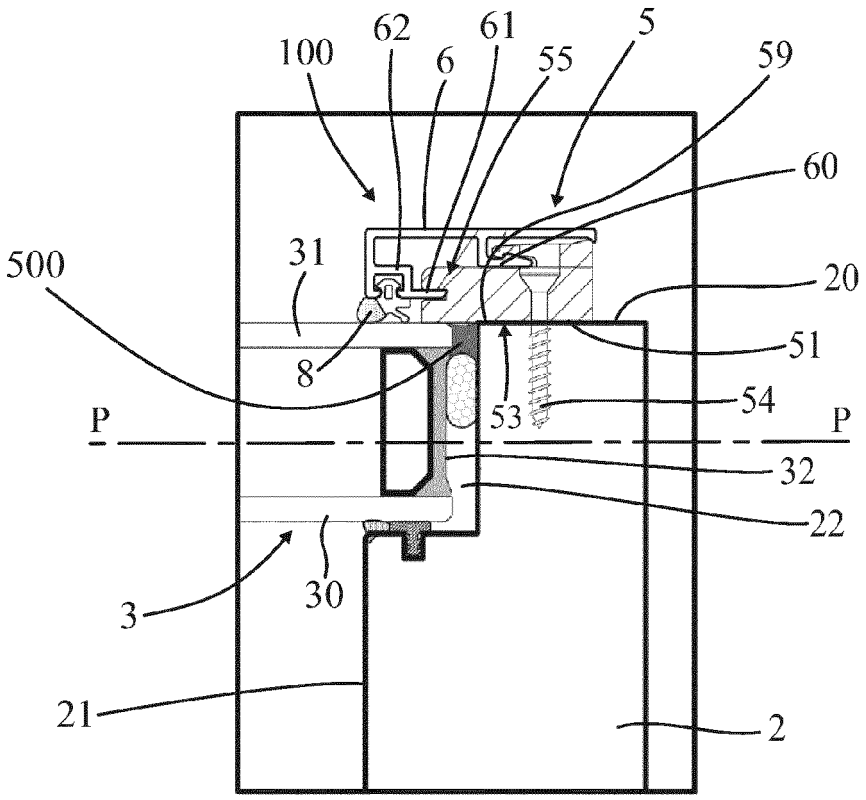
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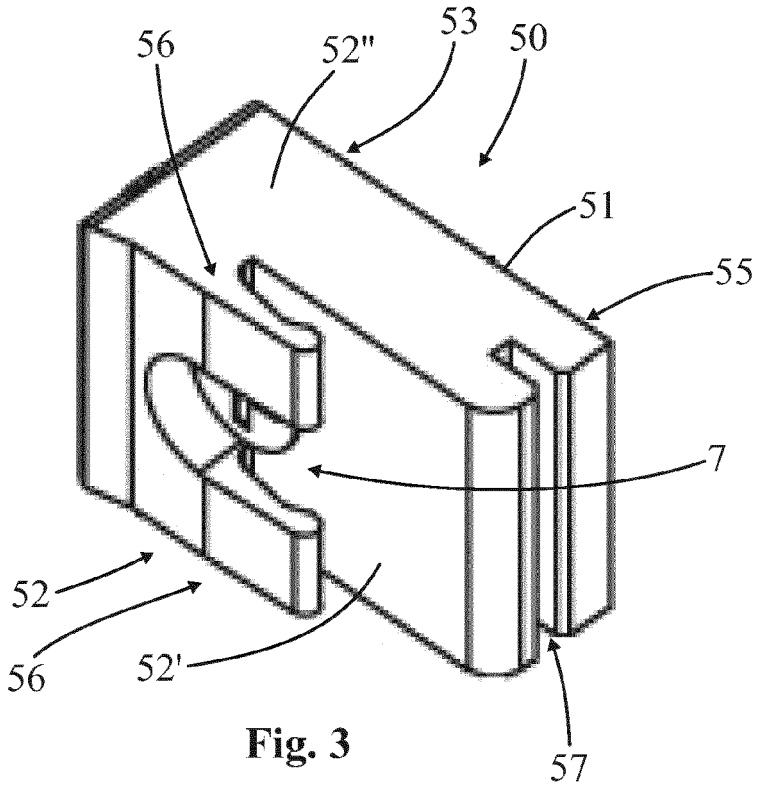
Fig. 2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56
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57

