



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.09.2023 Bulletin 2023/37

(51) International Patent Classification (IPC):
E06B 1/60 (2006.01) E06B 1/02 (2006.01)

(21) Application number: **23382216.2**

(52) Cooperative Patent Classification (CPC):
E06B 1/603; E06B 1/02

(22) Date of filing: **08.03.2023**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

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(30) Priority: **10.03.2022 ES 202230197**

(54) **SYSTEM FOR POSITIONING, ADJUSTING AND INSTALLING ENCLOSURES**

(57) The present invention relates to a system for positioning, adjusting and installing enclosures which comprises a sub-frame (P) configured to be directly attached to the partition on which the enclosure is to be built, a frame (M) with the ability to adjust the frame (M) in two and three dimensions with respect to the sub-frame (P); wherein the positioning and installation device of the enclosure (1) comprises a first adjustable profile (10, 10') and a second adjustable profile (20, 20', 20'') in such a way that the first adjustable profile (10, 10') is secured

to the frame (M) on one of its sides and on the opposite side it is attached to a first end of the second adjustable profile (20, 20', 20'') through first adjustment and locking means (30, 30'); and wherein, the second end of the second adjustable profile (20, 20', 20'') is further attached to the sub-frame (P) by means of second adjustment means (40); and wherein the second adjustable profile (20, 20', 20'') is clipped with a perimeter flashing (T) having full locking capacity between the parts thereof.

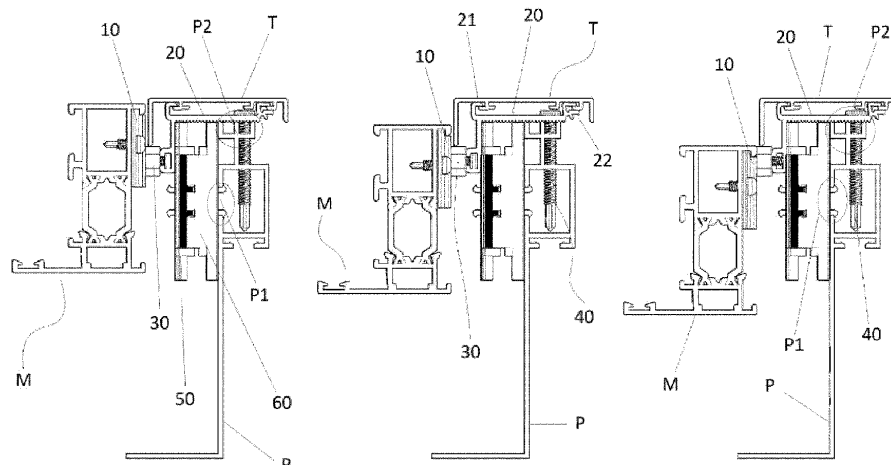


Figure 1

Description

Technical field of the invention

[0001] The present invention relates to a system for positioning, adjusting and installing enclosures between partitioning, sub-frames and frames, both for windows and for doors for use both indoors and outdoors.

State of the art

[0002] In the current state of the art, sub-frames, generally made up of square or rectangular strips without channels or grooves in their design, are manufactured for the installation of doors and windows. The strips of the sub-frame are assembled at their ends and secured by means of horizontal, vertical and diagonal ties arranged in the centre and the corners to ensure the square of the sub-frame. The sub-frames are placed and stabilised in the partitioning of the work, either using cement or mortar or using direct screws. However, these systems have several drawbacks, such as the time required by the installation personnel to assemble them, or the need to use shims, props and/or braces to assemble them, which will later have to be removed.

[0003] Therefore, a first technical problem that the present invention must solve is to achieve a system for placing the conveniently plumb sub-frame that is level, square and at the desired height, which prevents faulty execution of the partitioning. In the current state of the art, to correct faulty execution in the construction of any type of partitioning and the poor installation of sub-frames made of various materials, the current methods for installing enclosures are based on the use of direct screws to the sub-frame, artisan support parts, angles and evolved supports, spacers and wedge shims, which do not constitute a professional solution, but only pursue the objective of securing the enclosure in an improvised and random manner, wherein the lack of safety in securing the enclosure and its possible derived defects are frequent, and even occasionally the enclosures are secured only with polyurethane and silicones, which are not valid securing methods.

[0004] For example, in the state of the art, document ES1034520U is known, which describes a door frame applicable on the partition of the construction opening or on a sub-frame, designed to adjust its inclination in the vertical plane of the door and to adjust its inclination in the plane transverse to the previous one in order to absorb construction errors related to a lack of verticality and perpendicularity for a correct adjustment of the door. The frame is essentially characterised in that it is made up of a square joined to the partition on one of its faces with the help of a screw and on the other face with the help of another screw that connects it to the front profile constituting the frame and which surrounds the partition until it comes into contact with the front face of the same, and on which it couples the rear profile, also constituting the

frame, which surrounds the partition until it comes into contact with the rear face of the partition, having adjustment means for adjusting the position of the rear profile with respect to the front profile for its adaptation in position to the width of the partition, having provided a slot on the contact face of the square with the front profile, said slot allowing the different positioning of the screw along this slot, adjusting the inclination of the assembly formed by the front and rear profiles of the frame in the vertical plane of the door, as well as on the contact face of the square with the partition, it has a slot that allows variable positioning of the screw, adjusting the inclination of the assembly formed by the front and rear profiles of the frame in the plane transverse to that of the door. This document does not allow three-dimensional movement of the enclosure, since it is necessary to secure the wall anchors in a perfect position to subsequently clip the outer flashing. Moreover, it does not have a sub-frame for guiding the devices. This document furthermore does not describe a three-dimensional flashing, nor does it describe a sub-frame for guiding the devices in three dimensions, nor does it allow the enclosure to be adjusted vertically (i.e., in height) since it is secured with a concealed screw without adjustment.

[0005] Document FR3073242B1, on the other hand, describes a method for preparing a fixed frame for carpentry that comprises, in a determined manner, on the periphery of the fixed frame, a set of implantation zones for securing the fixed frame on a support structure, where all the implantation zones of a securing member are adapted to obtain a predetermined mechanical resistance of the securing of the carpentry on the support structure; and which further comprises making, on the periphery of the fixed frame, a marking of each of said implantation areas of a securing member. In this document, three-dimensional movement of the enclosure anchored to the outer wall, but not to the inner wall, is allowed. A three-dimensional flashing is not defined either, not to mention that it does not have a sub-frame for guiding the devices in three dimensions. Moreover, the thermal bridge is broken when connecting the outer part of the work with the enclosure frame, in the case of aluminium and PVC enclosures, which necessarily requires U-shaped channels around the entire perimeter of the frame.

[0006] Another document known in the state of the art is document GB1054664A which describes a door or window frame, which is adjustable for variable wall thicknesses, and comprises cooperating sheet steel sub-frames that are screwed to the wall through holes and slots in the sub-frame. Top section reinforcements are welded to the auxiliary framework at intervals, and these reinforcements provide guides for the channel-section sliding members welded to the auxiliary framework. The auxiliary framework is screwed to the wall through the reinforcement slots, and additional angular or ribbed-section reinforcements are used at each reinforcement point on the framework. A hinge plate can be secured to

the auxiliary framework through a slot at each hinge point on the door body. However, this document is designed to absorb different thicknesses of partitioning. Moreover, it is provided with screwing means that are visible from the inside and from the outside of the enclosure. Finally, it has no three-dimensional adjustment.

[0007] Document WO20090690A1 discloses a window frame assembly comprising a fibre cement sub-frame that can be secured within a window aperture in a wall, an aluminium window frame that can be mounted on the sub-frame; and a series of retaining clips to securely mount the window frame on the sub-frame. As it is made of fibre cement, the sub-frame is suitable for adhering to a layer of plaster. The exposed inner and outer sides of the sub-frame may be plastered when the outer sides of the wall are plastered. Later, when appropriate, the window frame, with the glazing installed, can be mounted on the sub-frame. This document does not describe any three-dimensional adjustment, nor is there any flashing or sub-frame of any kind. Moreover, it requires the use of visible wedges and screws inside the sub-frame.

[0008] However, all these documents refer to the placement of the sub-frame, but in no case do they refer to the securing of the enclosure in question, i.e., to the securing of the door or window. Moreover, these systems have the following disadvantages:

- Total absence of an enclosure installation system with three-dimensional adjustment.
- The state of the art does not describe systems that prevent thermal transmission between the enclosure wall, sub-frame and frame due to the conductivity of the screwing means, in addition to air and water inlets due to the perforation of the enclosure frame.
- The enclosure installation processes described in the state of the art are slow and unreliable, since they include direct screws to the sub-frames and frames, angles, plates, spacers, shims or artisan wooden wedges.
- Current installation methods endanger the integrity of the enclosure, causing poor securing and loss of stability in the same.
- The enclosure installation methods described in the state of the art are complex and require highly qualified operators, since the result depends on their ability and skill.
- Current installation methods are not suitable for any type of enclosure, since they depend on the manufacturer of the profiling, thickness or material of the sub-frame used. They only allow adjustment in the vertical or horizontal plane of the enclosure, but do not allow systematic adjustment of the depth of the enclosure, in other words, they lack wall adjustment for partitioning thicknesses and collapse, which causes unwanted apertures and closings of the enclosure leaf on the wall of the house or on other enclosures.

- The systems of the state of the art require finishing on the perimeter of the enclosure as they have to use silicones and mortars to conceal the slots produced between the wall and the enclosure, as a result of unevenness and collapse.
- Total absence of a mandatory safety system in the openings made on site for the installation of enclosures, especially doors and windows, which are kept outdoors without efficient safety measures until the moment of undertaking the installation.
- Total absence of a weather protection system in the openings made on site for the installation of enclosures, especially doors and windows, which are kept outdoors without any weather protection, until the moment of undertaking the installation. The openings are only covered with plastic, without any type of guarantee securing, as they often tear or fall in the wrong places in adverse weather conditions or strong winds.

[0009] Document ES2888699A1 describes a system for positioning, adjusting and installing enclosures that comprises a sub-frame that is directly attached to the partition on which the enclosure is to be built; an enclosure frame on which the window or door leaves forming the enclosure are incorporated and at least one positioning and installation device of the enclosure placed on each side, top and bottom of the enclosure, responsible for attaching the frame to the sub-frame and with the ability to adjust the frame in three dimensions with respect to the sub-frame.

[0010] However, the object of the present invention is to improve the performance of this system, particularly of the positioning and installation device of the enclosure, according to the claims that accompany the present specification.

Description of the invention

[0011] An object of the invention is a comprehensive system for positioning, adjusting and installing enclosures, which is notable for allowing three-dimensional adjustment (horizontal, vertical and depth) for optimal placement of the enclosure, solving any potential problem of partition unevenness, collapse and thicknesses, thus constituting a practical and effective solution that ensures professional installation of the enclosure, further complying with international installation regulations, without faulty placement or low-quality finishes, all of this quickly and easily, without requiring highly qualified workers. Another object of the invention is for this system to be more compact, contain fewer parts, weigh less, and be more cost-effective with the same benefits as the systems known in the state of the art. These problems are solved with the system of claim 1. Particular solutions and practical embodiments of the system of the invention are described in the dependent claims.

[0012] Thus, the system for positioning, adjusting and

installing enclosures of the invention comprises a sub-frame configured to be directly attached to the partition on which the enclosure is to be built, an enclosure frame and at least one positioning and installation device of the enclosure placed on each side, top and bottom of the enclosure, responsible for attaching the frame to the sub-frame and with the ability to adjust the frame in two and three dimensions with respect to the sub-frame.

[0013] The system for positioning, adjusting and installing enclosures of the invention is characterised in that it comprises:

a first adjustable profile and a second adjustable profile comprising a first end and a second end on the side opposite the first, in such a way that:

the first adjustable profile is secured to the frame on one of its sides and on the opposite side it is attached to a first end of the second adjustable profile through first adjustment means;

wherein, the second end of the second adjustable profile is further attached to the sub-frame by means of second adjustment means;

and wherein the second adjustable profile is clipped with a perimeter flashing that is configured as a part that covers the opening between the frame and sub-frame, concealing the positioning and installation devices of the enclosure.

[0014] Moreover, the system comprises two wedges complementary to each other and housed in the open channel of the sub-frame. On the other hand, the first adjustment means are selected from among a screw-nut assembly and a throttle screw. In a practical embodiment, the system comprises an intermediate part for clipping between the flashing and the first adjustment means. In another practical embodiment, the system comprises a square-bevel in a single part.

[0015] Finally, the system comprises a canvas for protection against atmospheric agents, a safety net and a safety system to fasten the operator's life harness to the sub-frame, wherein said support can be installed on the sub-frame even after the installation of the enclosure; it is enough to remove a flashing and install the harness support for the safety of the operator who will work on the enclosure.

[0016] Due to the design described, the present invention improves the operation and installation of enclosures, since it is designed to be manufactured quickly and at a low cost of material and accessories for its assembly. All sub-frames described in the state of the art have a channel aperture on the outer side of the sub-frame, which is received with mortar or metallic reinforcements of the partitioning. In this case, the position of the channel is inverted and, in this way, it is used for the injection of polyurethane foam, to perfectly secure the enclosure and effectively isolate the perimeter of the enclosure frame by expanding the polyurethane foam in the inner channel of the sub-frame, thereby supporting the

different expansions between materials.

[0017] Due to the present invention, a lower weight is obtained with the consequent savings for the sub-frame manufacturer. The sub-frame is a solution and complement to the 3D device, since it guides the installation manoeuvre of the 3D system and solves all possible partitioning failures in the work.

[0018] Thus, the present invention is configured as an installation device with a three-dimensional flashing collapse system due to the synergistic effect between the sub-frame, the positioning device with the wedges and the square-bevel to attach cross reinforcement struts, a straight-cut flashing with its plastic parts to allow the absorption of measurement in the horizontal flashings, a mitre-cut flashing system with 2 mm lateral adjustment, as well as vertical adjustment when sliding by the clip system and inner adjustment of the flashing, the plastic support that secures and supports the net and the weather protection canvas, the safety support for the harness. In general, it is a set of elements with a combined or synergistic effect for the three-dimensional installation of an enclosure that until now could only be installed in two dimensions, it solves the problems of partitioning collapse, allowing the window to be correctly plumb, and it gives the option for the builder-promoter to fix the partitioning problem in two ways:

- Correcting the collapse on the inside of the flashing.
- Correcting the collapse on the outer side of the flashing.

[0019] Throughout the description and the claims, the word "comprise" and its variants are not intended to exclude other technical features, additions, components or steps. For those skilled in the art, other objects, advantages and features of the invention will be deduced from both the invention and the practical use of the invention. The following examples and drawings are provided by way of illustration, and are not intended to limit the present invention. Furthermore, the invention covers all possible combinations of particular and preferred embodiments indicated herein.

Brief description of the drawings

[0020] What follows is a very brief description of a series of drawings that aid in better understanding the invention and which are expressly related to an embodiment of said invention that is illustrated by way of a non-limiting example of the same.

Fig 1. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with screw and nut adjustment.

Fig 2. This figure shows a sectional and detailed view of the assembly of the system of the in-

- vention for mitre-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with combined screw and nut adjustment, and throttle screws.
- Fig 3. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with adjustment exclusively with throttle screws.
- Fig 4. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with screw and nut adjustment.
- Fig 5. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with combined screw and nut adjustment, and throttle screws.
- Fig 6. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with adjustment exclusively with throttle screws.
- Fig 7. This figure shows a sectional and detailed view of the assembly of the system of the invention for mitre-cut flashings, wherein the sub-frame is plumb and the inner partition collapsed, with screw and nut adjustment.
- Fig 8. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with screw and nut adjustment.
- Fig 9. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with combined screw and nut adjustment, and throttle screws.
- Fig 10. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the plumb inner partition, in an embodiment with adjustment exclusively with throttle screws.
- Fig 11. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with screw and nut adjustment.
- Fig 12. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with combined screw and nut adjustment, and throttle screws.
- Fig 13. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, with the sub-frame and the collapsed inner partition, in an embodiment with adjustment exclusively with throttle screws.
- Fig 14. This figure shows a sectional and detailed view of the assembly of the system of the invention for straight-cut flashings, wherein the sub-frame is plumb and the inner partition collapsed, with screw and nut adjustment.
- Fig 15. This figure shows a sectional and perspective view of the system of the invention, wherein the assembly of the wedges in the positioning and installation device of the enclosure (1) can be seen.
- Fig 16. This figure shows an isolated view of the wedges shown in FIG. 15.
- Fig 17. This figure shows a detailed view of the sub-frame.
- Fig 18. This figure shows a detailed view of a first adjustable profile (10) for securing the screw-nut adjustment.
- Fig 19. This figure shows a detailed view of a first adjustable profile (10') for securing the throttle screw adjustment.
- Fig 20. This figure shows a detailed view of an embodiment of a second profile (20) for securing the screw-nut adjustment.
- Fig 21. This figure shows a detailed view of an embodiment of a second profile (20') for securing the throttle screw adjustment.
- Fig 22. This figure shows a detailed view of an embodiment of a second profile (20'') for securing the screw-nut adjustment and collapse of the inner wall.
- Fig 23. This figure shows a detailed view of a third part for correcting the collapse of the inner partition.
- Fig 24. This figure shows a perspective front view of the system of the invention with a protective canvas and anchor for a safety harness.
- Fig 25. This figure shows a perspective rear view of the system of the invention with mesh and anchor for a safety harness.
- Fig 26. This figure shows a perspective and detailed view of a first embodiment of a bevel-square implemented in the system of the invention.
- Fig 27. This figure shows a perspective and detailed view of a first embodiment of a square for attaching intermediate reinforcements implemented in the system of the invention.
- Fig 28. This figure shows a perspective and isolated view of covers of the closing and finishing assembly of the straight-cut flashing that is implemented in the system of the invention.