Fig. 3

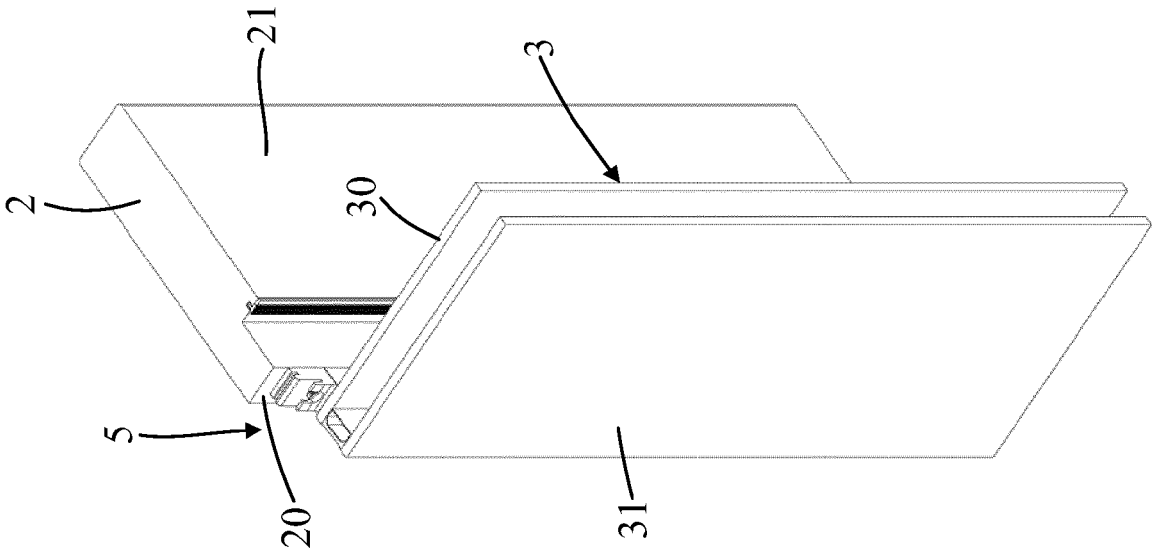

Fig. 6

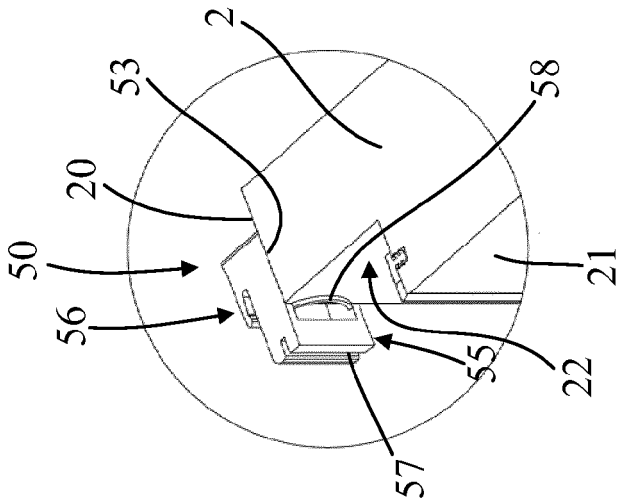

Fig. 5

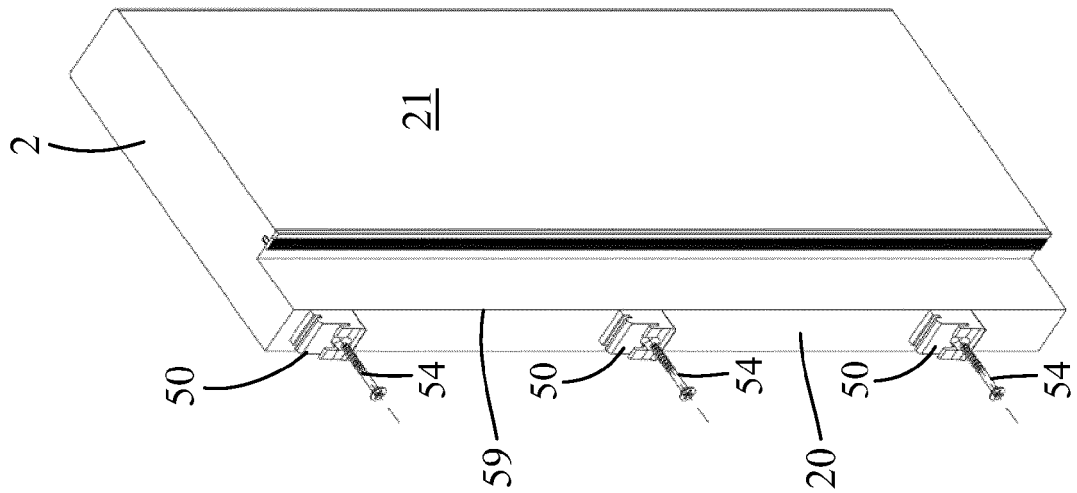

Fig. 4

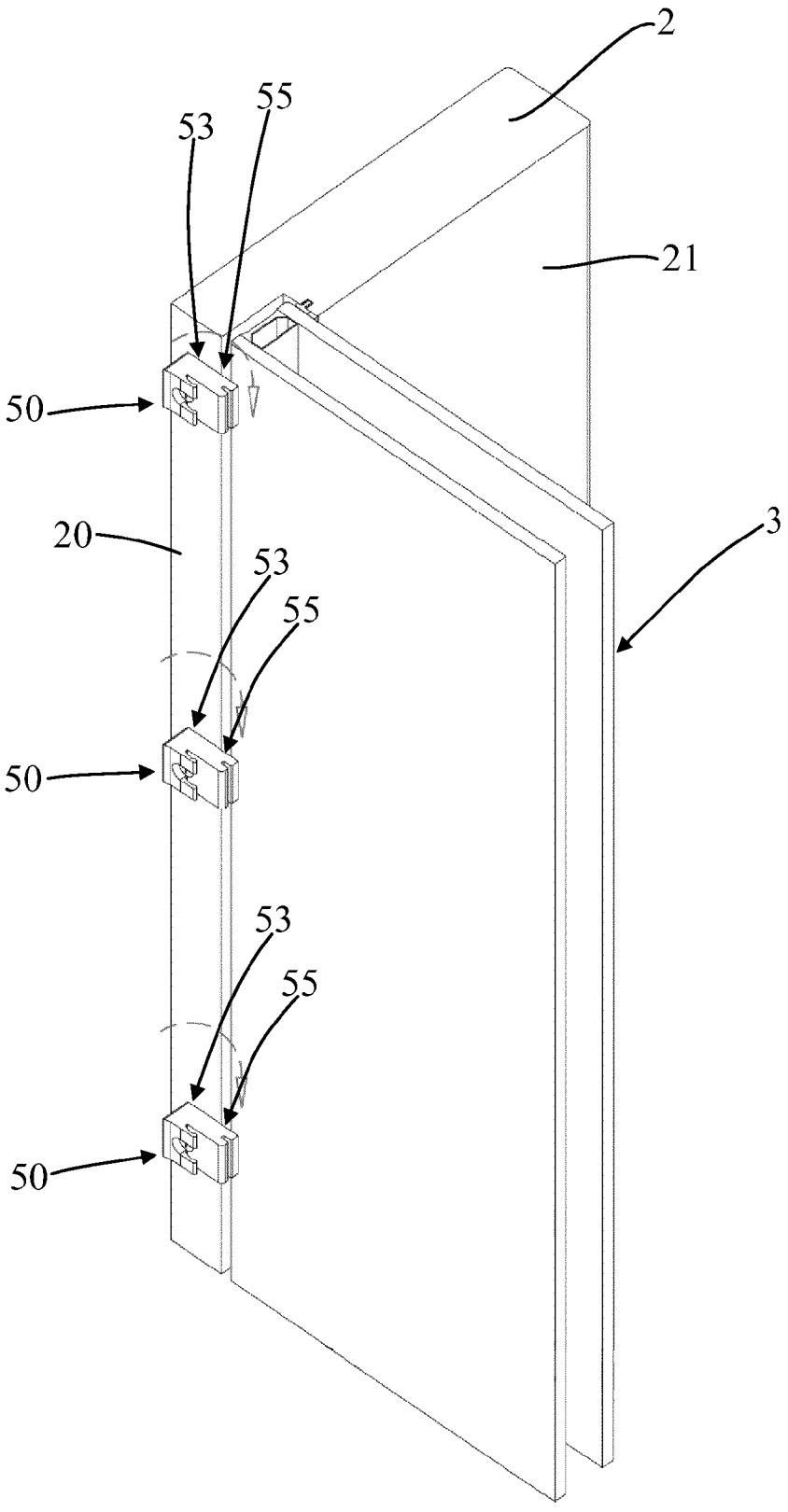

Fig. 7

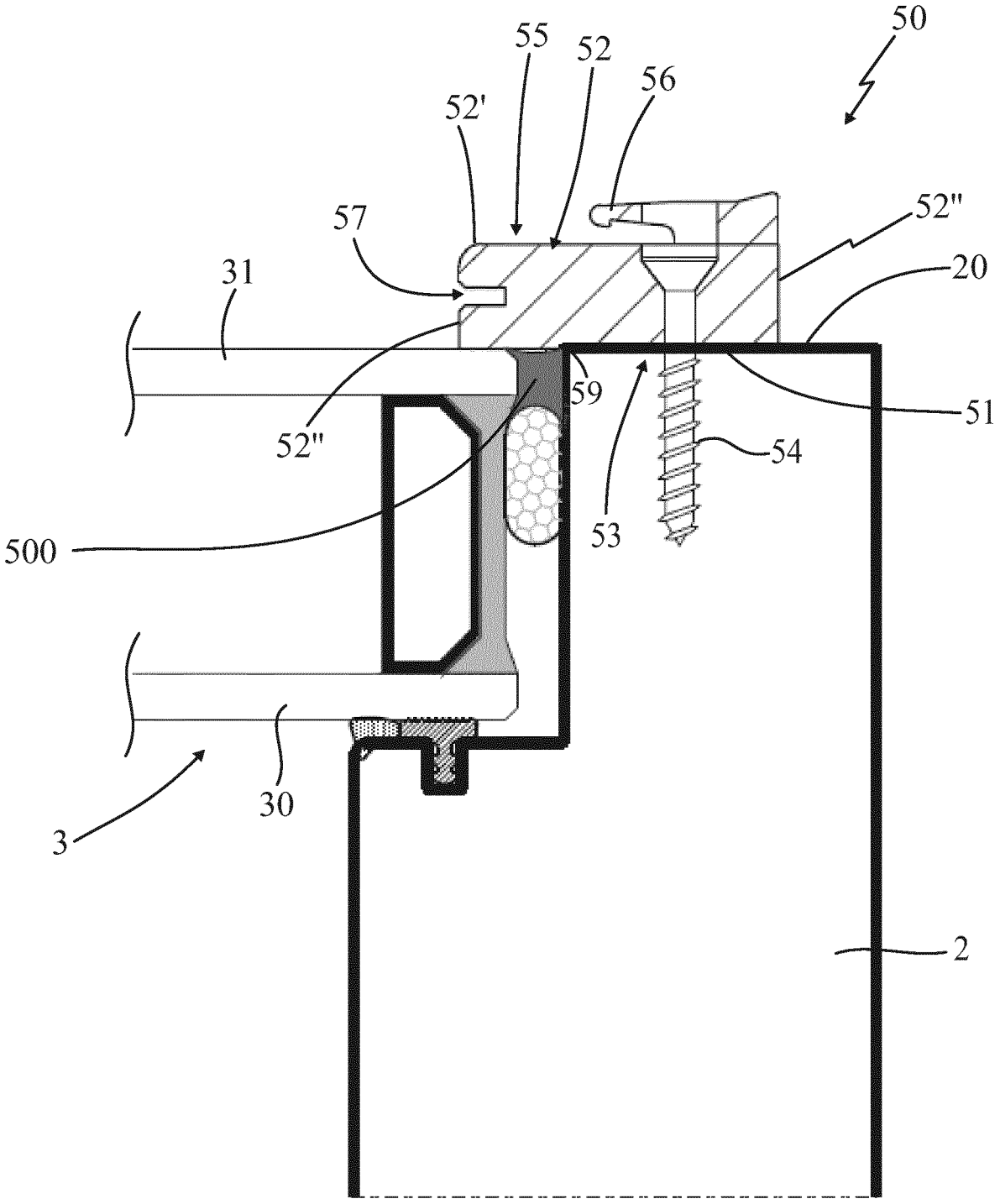

Fig. 8