- Fig 29. This figure shows a perspective and detailed view of the attachment of the safety net to the sub-frame, as implemented in the present invention.
- Fig 30. This figure shows a perspective and detailed view of the attachment of the canvas to the sub-frame, as implemented in the present invention.
- Fig 31. This figure shows a perspective and detailed view of the attachment of the safety fastener of the harness to the sub-frame, as implemented in the present invention.

Detailed description of an embodiment of the invention

[0021] The attached figures show the frame (M) and the secured sub-frame (P) of an enclosure, in this case a window, which incorporates a positioning and installation device of the enclosure (1). It should be noted here that, although the enclosure is a window in this preferred exemplary embodiment, it is envisaged that the positioning and installation device of the enclosure (1) of the invention can also be used on doors or any other enclosure. The system is completed with a perimeter flashing (T) that is configured as a part that covers the opening between the frame (M) and sub-frame (P), concealing the positioning and installation devices of the enclosure (1), giving a continuous finished appearance. Preferably, the positioning and installation device of the enclosure (1) described herein is made of aluminium, a material of great durability and resistance, widely contrasted in the state of the art.

[0022] In the present invention, the following practical embodiments can be distinguished:

- System for mitre-cut flashings (cut at 45°):
 - Sub-frame and plumb inner partition
 - Screw-nut adjustment (Fig. 1)
 - Screw-nut adjustment and throttle screw (Fig. 2)
 - Throttle screw adjustment (Fig. 3)
 - Sub-frame and collapsed inner partition
 - Screw-nut adjustment (Fig. 4)
 - Screw-nut adjustment and throttle screw (Fig. 5)
 - Throttle screw adjustment (Fig. 6)
 - Plumb sub-frame and collapsed inner partition (Fig. 7)
- System for straight-cut flashings (cut at 90°):
 - Sub-frame and plumb inner partition

- Screw-nut adjustment (Fig. 8)
- Screw-nut adjustment and throttle screw (Fig. 9)
- Throttle screw adjustment (Fig. 10)

◦ Sub-frame and collapsed inner partition

- Screw-nut adjustment (Fig. 11)
- Screw-nut adjustment and throttle screw (Fig. 12)
- Throttle screw adjustment (Fig. 13)

◦ Plumb sub-frame and collapsed inner partition (Fig. 14)

[0023] In all Figures 1 to 14, three images are represented:

- a) The image on the left always corresponds to the positioning and installation device of the enclosure (1) of the invention, which is installed 200 mm from the top corner of the vertical frame;
- b) The central image corresponds to the positioning and installation device of the enclosure (1) of the invention that is installed at the intermediate points of the vertical frame and at all points of the horizontal frames; and
- c) The image on the right always corresponds to the positioning and installation device of the enclosure (1) of the invention, which is installed 200 mm from the bottom corner of the vertical frame.

[0024] In the present description, "vertical frame" is understood to be the vertical sides of the frame (M) and "horizontal frame" is the horizontal struts of the frame (M). In a preferred embodiment of the invention, each frame comprises three positioning and installation devices of the enclosure (1) regularly distributed in each vertical and horizontal frame.

[0025] In all the embodiments, an aluminium sub-frame (P) has been represented which is part of the system and which facilitates the installation of the enclosure quickly, intuitively and professionally, without improvisations or unforeseen events of any kind. The sub-frame (P) is equipped with safety measures and weather protection. It is envisaged that the sub-frame (P) also allows the placement of so-called non-recoverable framing square-bevel parts (Figures 25 to 27) and a multitude of reinforcements to avoid false misalignment of the sub-frame, due to the inner design of a channel with longitudinal grooves along the entire perimeter of the sub-frame (P), on which the securing screws are housed. In this way, an aluminium sub-frame is obtained that facilitates three-dimensional adjustment, designed and tested with the protection of safety and weather measures.

[0026] In particular, compared to document ES 2 888 699 A1, the system of the invention is L-shaped, it does not invade the thermal break polyamide area of the win-

dow frame to improve energy efficiency, and it is smaller, more compact, with less weight, and therefore more economically competitive and with the same mechanical features. In the indicated system (ES2888699A1), the movement of the enclosure can be adjusted, but it does not lock it. However, due to the structure described in the present invention, it is possible to firmly lock the enclosure thanks to the structure of the positioning and installation device of the enclosure (1). Given the foregoing, it is possible to use the system in heavy enclosures, such as doors, and secure the frame with the sub-frame.

[0027] Referring to Figure 1, the system of the invention comprises a frame (M), a sub-frame (P), a flashing (T) and a positioning and installation device of the enclosure (1) which, in turn, comprises a first adjustable profile (10) and a second adjustable profile (20), wherein the first adjustable profile (10) is, on the one hand, integrally attached and screwed to the frame (M) and, on the other, it is integrally attached to the second adjustable profile (20) by means of first adjustment means (30); and wherein the second adjustable profile (20) is further integrally attached to the sub-frame (P) by means of second adjustment means (40). Given this structure, gaps are avoided in the assembly of the enclosure.

[0028] In this aspect of the adjustment, the channels (P2) in the form of a trident in the top portion of the sub-frame (P) are relevant, said top portion which is configured for extra adjustment of up to approximately 5 mm depending on where the second adjustment means (40) are inserted in the sub-frame (P), in the first channel or second channel of the sub-frame (P); in addition, the sub-frame can be provided with more or fewer channels in other practical embodiments. Another relevant element of the sub-frame (P) is its open channel (P1) in the inner position, which allows the clipping of the wedges (50, 60), the poppet (S) of the protection canvas (L) or the support for the safety harness (200).

[0029] In this practical embodiment, the second adjustable profile (20), which is shown in detail in Figure 20, since the profile of this part varies according to the first adjustment means (30) given that if they are of the screw type-nut, as in this Figure 1, the second adjustable profile (20) comprises a C-shaped end to house said screw-nut.

[0030] Moreover, in the embodiments for mitre cutting, the second adjustable profile (20) comprises anchors (21, 22) that correspond to projections of the flashing (T) to allow direct clipping of the flashing to the second adjustable profile (20), thus allowing the direct clipping of the flashing (T) to the second adjustable profile (20) without the need for intermediate parts with adjustment of 1 mm by 1 mm, achieving a total adjustment of the mitre-cut flashing of ± 2 mm.

[0031] Finally, housed in the open channel (P1) of the sub-frame (P) are two wedges (50, 60) complementary to each other, as best seen also in Figures 15 and 16. These wedges have unlimited growth and are configured to be inserted and guided into the inner open channel of the sub-frame (P). The wedges are designed to guaran-

tee that there are no gaps between the sub-frame (P) and the frame (M) of the enclosure; moreover, the wedge, being of unlimited growth, can be installed under the mitre of the enclosure to avoid unwanted apertures of the frame mitre in the event of large and heavy glazing, as best seen in Figure 15.

[0032] These wedges (50, 60) allow unlimited growth, in the sense that they can be complementary stacked one on top of another. These wedges (50, 60) are further used in the mitre to support the weight of large glazing (as seen in detail in Figure 15), precisely so that the mitre does not open. The wedges (50, 60) are common to all embodiments.

[0033] However, in the embodiments of Figures 7 and 14, a second wedge (50') is used to fulfil the function of levelling between the sub-frame and the second adjustable profile (20"), aligning the base of this second profile with the wall and thus achieving a flat and perfect settlement so that the second profile does not rotate in an undesired manner and provides a flat settlement of the flashing (T) on the wall.

[0034] The embodiment of Figure 2 differs from the embodiment of Figure 1 in that the first adjustment and locking means now comprise a throttle screw (30') instead of the screw-nut assembly (30) in the devices (1) which are at the intermediate points of the vertical frame and at all points of the horizontal frames. This further means that the first adjustable profile has a second embodiment (10') that is shown in greater detail in Figure 19. The second adjustable profile also has a second embodiment (20') that is shown in greater detail in Figure 21. The embodiment of Figure 3 would be in all devices (1) thereof identical to the one described for the central image of Figure 2.

[0035] As can be seen in the embodiments of Figures 4 to 6, the only difference with the embodiments of Figures 1 to 3 is that the inner partition and the sub-frame are collapsed, as can be seen in the position of the first adjustable profile (10, 10') in the central image of Figures 4 to 6.

[0036] The embodiment of Figure 7 (plumb sub-frame and collapsed inner partition) incorporates additional elements for correcting the position. Thus, the second adjustable profile has a third practical embodiment (20") shown in Figure 22 in greater detail. This embodiment incorporates, with respect to the previous ones:

- an intermediate clipping part (70) between the flashing (T) and the first adjustment means (30), which is shown in detail in Figure 23.
- a corrector (80) and a folded sheet (90) to close the opening between the flashing (T) and the second adjustable profile (20").

[0037] With the embodiment of Figures 7 or 14, it is possible to correct the collapse on the outer side of the flashing (T).

[0038] The embodiments of Figures 8 to 14 correspond

to the embodiments of Figures 1 to 7, except that the flashing is cut straight (90°), which means that the anchors (21', 22') for clipping the flashing (T) have a different design, although their function is, logically, the same as that already described.

[0039] The flashing (T) is installed on the anchor or clamp that secures the enclosure to the sub-frame (P) according to current regulations. These flashings (T), as indicated, are clipped onto the second adjustable profile (20, 20') or, where appropriate, onto an intermediate part (70, 70'), without any adjustment, and it is not necessary for the flashing (T) in that case to be cut and checked at the factory like the rest of the existing methods on the market today.

[0040] Moreover, the flashing (T) does not require any type of machining in the top area when the window is provided with a monoblock shutter box, and it is prepared for mitre cutting in this practical embodiment. On the other hand, by means of the flashing (T) of the present invention, the sealing between the window frame (M), the flashing (T) and the wall is avoided due to the resistance of its design, providing a silicone-free finish of any type on the window perimeter. Lastly, it should be noted that this flashing (T) provides easy and quick unclipping in the event that parts must be replaced, either due to blows or after review by technicians to achieve perfect insulation of the enclosure.

[0041] Figures 24 to 27 show the sub-frame assembly of safety elements. Specifically, a canvas for protection against atmospheric agents (L), a safety net (R) and a safety system (200) to fasten the operator's life harness to the sub-frame (P), wherein said support can be installed on the sub-frame even after the installation of the enclosure; it is enough to remove a flashing (T) and install the harness support (200) for the safety of the operator who will work on the enclosure. This safety system (200) can be seen in detail in Figure 31 and essentially comprises a support profile that can be installed on the sub-frame (P). Moreover, Figures 29 and 30 show in detail the attachment of the safety net (R) and the protection canvas (L) to the sub-frame (P) through a plastic part or poppet (S), in an essentially T-shape that is secured to the sub-frame (P) holding the safety net (R) in the channel of the sub-frame (P) by means of a rod (V), or it holds the canvas (L) through holes in said canvas.

[0042] This structure represents an improvement with respect to the known state of the art, since currently anchor points in the work, ropes and the harness itself must be installed to avoid falling into the void, but this work is slow and affects the installation of the enclosures. However, with the system of the invention, the operator installs the safety harness in the enclosure sub-frame and avoids the costly time of searching for the fastening point far from the enclosure. Moreover, in possible after-sales works where these life anchor points will no longer be present, the operation is once again easy and viable due to the removal of the flashing (T) and fastening of the harness support (200) to the sub-frame (P) in an easy

and intuitive way.

[0043] Finally, as shown in Figures 25 to 27, the present invention implements a square-bevel (100, 100') in a single part with two different embodiments, depending on whether it is intended to be placed in a mitre (100, Figure 26) and cannot be reused or in the central strut (100', Figure 27), and in this case if it is reusable. In both embodiments of the square-bevel (100, 100'), it is possible to save on the cost of material injection, save time in the installation, as well as save screws for the securing thereof; when the window is installed on site, it will only be necessary to cut the visible area of the bevel reinforcement to give entry to the window and the sub-frame (P) opening remains completely free. As can be seen in these figures, each square-bevel (100, 100') has means for anchoring and/or securing to the inner channel of the sub-frame (P) in its different positions.

[0044] Therefore, the system of the present invention provides a safe, simple and intuitive solution for the installation of enclosures, allowing three-dimensional adjustment (vertical plane, horizontal plane and depth) for the placement of the enclosure. In addition to being adaptable to any type of enclosure and material, it allows storage to be reduced to a minimum, controlling the products from the factory to avoid loss of materials, and reducing the required screws. In this way, installation personnel are provided with fast, clean, safe and top-quality work, complying with international installation guides in all cases.

Claims

1. A system for positioning, adjusting and installing enclosures that comprises a sub-frame (P) configured to be directly attached to the partition on which the enclosure is to be built, an enclosure frame (M) and at least one positioning and installation device of the enclosure (1) placed on each side, top and bottom of the enclosure, responsible for attaching the frame (M) to the sub-frame (P) and with the ability to adjust the frame (M) in two or three dimensions with respect to the sub-frame (P), having full locking between the parts thereof; wherein the positioning and installation device of the enclosure (1) is **characterised in that** it comprises:

a first adjustable profile (10, 10') and a second adjustable profile (20, 20', 20'') comprising a first end and a second end on the opposite side to the first, in such a way that:

the first adjustable profile (10, 10') is secured to the frame (M) on one of its sides and on the opposite side it is attached to a first end of the second adjustable profile (20, 20', 20'') through first adjustment and locking means (30, 30');

and wherein, the second end of the second adjustable profile (20, 20', 20'') is further attached to the sub-frame (P) by means of second adjustment means (40);

and wherein the second adjustable profile (20, 20', 20'') is clipped with a perimeter flashing (T) which is configured as a part that covers the opening between the frame (M) and sub-frame (P) in such a way that the flashing (T) conceals the positioning and installation device of the enclosure (1).

2. The system according to claim 1, comprising two wedges (50, 60) complementary to each other and housed in the open inner channel (P1) of the sub-frame (P). 15
3. The system according to any one of claims 1 or 2, wherein the sub-frame (P) comprises a top adjustment area of the sub-frame (P) with at least two channels (P2) that is configured for extra adjustment of up to approximately 5 mm depending on where the second adjustment means (40) are inserted in the sub-frame (P). 20
25
4. The system according to any one of claims 1 to 3, comprising a second wedge (50') configured to level the sub-frame (P) and the second adjustable profile (20'') aligning the base of the second adjustable profile (20'') with the inner partition, when it is collapsed and the frame (M) is correctly plumb. 30
5. The system according to one of claims 1 to 4, wherein the first adjustment and locking means are selected from a screw-nut assembly (30) and a throttle screw (30'). 35
6. The system according to one of claims 1 to 5, comprising an intermediate clipping part (70, 70') between the flashing (T) and the first adjustment and locking means (30, 30'). 40
7. The system according to any one of claims 1 to 6, comprising a poppet (S) for a canvas for protection against atmospheric agents (L), a safety net (R) and a safety system (200) configured to fasten an operator's life harness to the sub-frame (P) which essentially comprises a support profile that can be installed on the sub-frame (P). 45
50
8. The system according to any one of claims 1 to 7, comprising a square-bevel (100, 100') in a single part, wherein a first square (100) is configured to be installed on the mitres of the enclosure and is not reusable, while a second square (100') is configured to be installed on a central strut (TC) of the enclosure and is reusable. 55

9. The system according to any one of the preceding claims, comprising plastic covers configured to close the flashing (T) in a vertical position (300') and absorb the expansions (300) of the flashing (T) between the vertical and horizontal parts of same. 5

10. The system according to any one of the preceding claims, comprising: (a) an intermediate clipping part (70) between the flashing (T) and the first adjustment means (30); and (b) a corrective part (80) and a folded sheet (90) to close the opening between the flashing (T) and the second adjustable profile (20'') when the partition is collapsed and the frame (M) is correctly plumb.

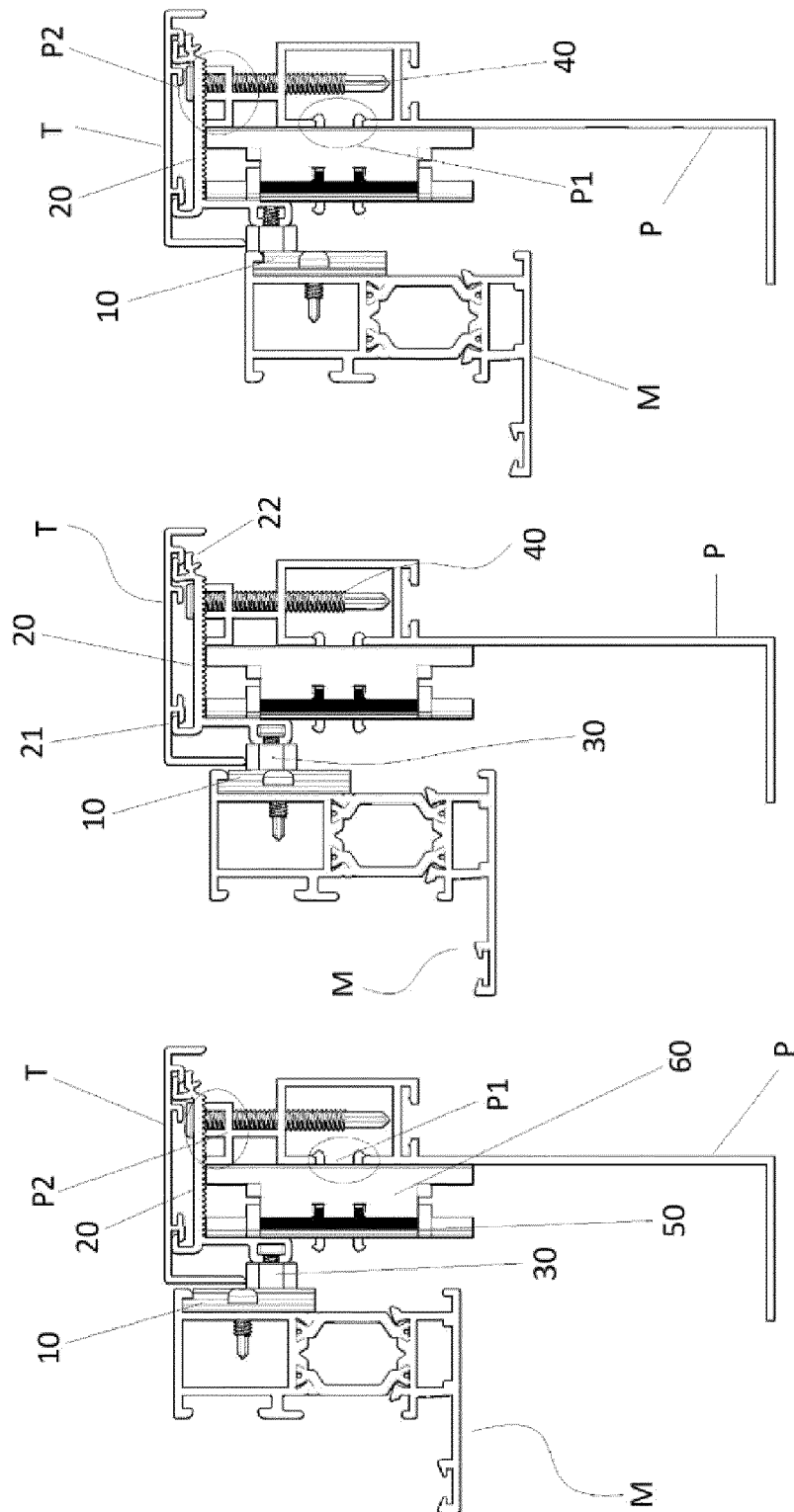


Figure 1

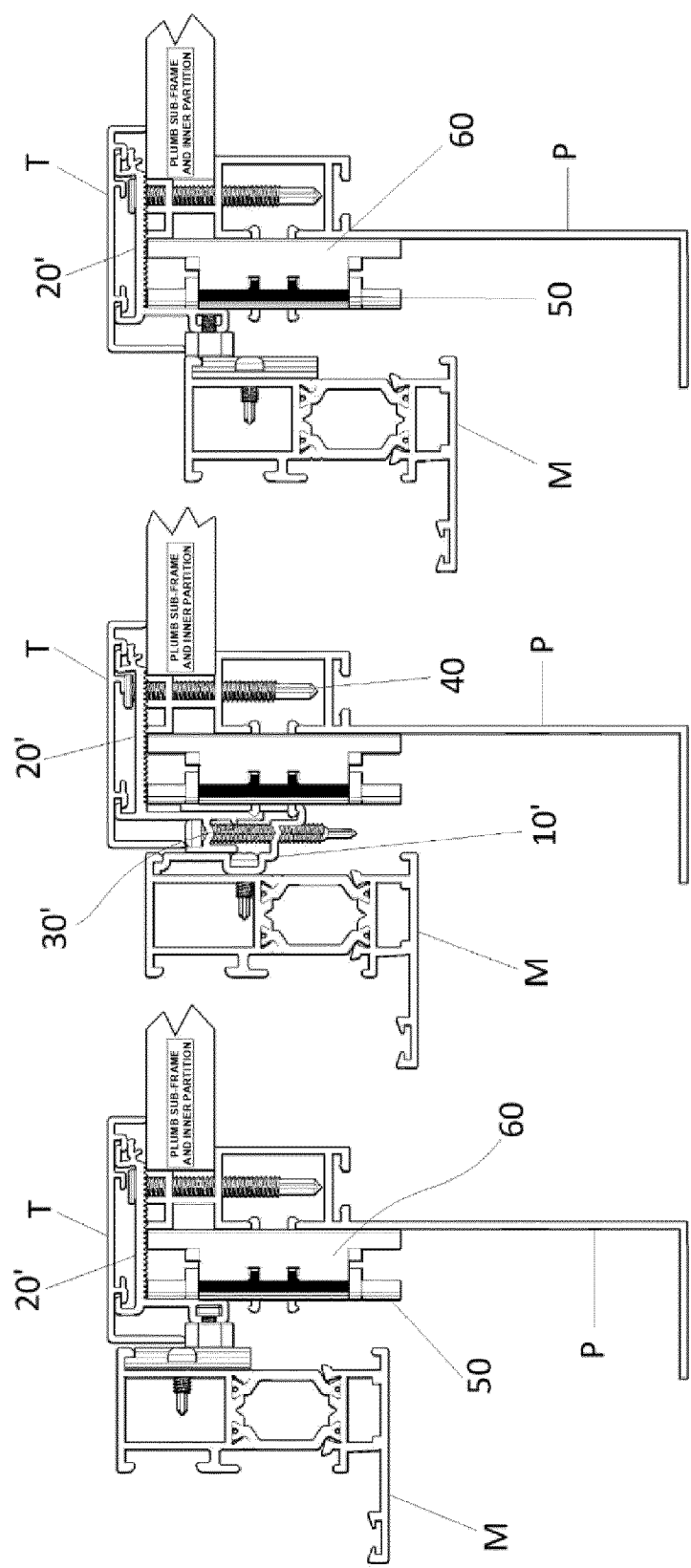


Figure 2

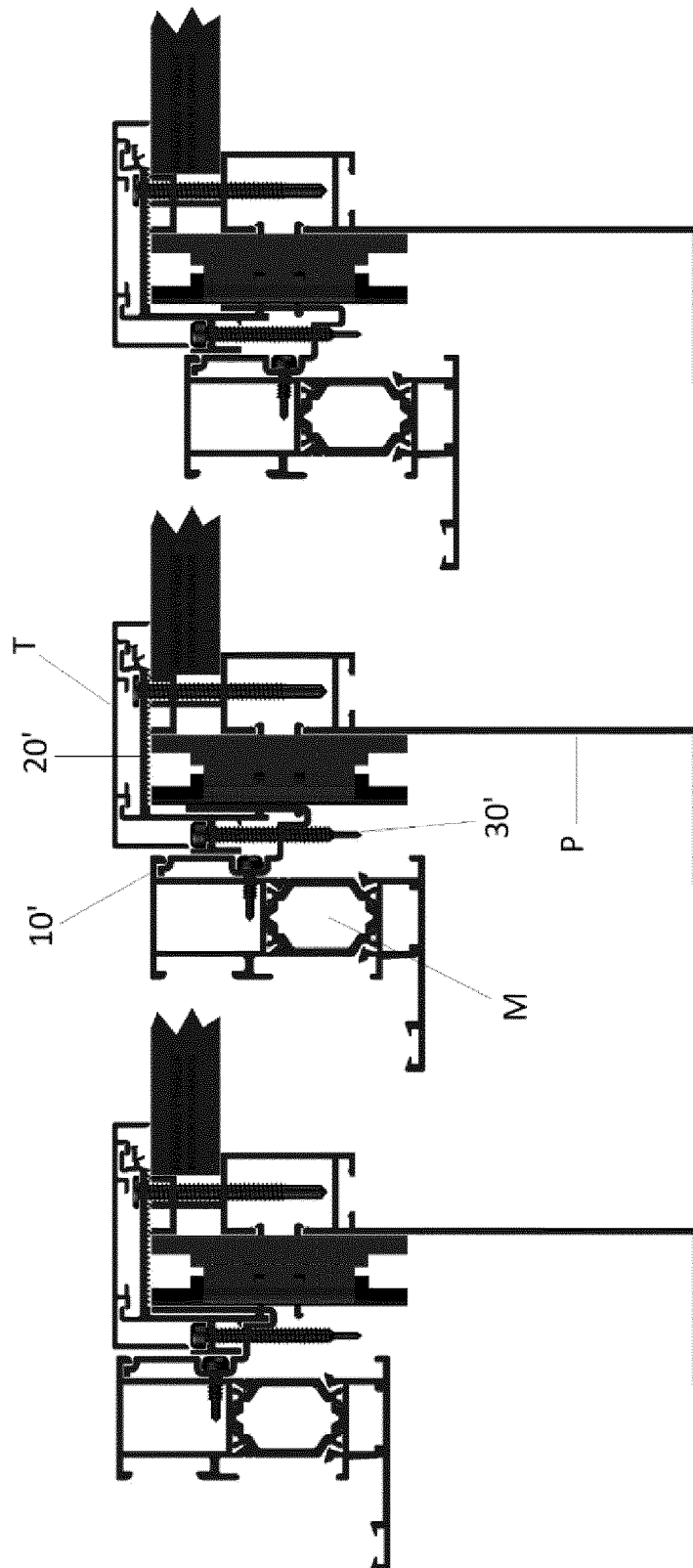


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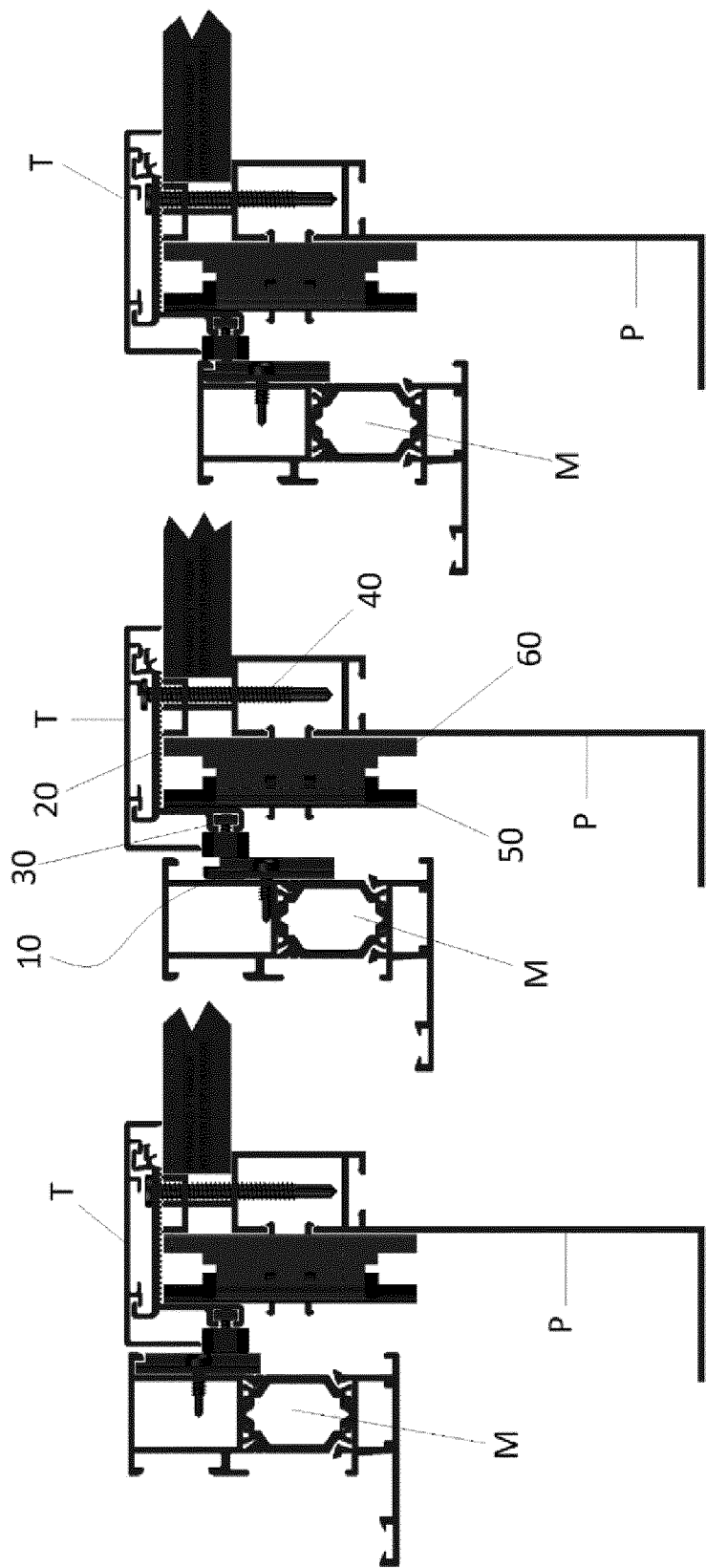


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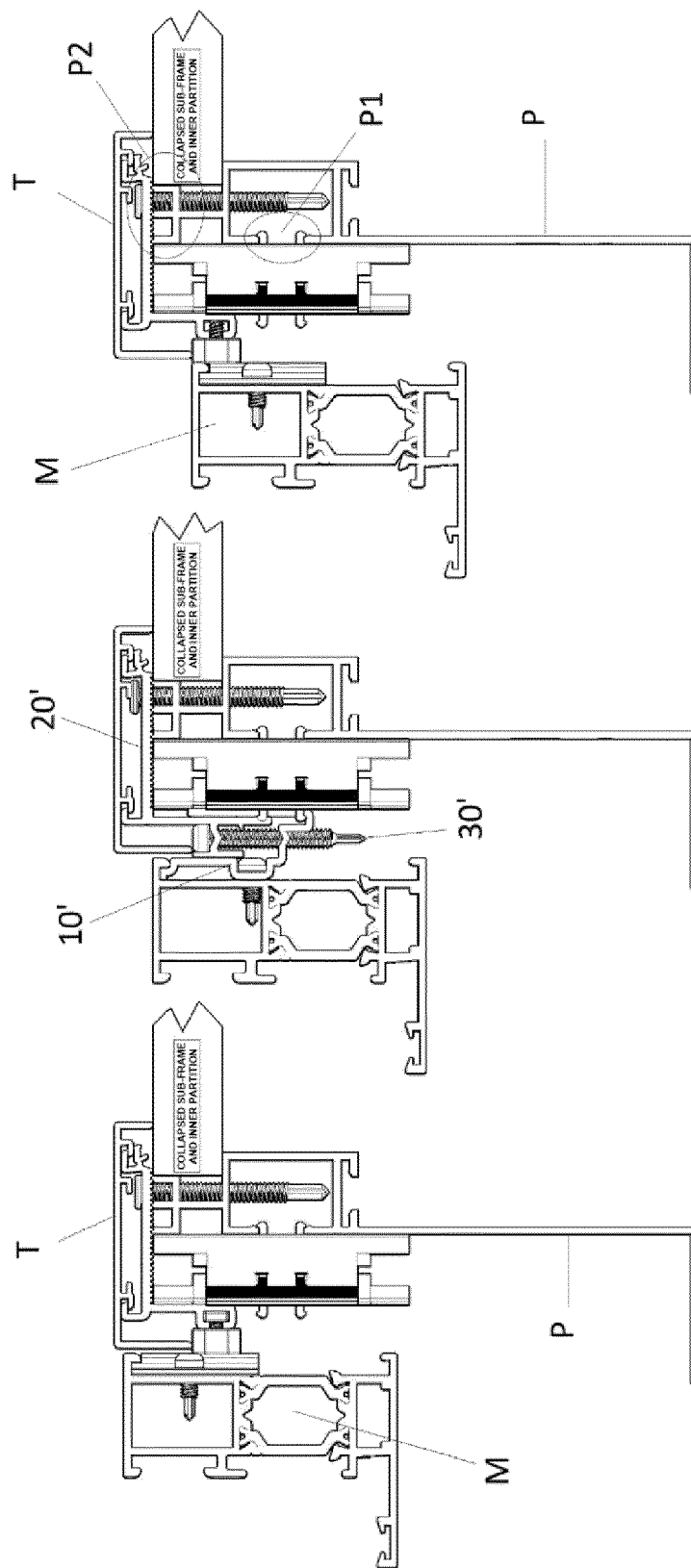