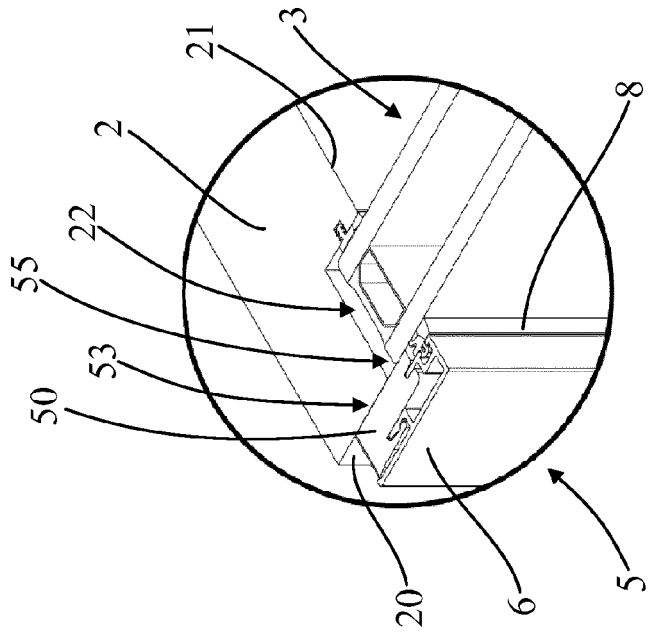

Fig. 11

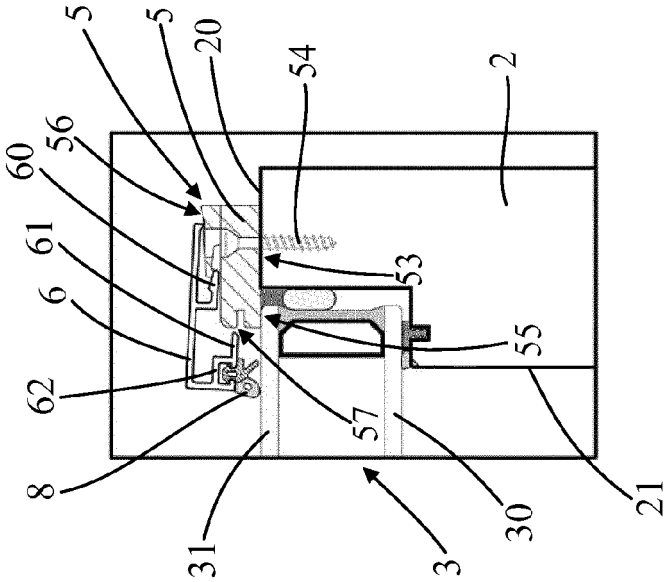

Fig. 10

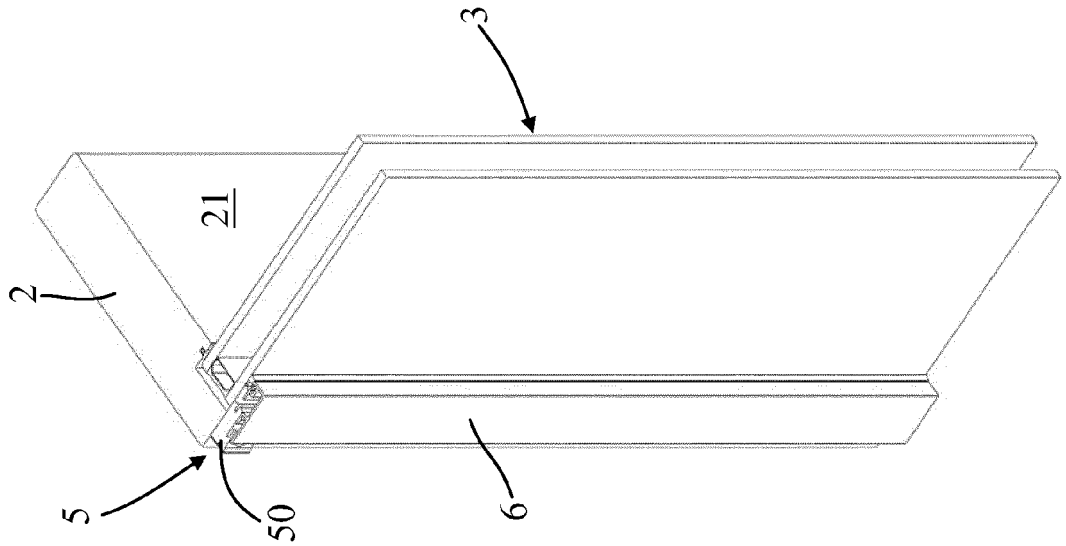

Fig. 9

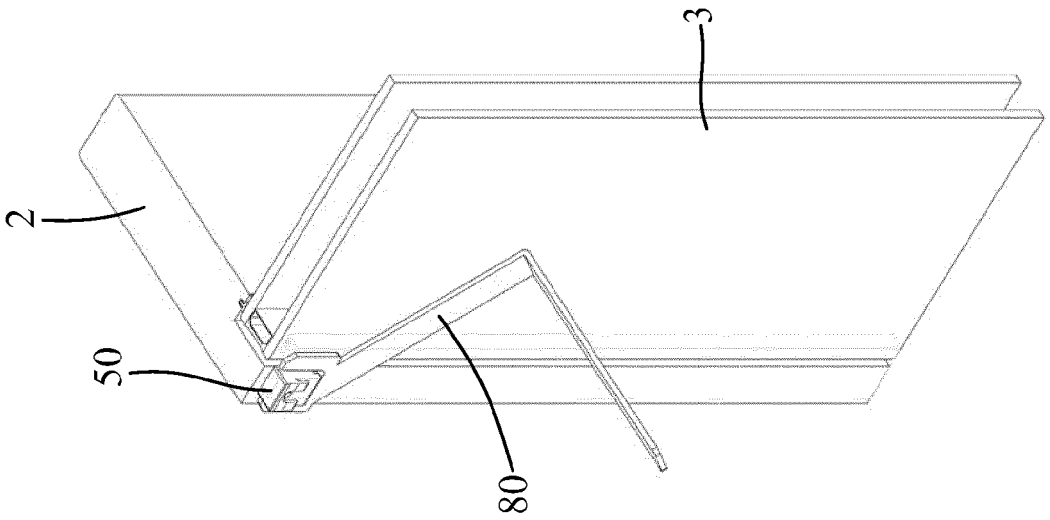

Fig. 15

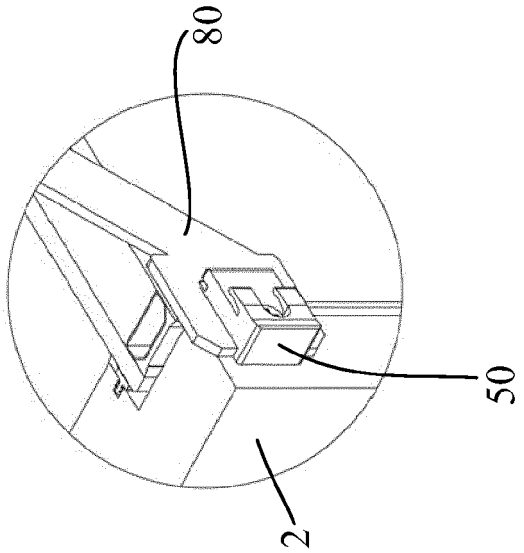

Fig. 13

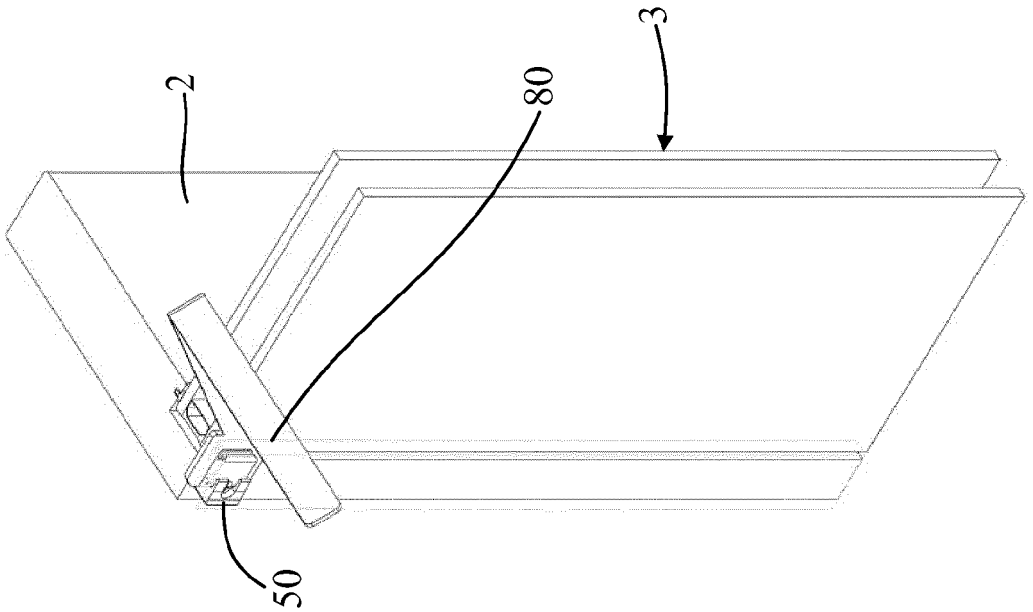