Figure 5

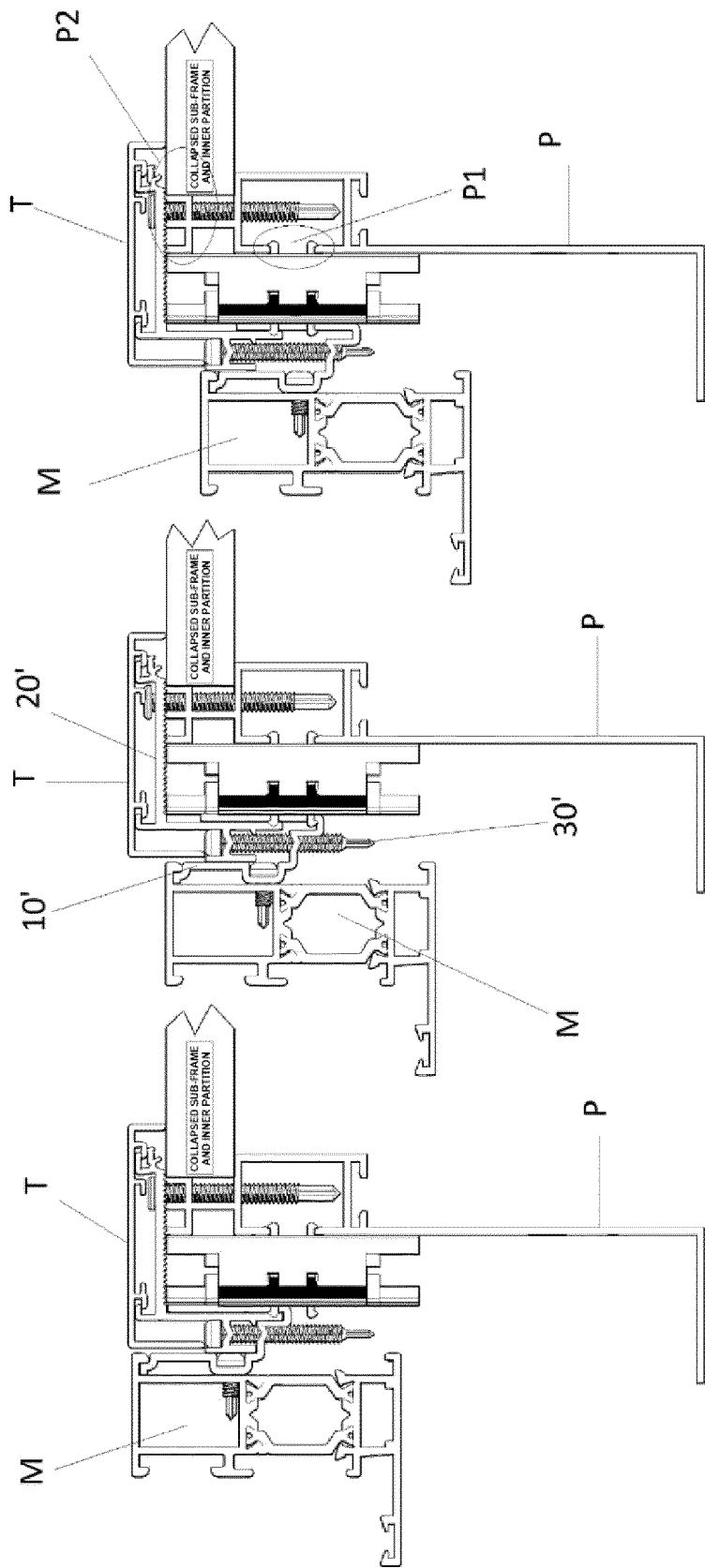


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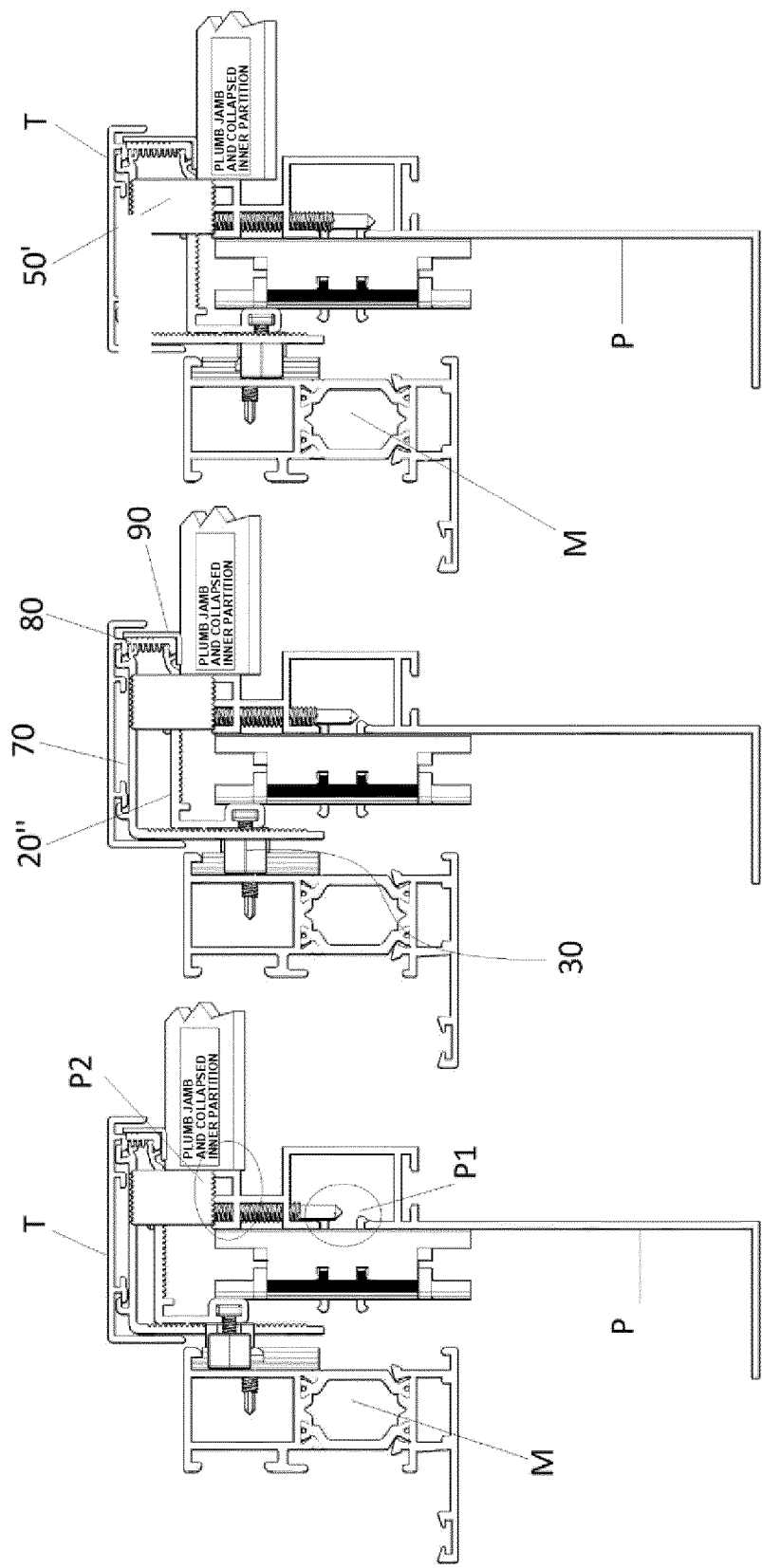


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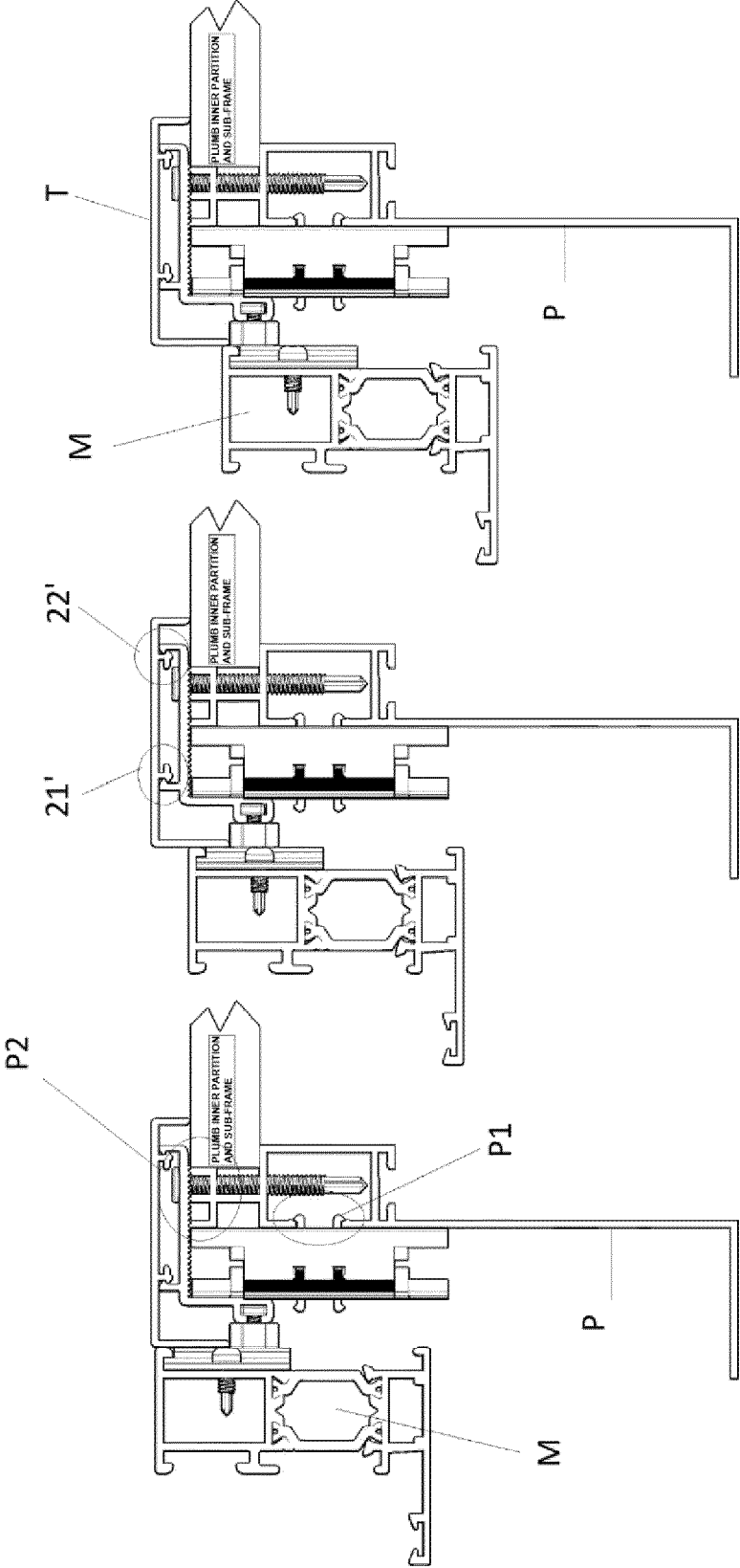


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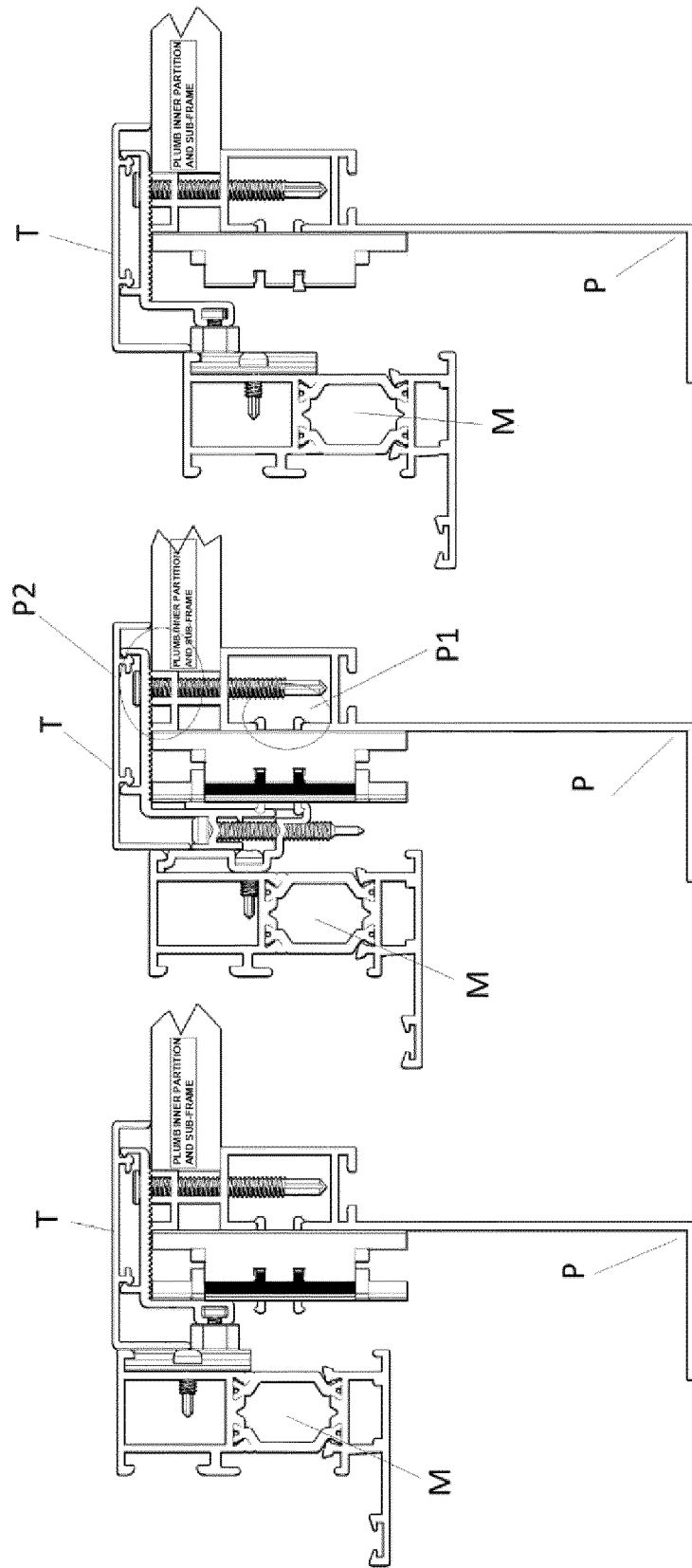


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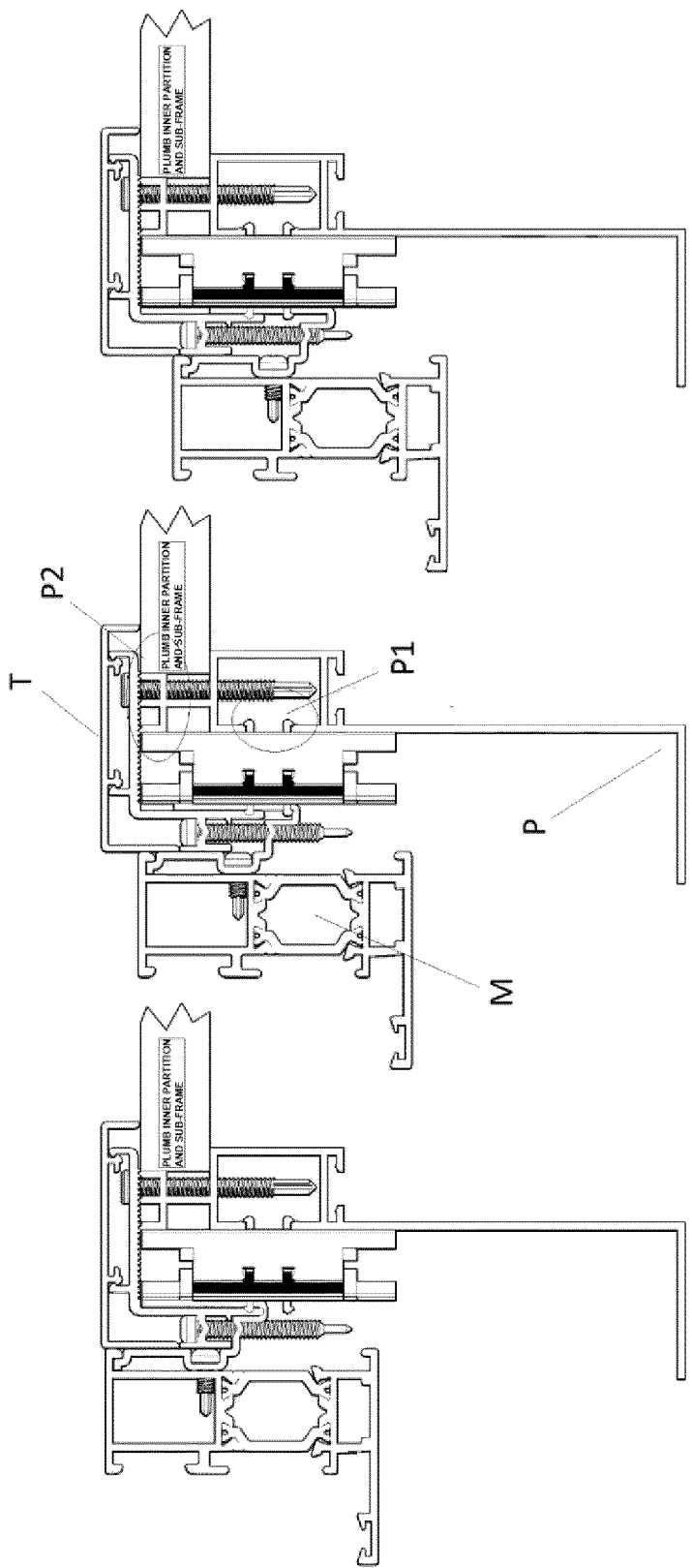


Figure 10

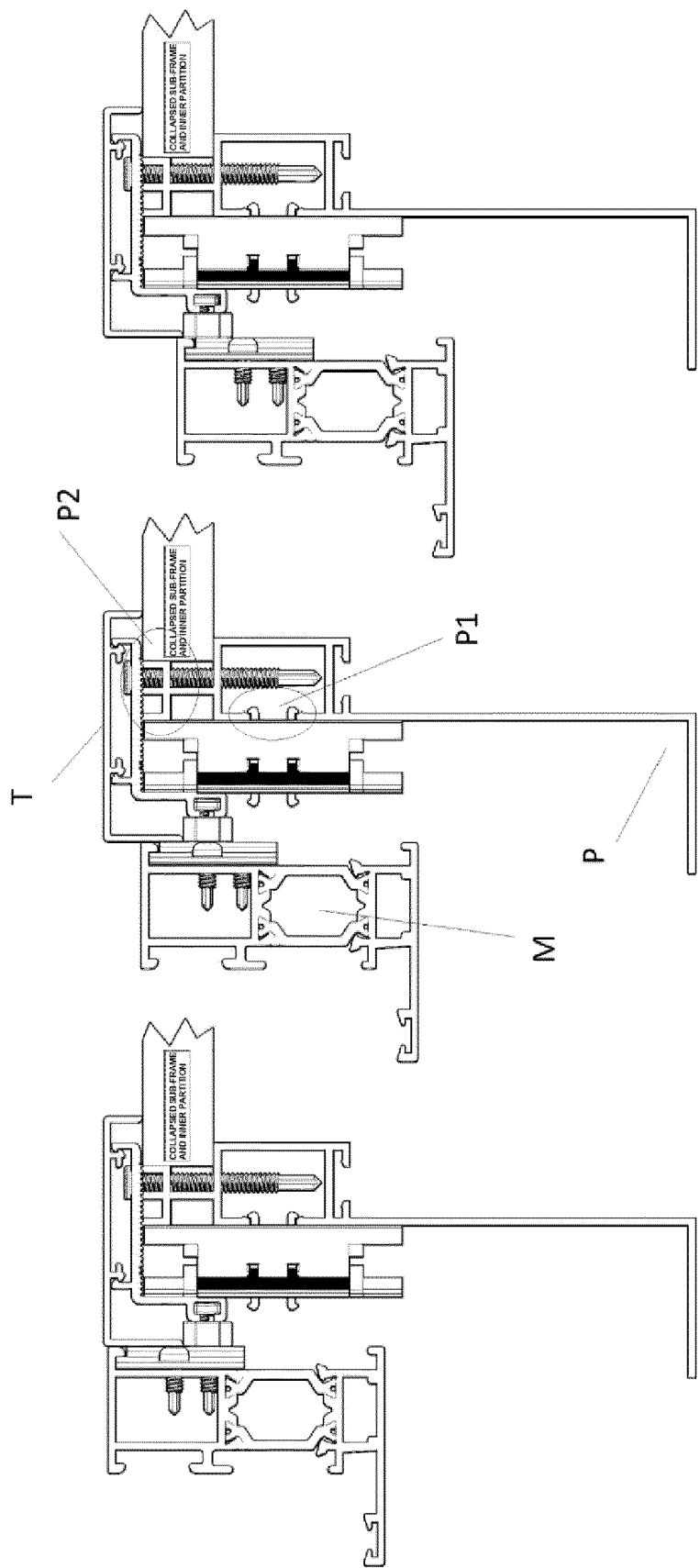


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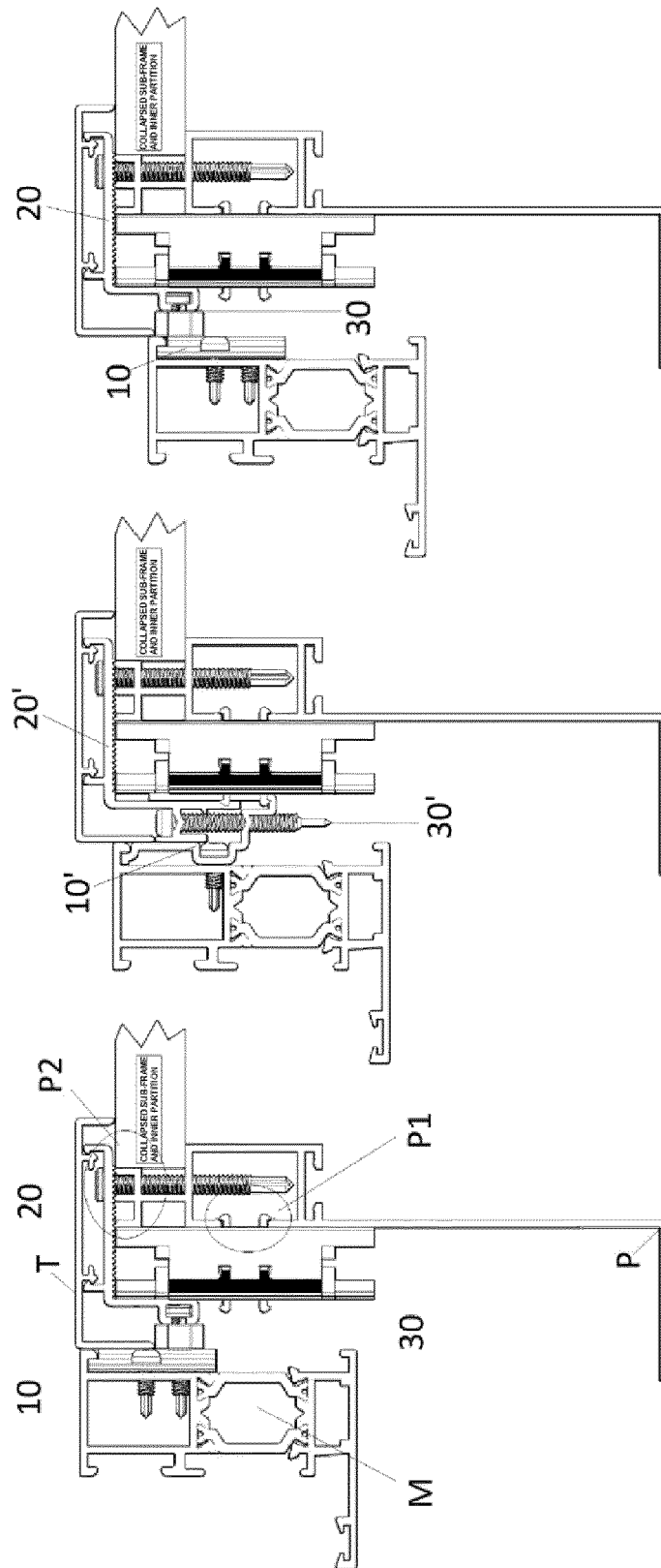


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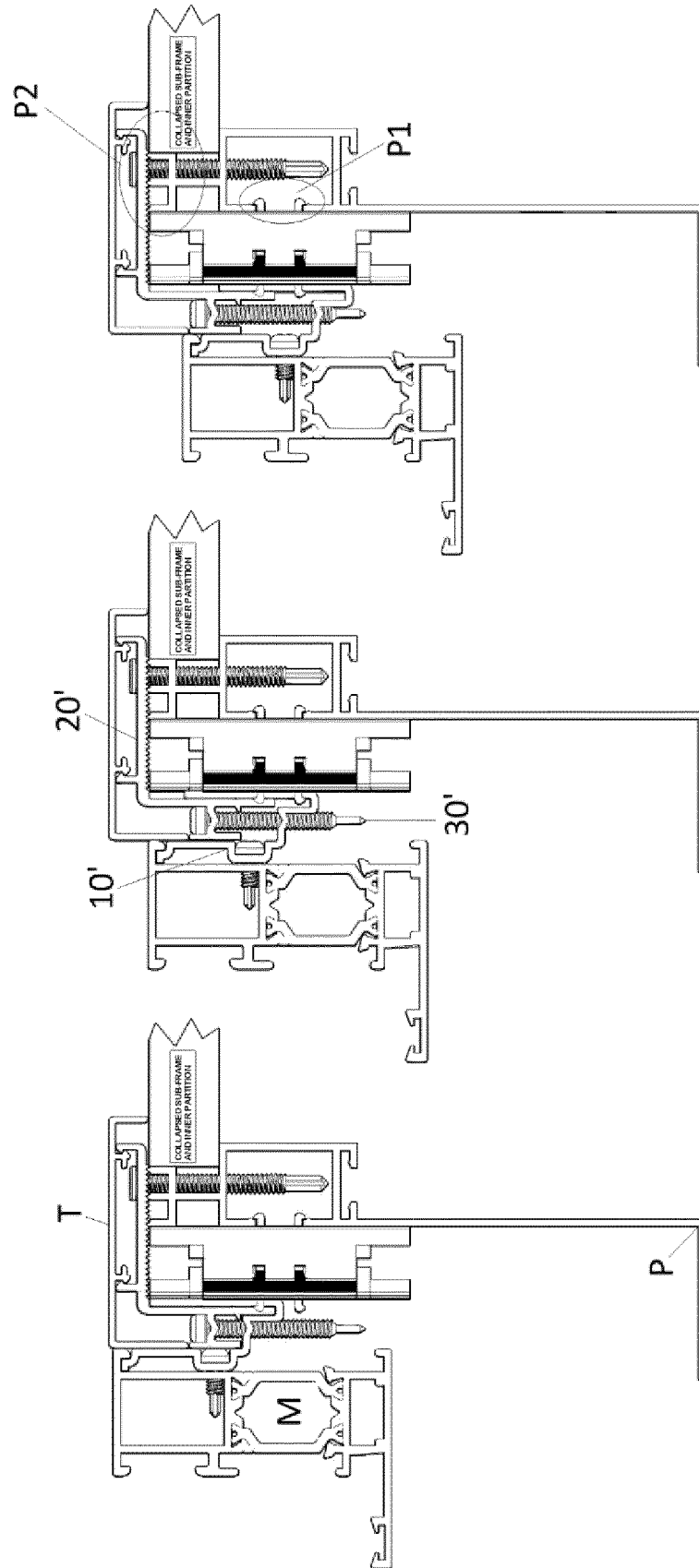


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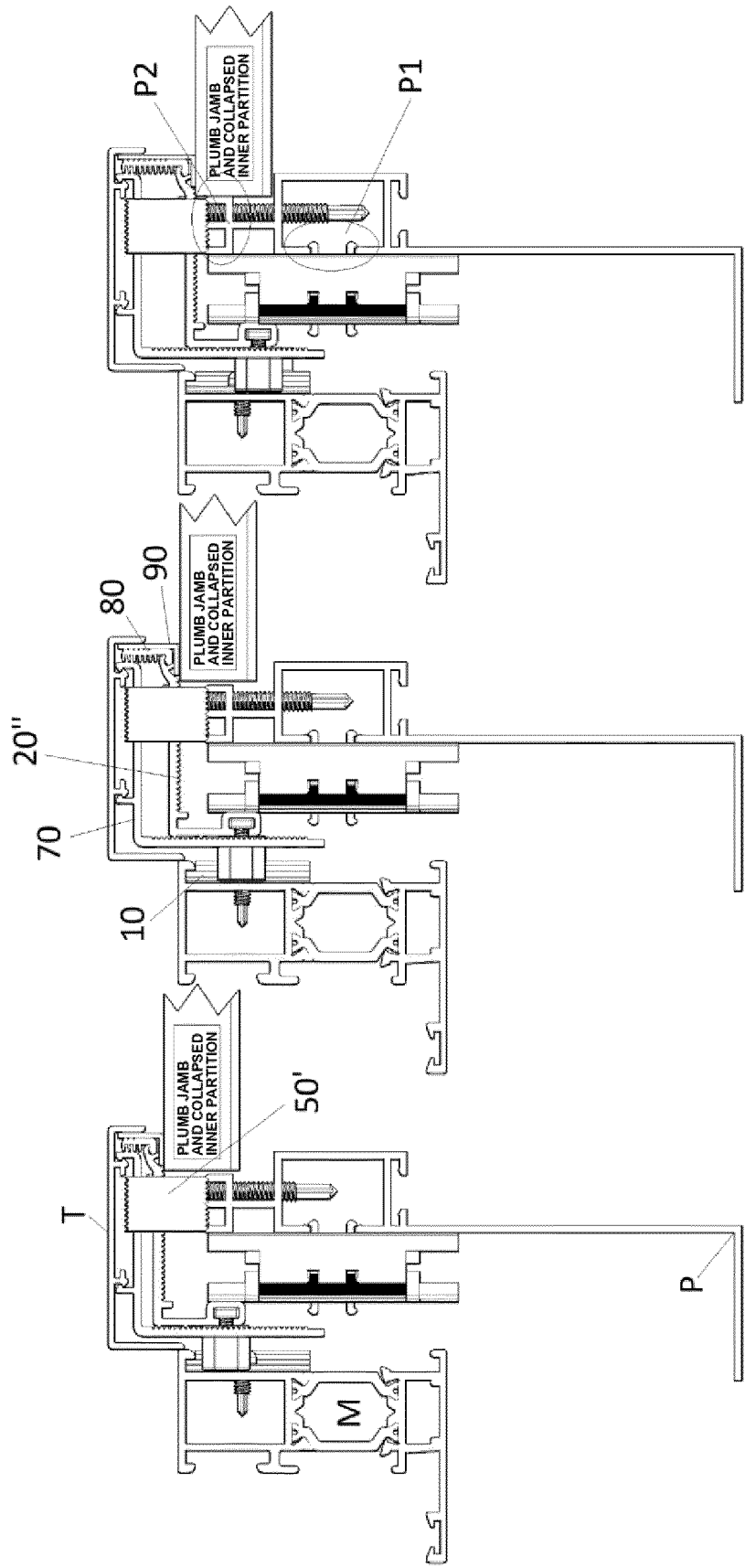


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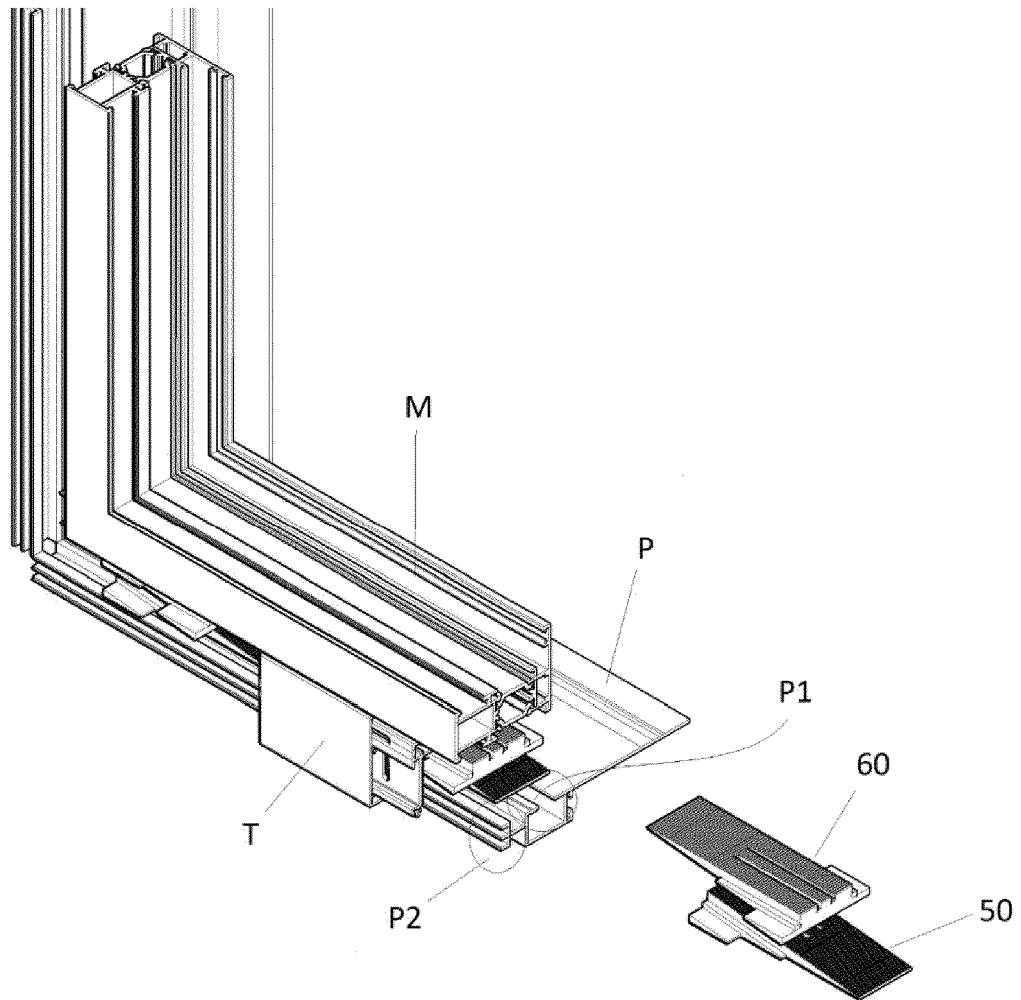


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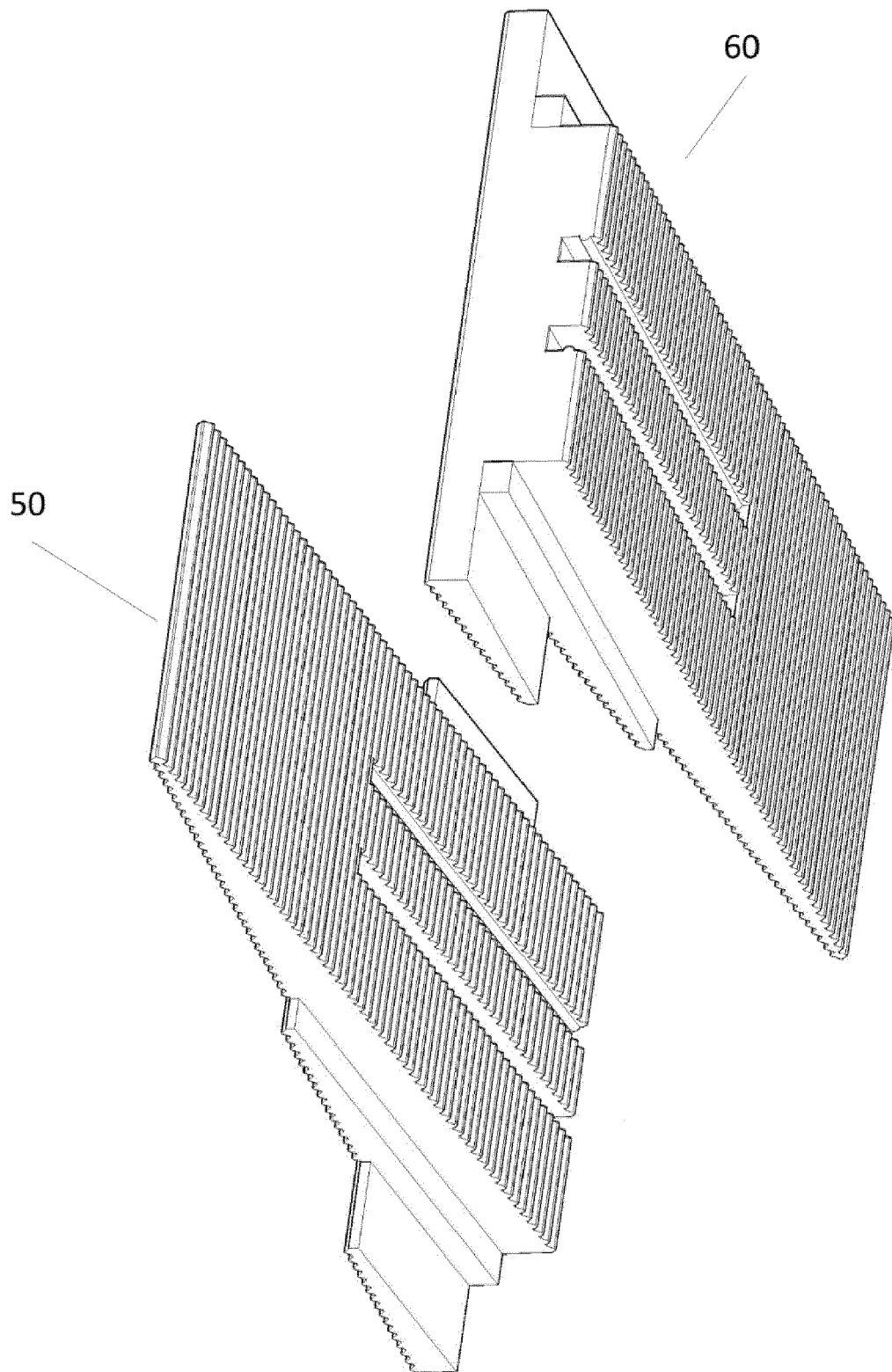