Fig. 12

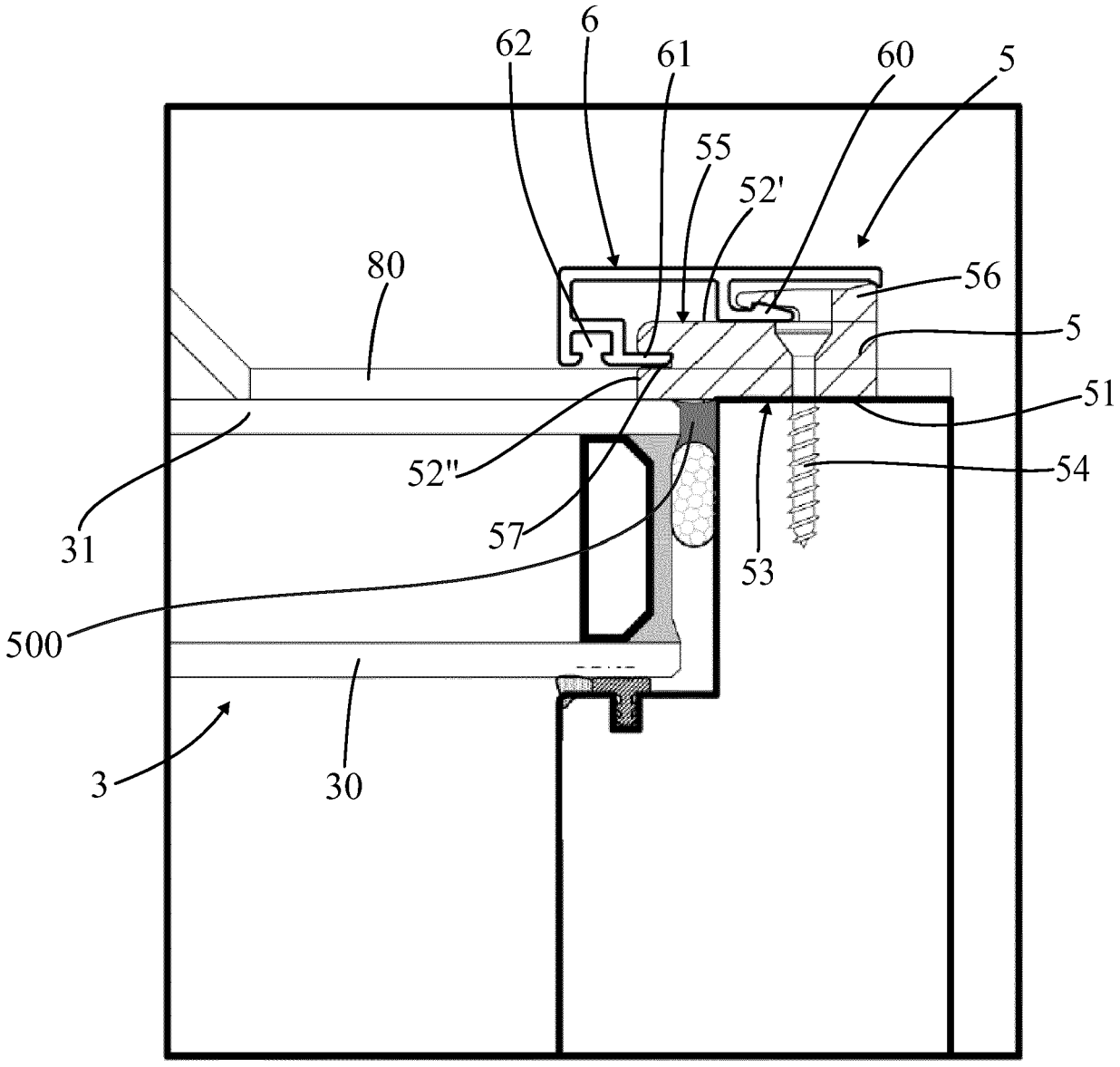

Fig. 14

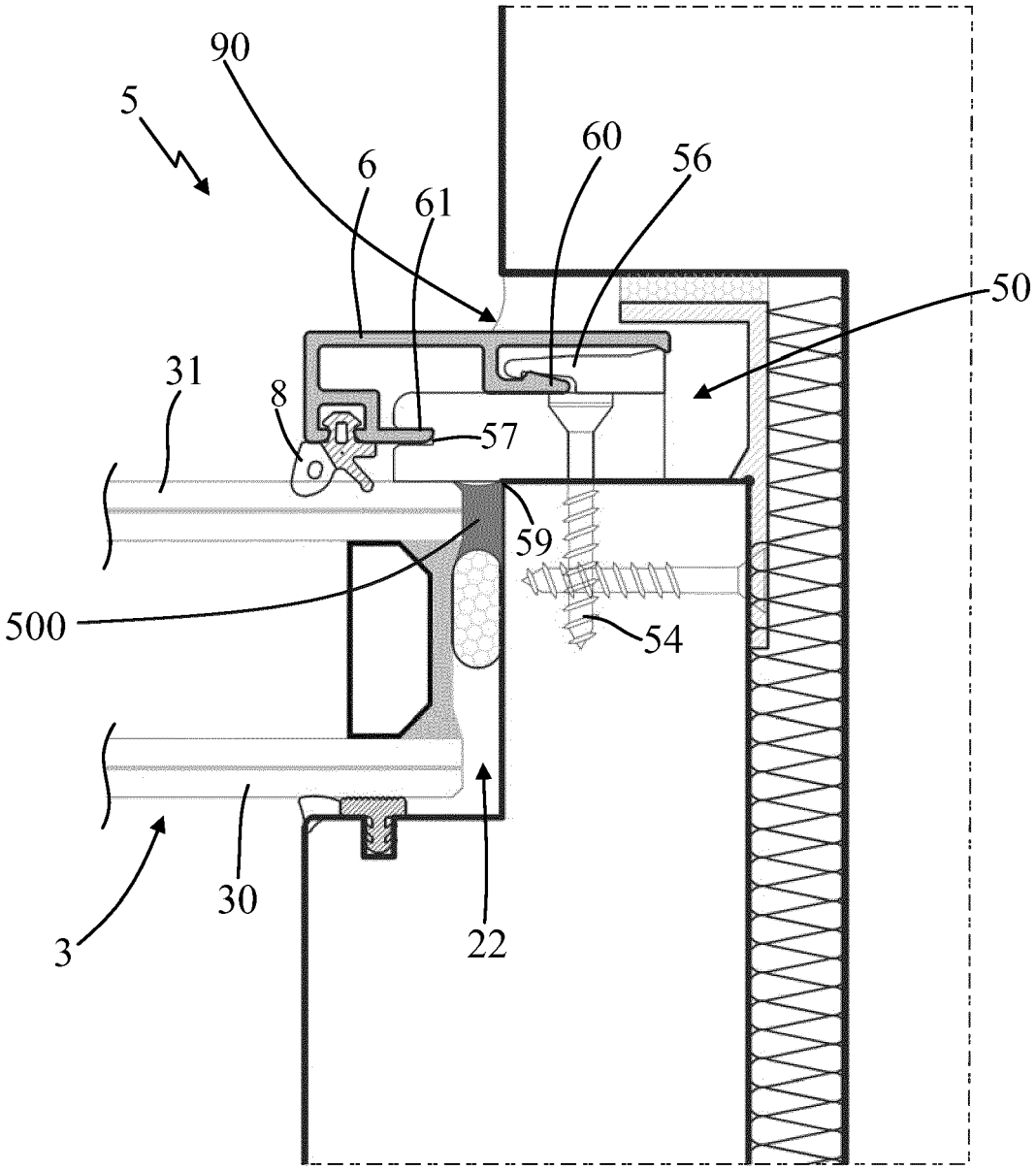

Fig. 16

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EUROPEAN SEARCH REPORT

Application Number
EP 19 18 2153