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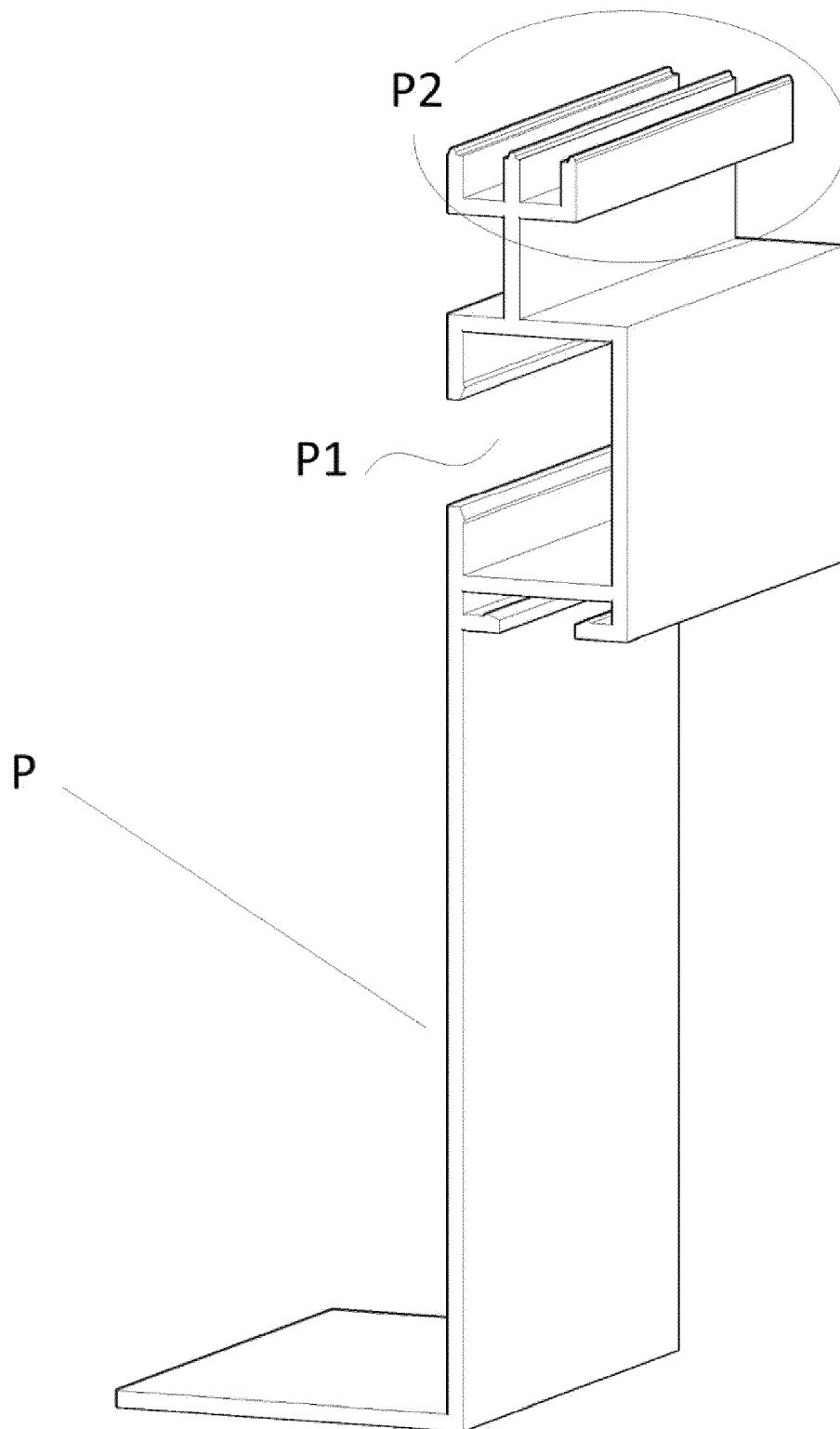


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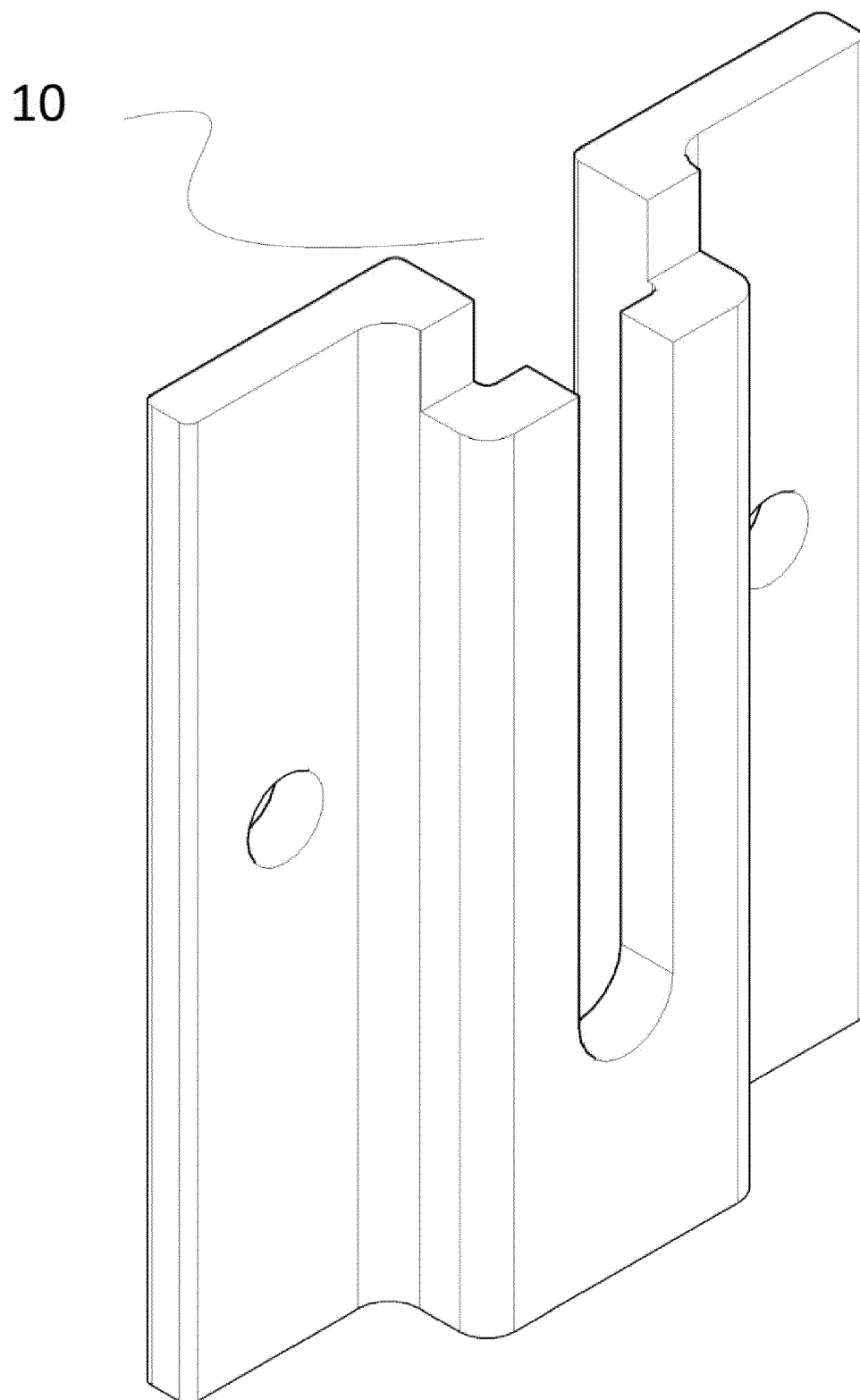


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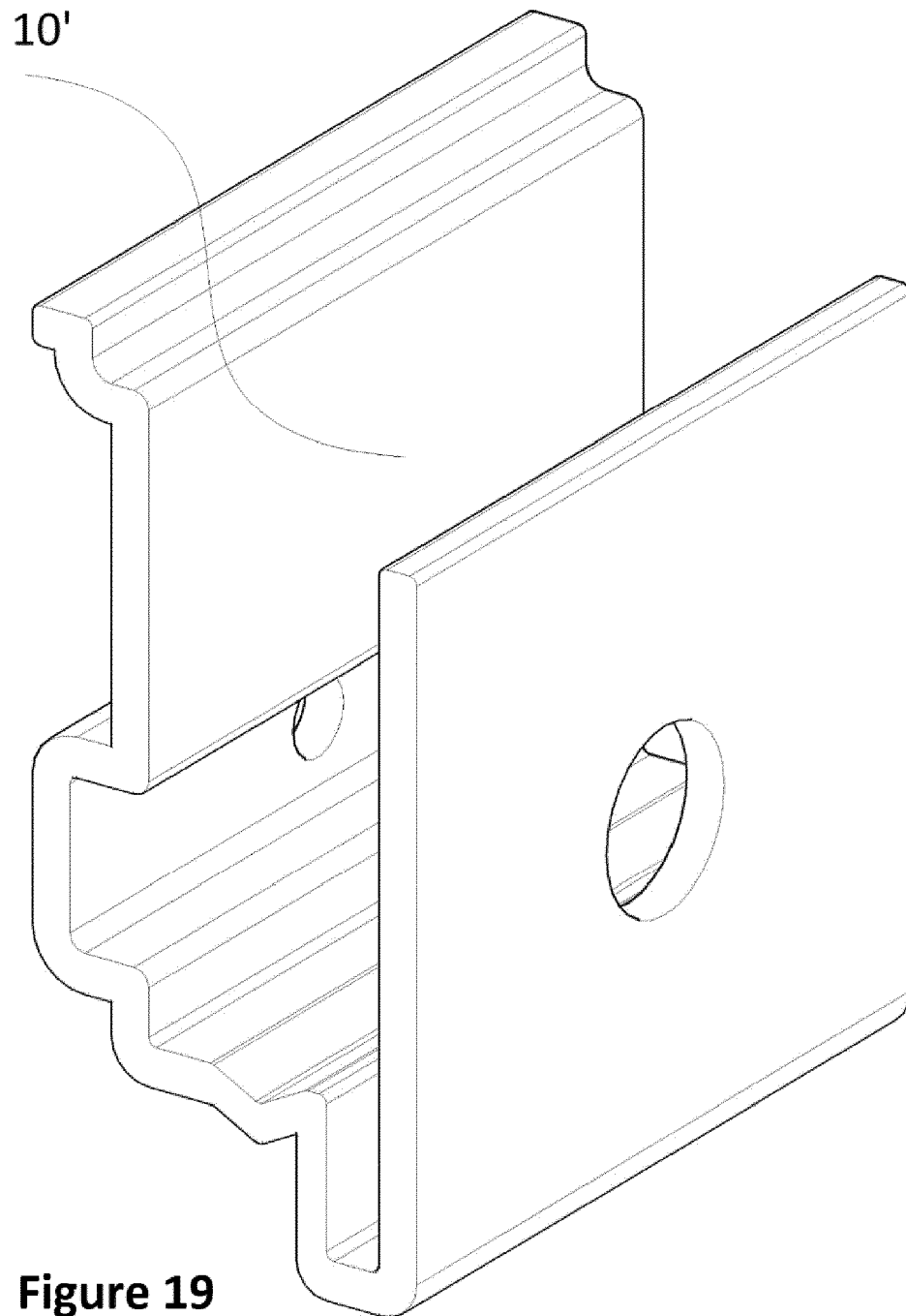


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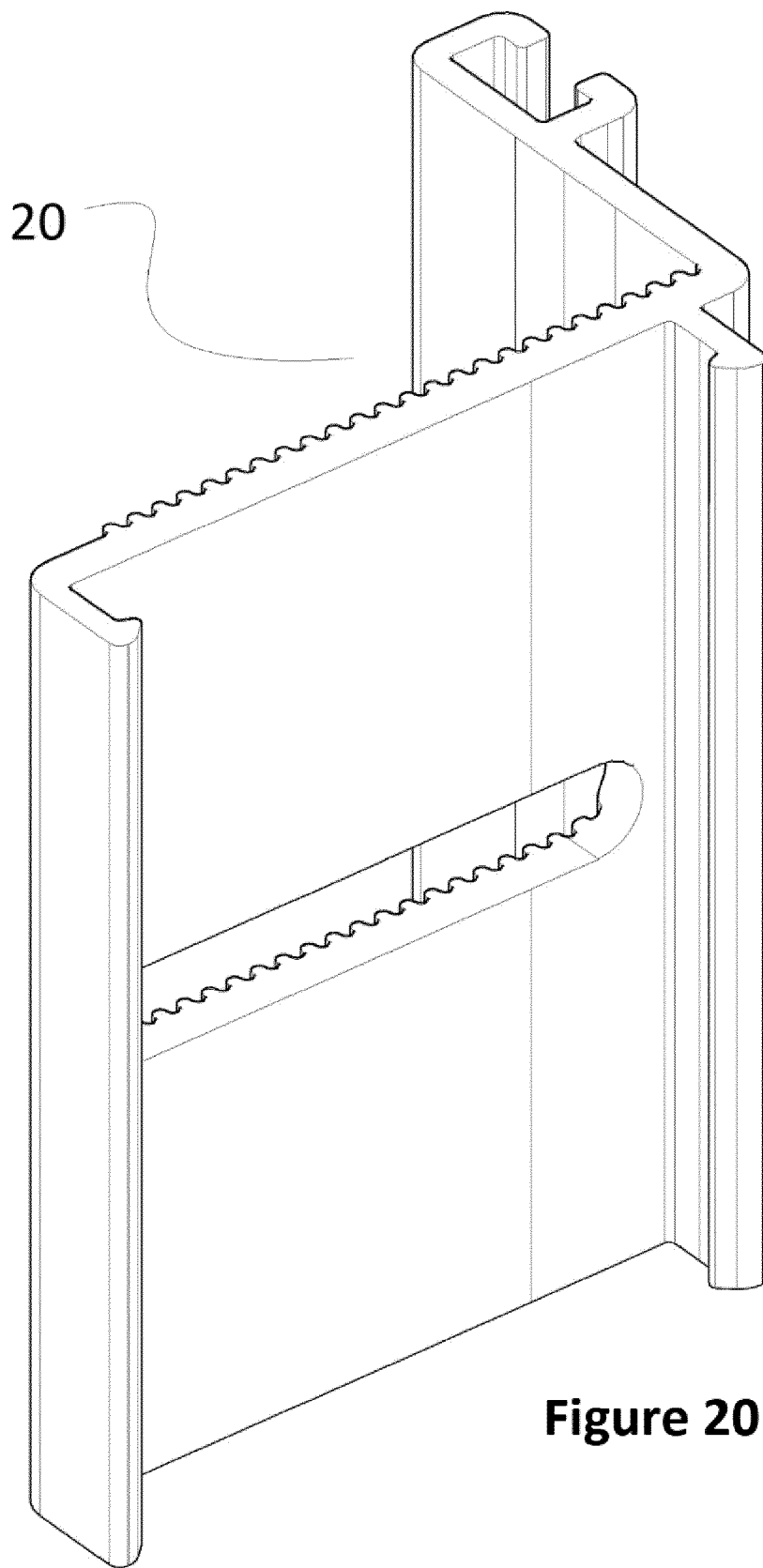


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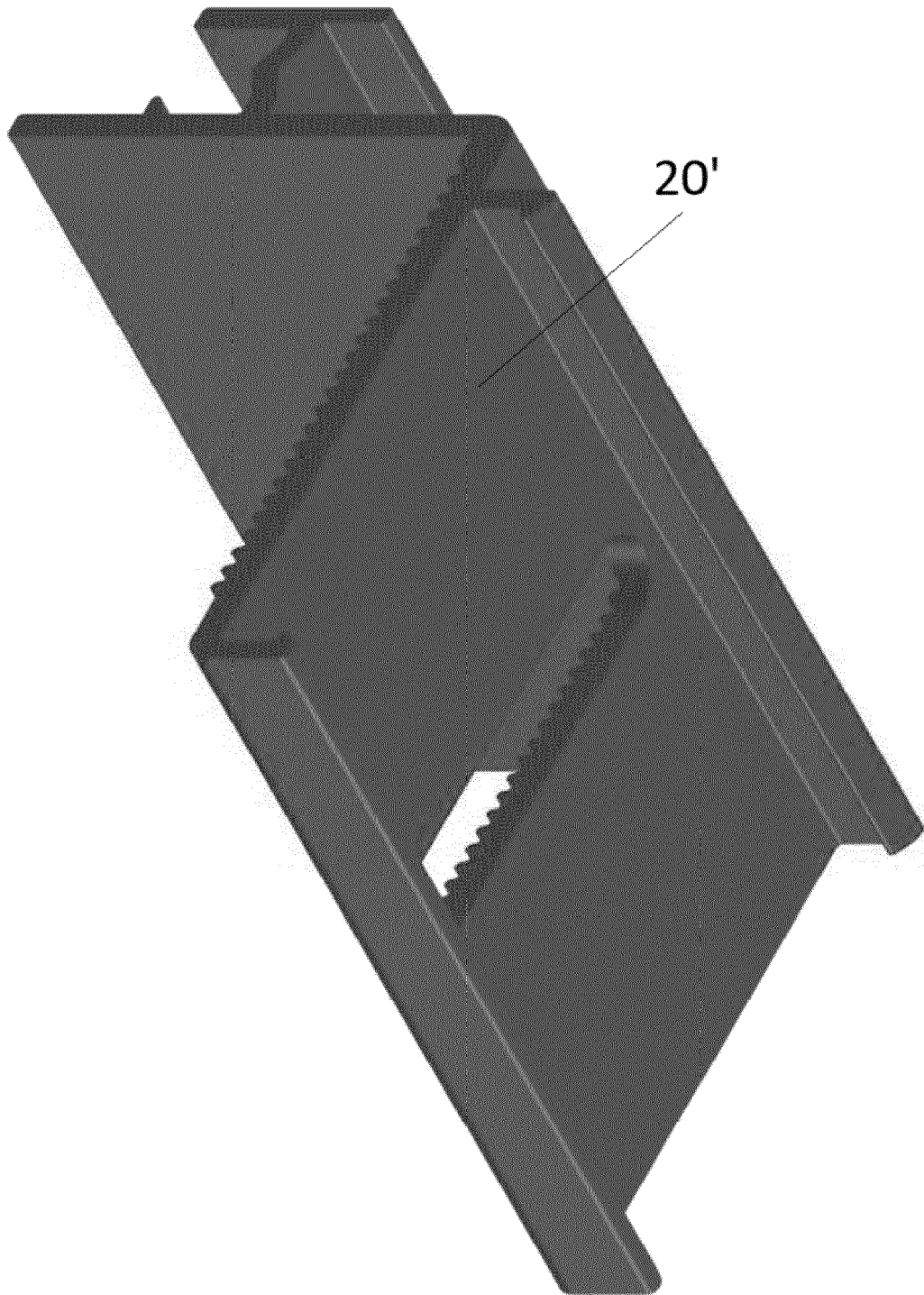


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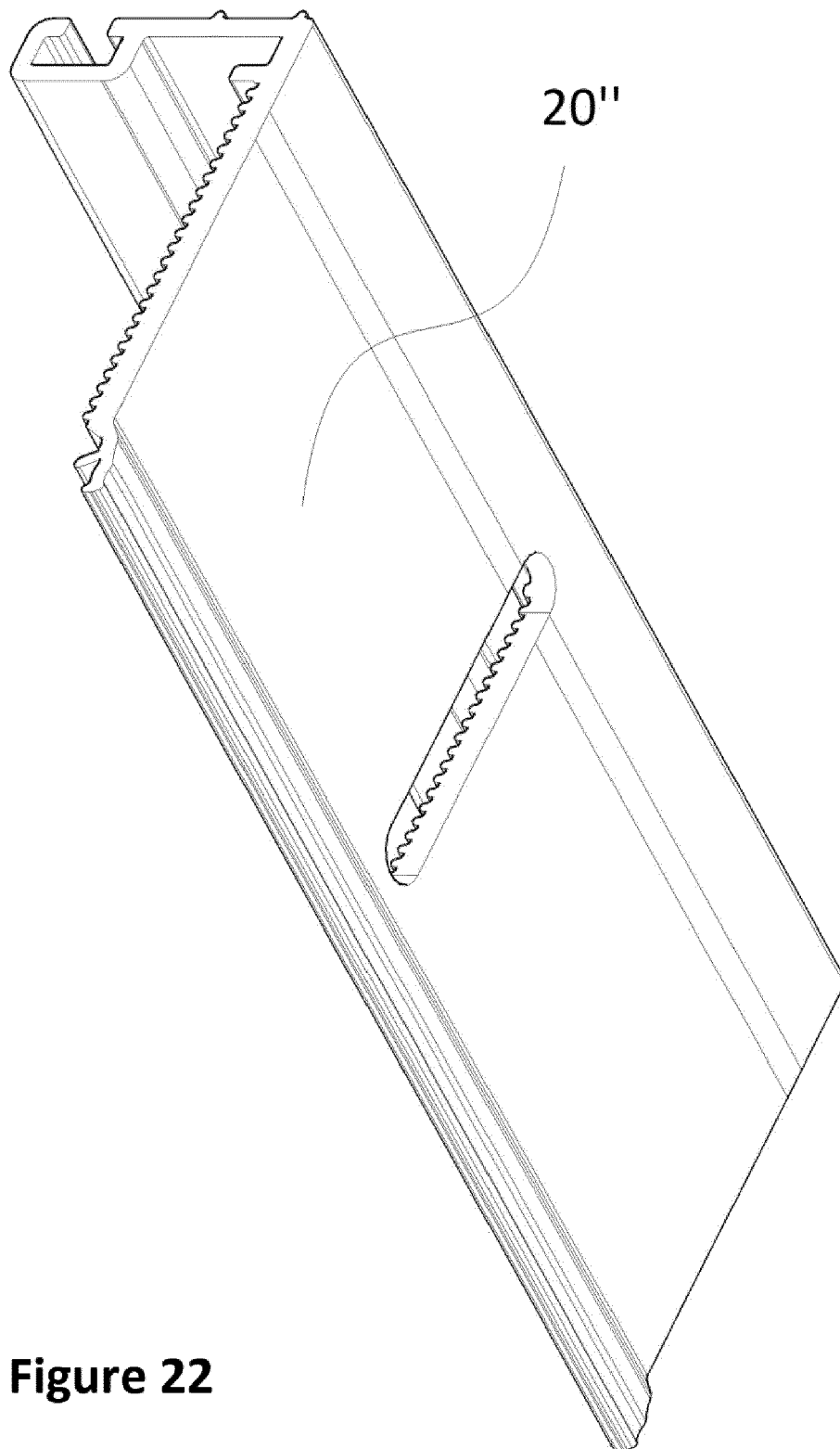


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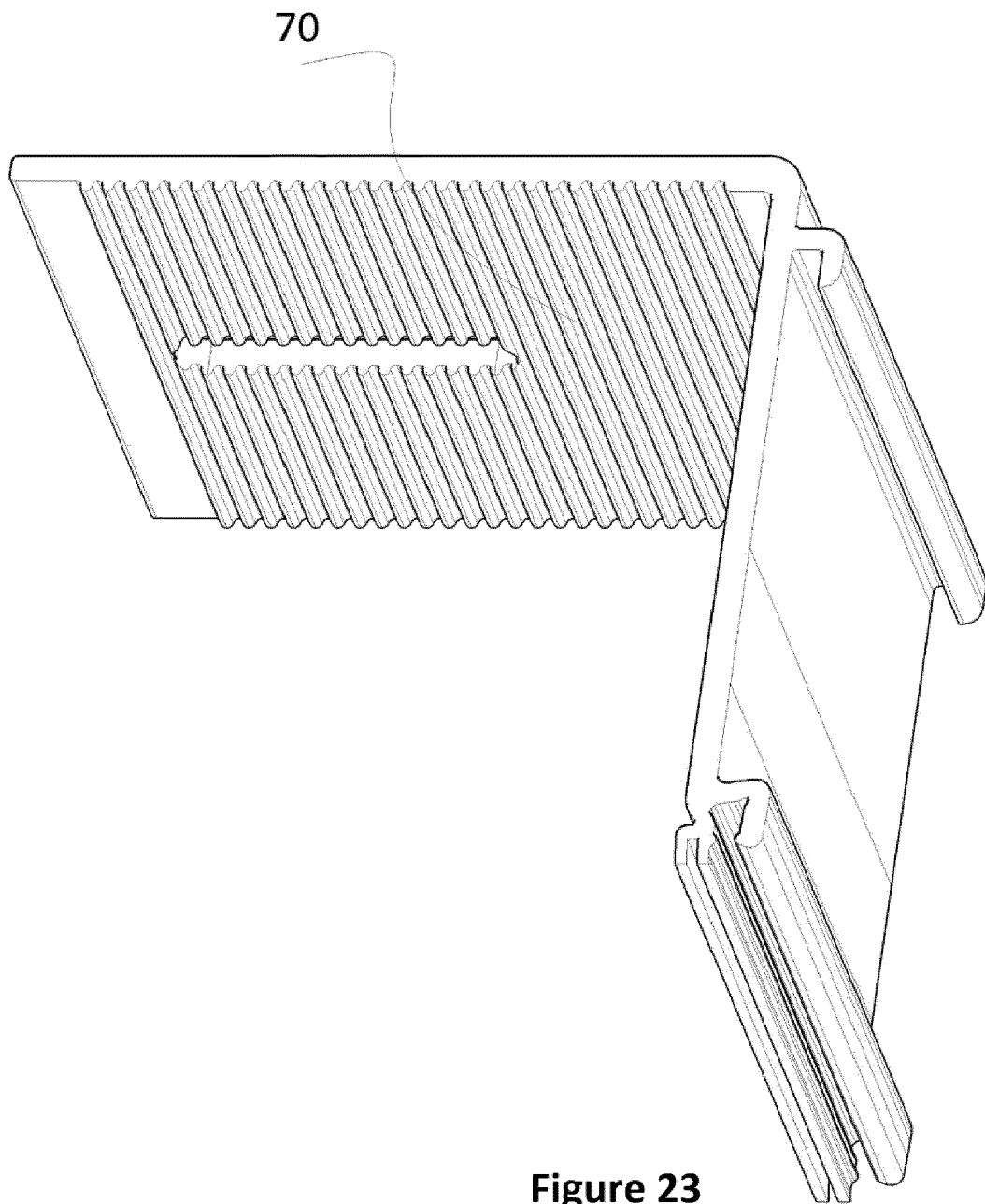


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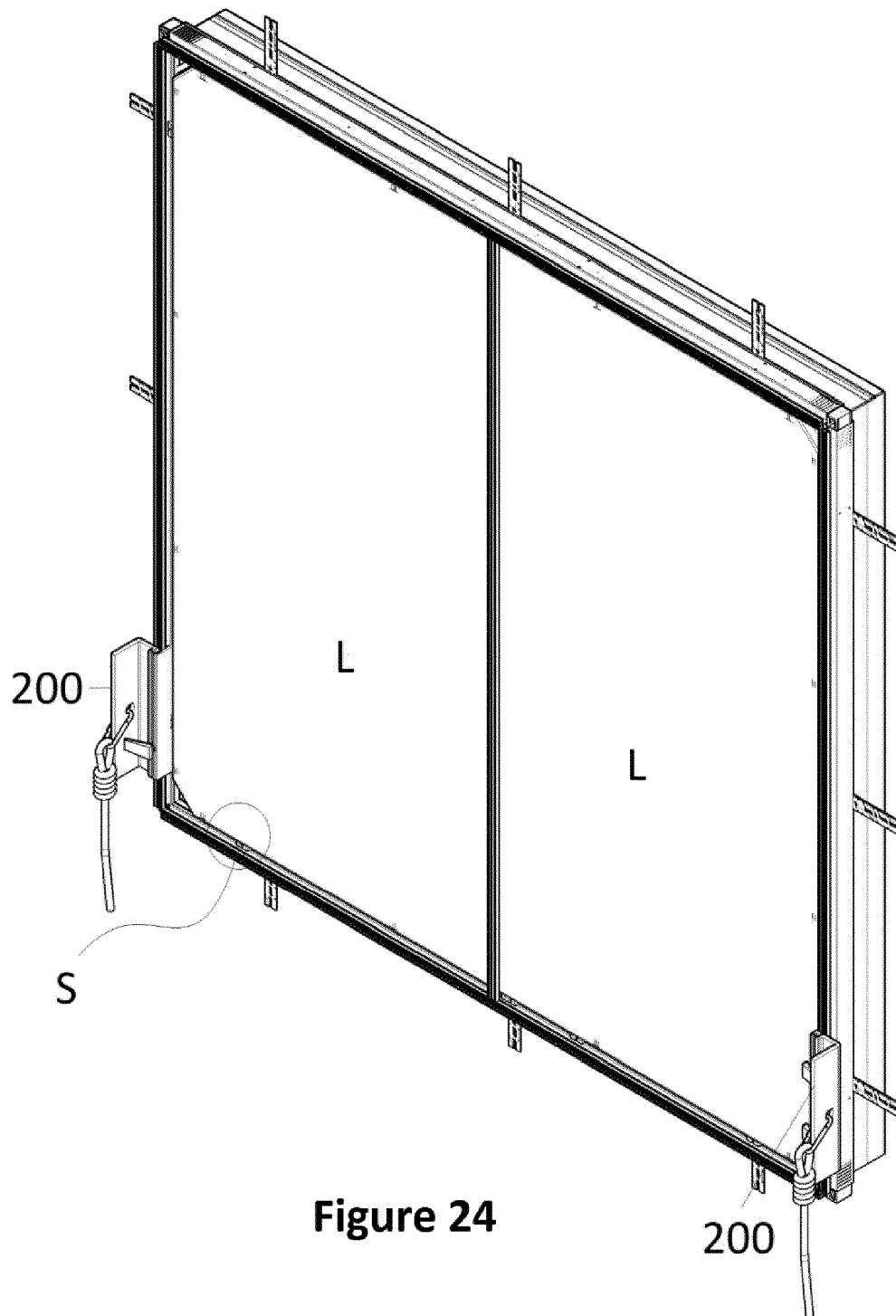


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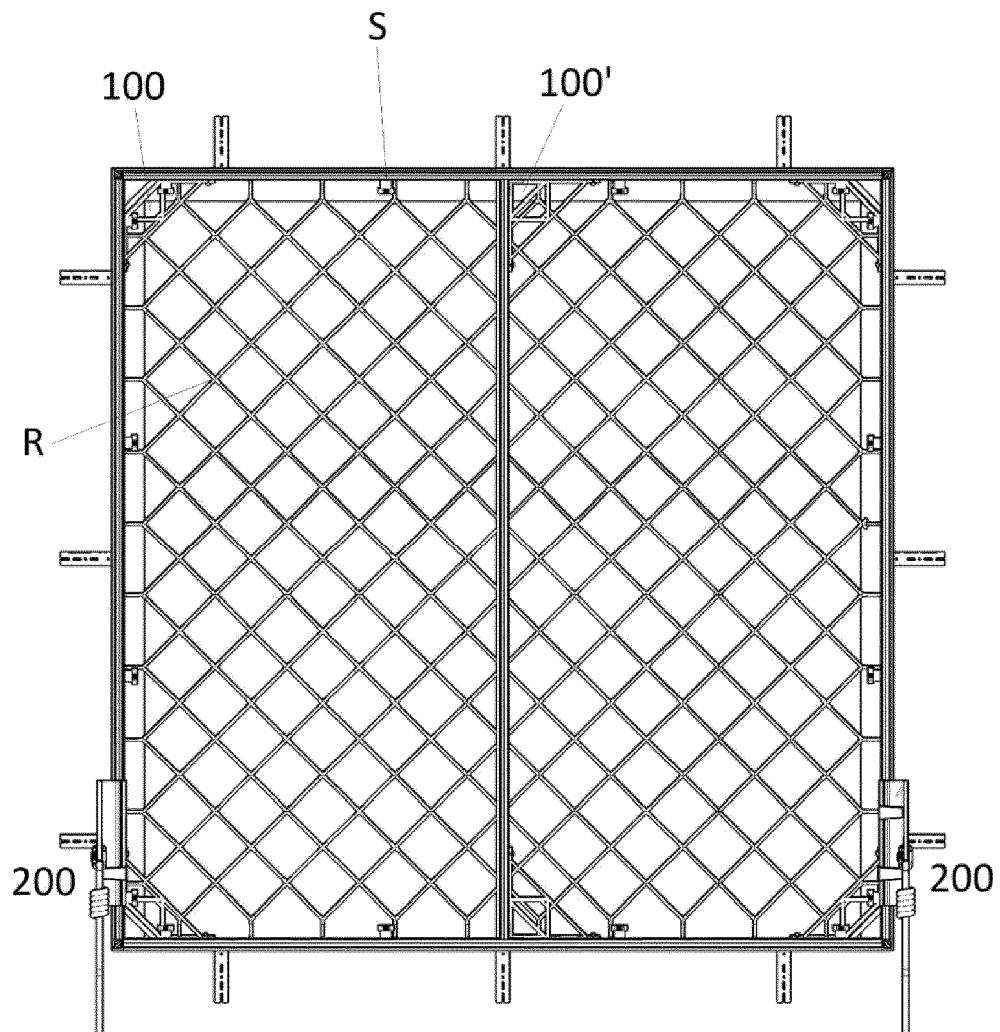