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	DE 10 2017 101003 A1 (G S GEORG STEMESEDER GMBH [AT]) 27 July 2017 (2017-07-27) * figure 2 * -----	1-11	INV. E06B3/30 E06B3/54 E06B3/58
A,D	EP 3 321 464 A1 (EUROPROFILI GROUP S P A [IT]) 16 May 2018 (2018-05-16) * figure 1'' * -----	1-11	
A	GB 2 264 742 A (SEARLE ROY [GB]) 8 September 1993 (1993-09-08) * figure 6 * -----	9	
A	DE 10 2005 015457 A1 (KNAPP FRIEDRICH [DE]) 5 October 2006 (2006-10-05) * figure 3 * -----	1-11	

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	17 October 2019	Jülich, Saskia

CATEGORY OF CITED DOCUMENTS

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17-10-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102017101003 A1	27-07-2017	AT 518200 A2	15-08-2017
		DE 102017101003 A1	27-07-2017
EP 3321464 A1	16-05-2018	NONE	
GB 2264742 A	08-09-1993	NONE	
DE 102005015457 A1	05-10-2006	DE 102005015457 A1	05-10-2006
		US 2009031651 A1	05-02-2009
		WO 2006105774 A1	12-10-2006

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Patent documents cited in the description

- EP 3321464 A **[0010]**
- DE 102017101003 **[0012]**