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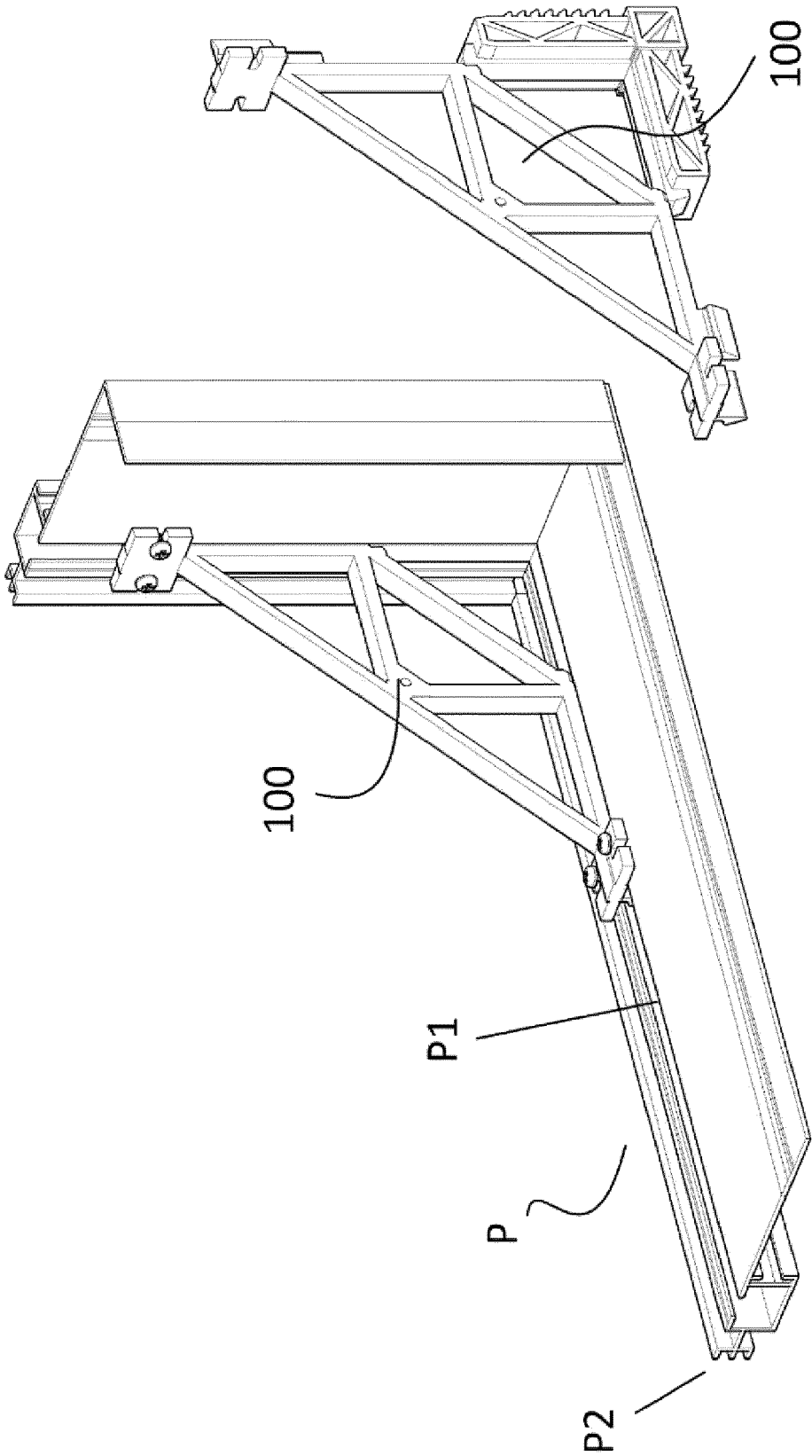


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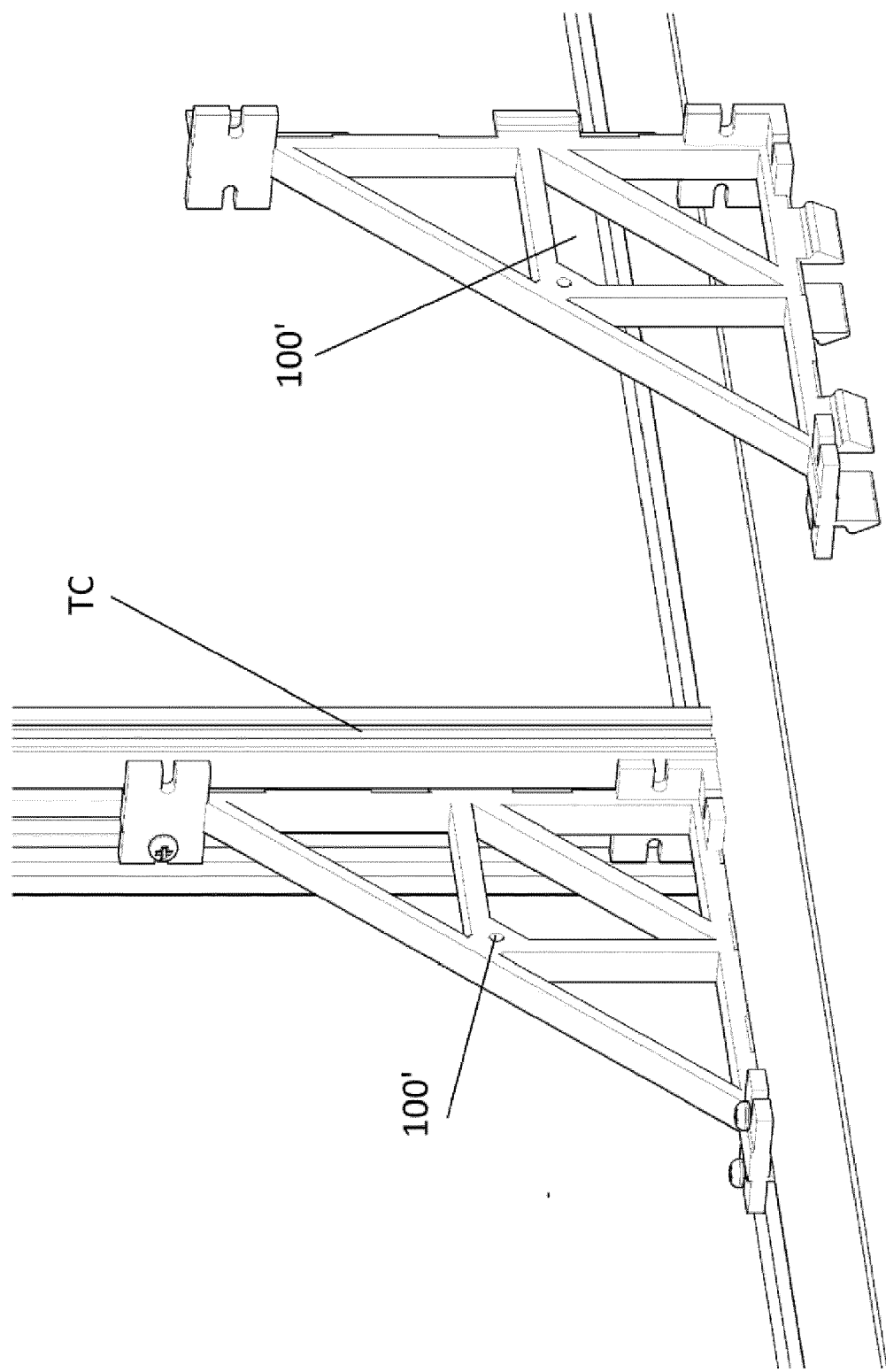


Figure 27

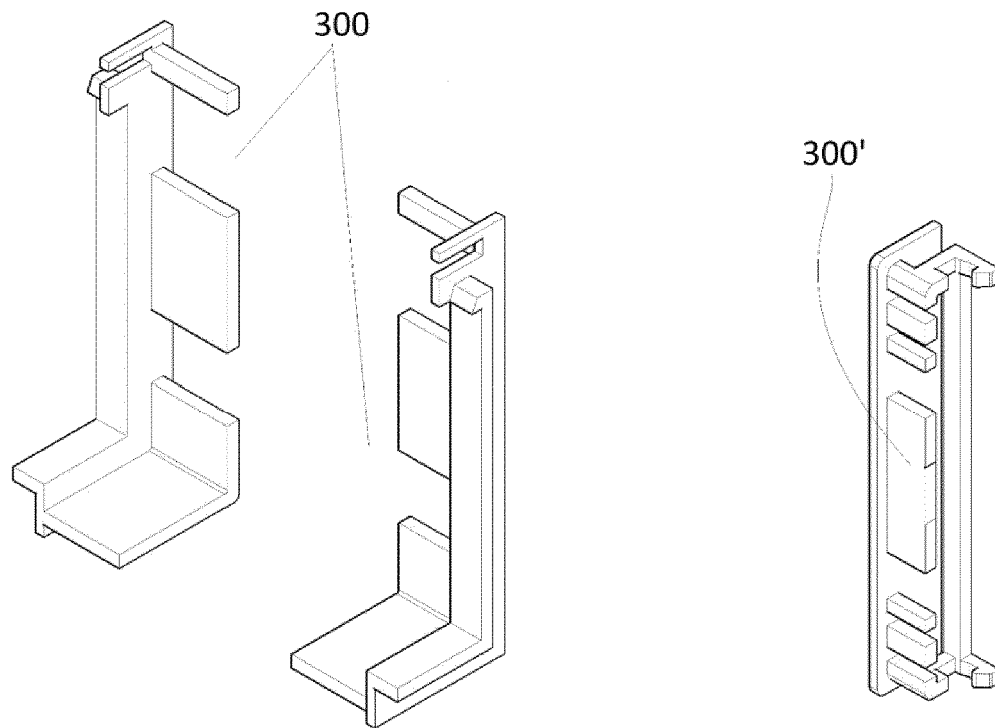


Figure 28

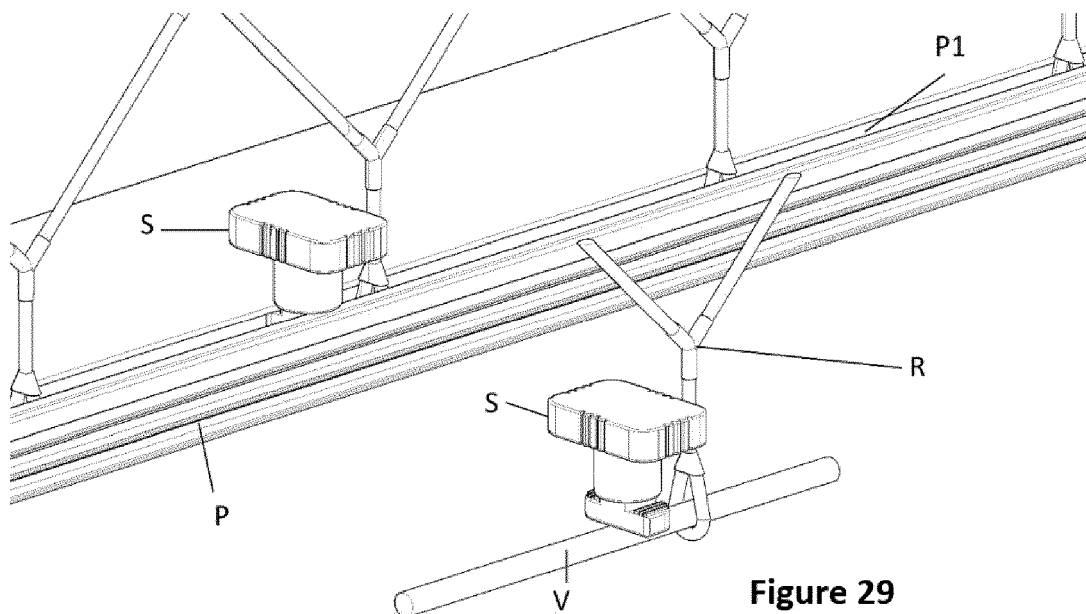


Figure 29

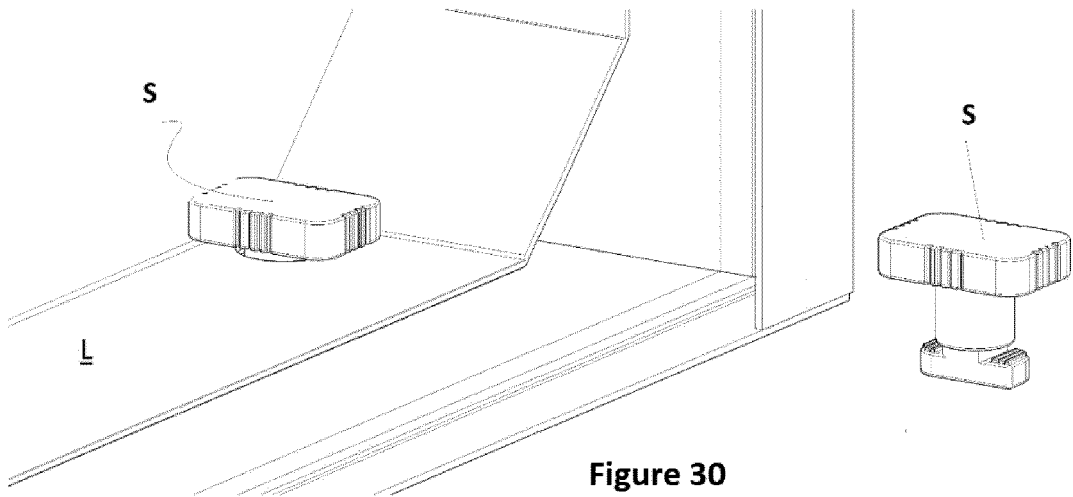


Figure 30

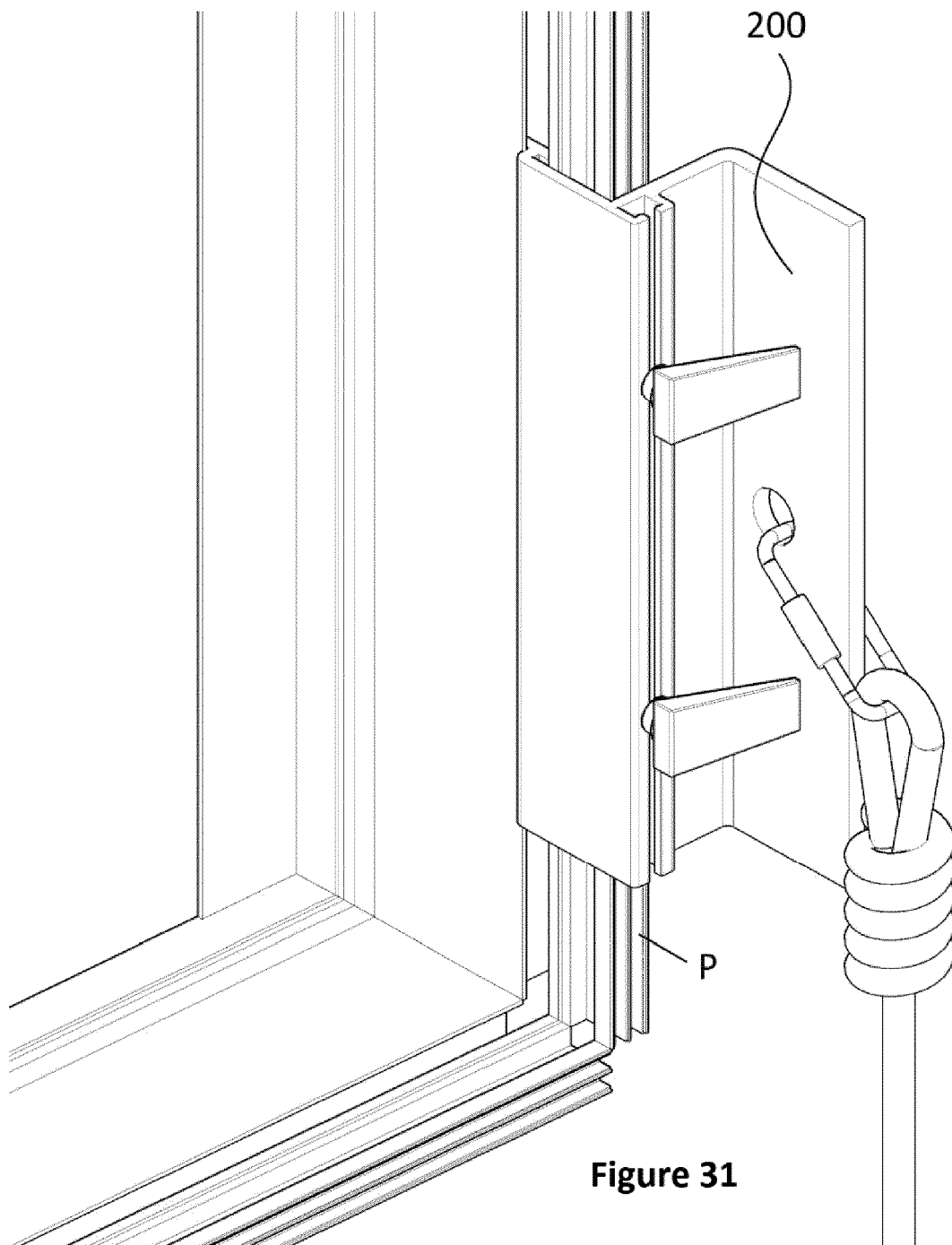


Figure 31



EUROPEAN SEARCH REPORT

Application Number

EP 23 38 2216

DOCUMENTS CONSIDERED TO BE RELEVANT

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	ES 2 888 699 A1 (ESFERA CLASICA LDA [PT]) 5 January 2022 (2022-01-05) * figures 7-7A, 10, 12-14 * -----	1-10	INV. E06B1/60 E06B1/02
			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		12 June 2023	Cobusneanu, D
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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

EP 23 38 2216

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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12-06-2023

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
15	ES 2888699	A1	05-01-2022	NONE
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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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