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(54) **CROWN BEAM PROFILE FOR A ROOF CONSTRUCTION**

(57) Crown beam profile (10) for a roof construction, wherein the crown beam profile (10) has an upper wall (11), a front wall (12) against which rafter profiles are for instance fixable, a rear wall (13) and a lower wall (14), wherein the crown beam profile (10) is provided with an elongate cavity (16) in which a screen roller (200) or a carrier profile (300) is receivable, wherein a recess is provided between the rear wall and the lower wall for the purpose of allowing a screen of the screen roller to pass, wherein the crown beam profile (10) has an inner wall (17) between the front wall (12) and the rear wall (13), and wherein the elongate cavity (16) lies between the rear wall and the inner wall; wherein the inner wall (17) is connected to the front wall by one or more intermediate walls (18), preferably by at least two intermediate walls, more preferably at least three intermediate walls.

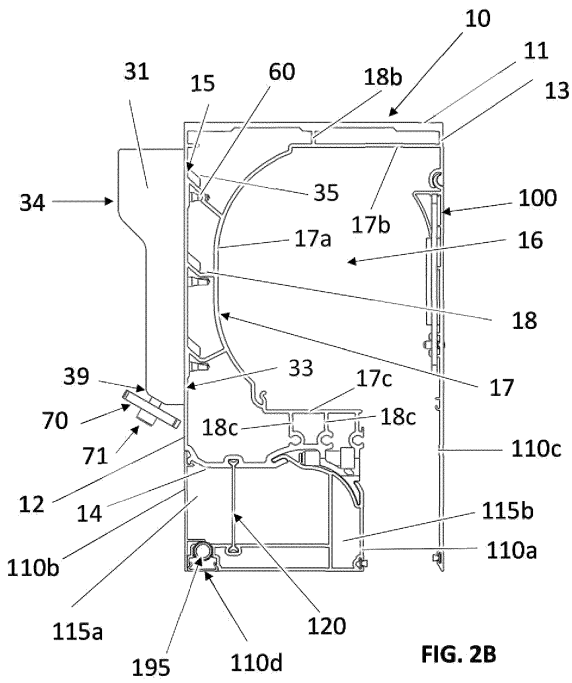

FIG. 2B

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Description

FIELD OF THE INVENTION

[0001] The invention relates to roof constructions, particularly canopies, constructed from crown beam profiles and rafter profiles, wherein a roof infill can be provided between the rafter profiles.

PRIOR ART

[0002] Such roof constructions, particularly canopies, are generally installed in order to shield an outdoor location. Such roof constructions are thus often set up at homes, restaurants, shops and so on in order to shield a patio or the like from solar rays and/or precipitation and/or wind, or to allow solar rays to enter temporarily. These roof constructions can for instance be used for pergolas, verandas, carports and so on.

[0003] Such a roof construction typically comprises a roof frame constructed from crown beam profiles and rafter profiles. The crown beam profiles are typically supported at least partially by columns. A roof infill can be fixed between two rafter profiles (also referred to as rafters). The roof infill can be fixed or displaceable. The roof infill can for instance comprise panels which are made at least partially of glass or plastic, such as PC or PMMA and/or solar panels which can optionally be integrated into the glass and/or sandwich panels. Such a roof construction is typically supported by four (or more) columns between which a wall infill can be provided. Fewer columns can however also be used if the roof construction is supported by other structures, such as a wall of an already existing structure. The wall infill can be fixed or displaceable. Examples are a retractable cloth or screen, or movable, i.e. slidable or foldable, panels.

[0004] The crown beam profiles and/or the rafter profiles and/or the columns can be adapted to provide lines to electrical/electronic equipment, to comprise electrical components such as lighting and/or to comprise discharge pipes or gutters for discharge of precipitation and/or to comprise guiding or cover profiles.

[0005] In such roof constructions it is important that the forces are transmitted properly from the rafter profiles carrying the roof infill to the crown beam profiles, and that the roof construction can be constructed in simple and rapid manner.

[0006] In existing systems the crown beam profile is embodied with a support tongue on which the rafter profiles are supported, wherein the rafter profiles are attached to the crown beam profile, and a cover is optionally arranged at the position of the connection of the rafter profile to the crown beam profile. Such systems are laborious and the force transmission and distribution are not optimal.

SUMMARY

[0007] The object of embodiments of the invention relates to providing a crown beam profile which is more robust than existing crown beam profiles and can fulfil multiple functions
Advantageous embodiments are described in claims 1-10.

[0008] The object of further embodiments of the invention relates to providing a crown beam with gutter profile which allows for an improved fixing of the gutter profile to the crown beam.

[0009] Advantageous embodiments are described in claims 11-14.

[0010] De invention further relates to a roof construction according to claim 15.

[0011] The object of further embodiments of the invention relates to providing a crown beam profile that can fulfil multiple functions, and an assembly of such a crown beam profile with a post.

[0012] The object of further embodiments of the invention relates to providing a post allowing cables and the like to be guided from a first to a second crown beam in a simple manner.

[0013] According to a further aspect, the invention relates to a roof construction comprising a crown beam profile and a plurality of rafter profiles. This can be a freestanding roof construction on posts, or a roof construction fixed to a wall. The roof construction comprises a plurality of crown beam support pieces which are fixed transversely of a front wall of the crown beam profile at a pitch distance from each other and a plurality of rafter support pieces which are configured to co-act with the plurality of crown beam support pieces. Each rafter support piece is either configured to be fixed to an end of a rafter profile or integrated with a rafter profile. Each crown beam support piece is provided with opposite sides, wherein each rafter support piece is shaped such that an outer end thereof is arrangeable over a corresponding crown beam support piece such that forces are transmitted via inter alia the opposite sides.

[0014] The rafter profiles can then be placed in simple manner by arranging the rafter support pieces over the corresponding crown beam support pieces, wherein a good distribution of forces is obtained, inter alia by the transmission of forces on the rafter profile to the sides of the crown beam support pieces.

[0015] The rafter support piece is preferably provided with a cavity in which the crown beam support piece is at least partially arrangeable, wherein the cavity is bounded by an open underside along which the crown beam support piece is insertable, and an open rear side intended to be directed toward the crown beam profile, an upper wall and opposite side walls connecting to the opposite sides of the crown beam support piece.

[0016] In this way the rafter support piece can as it were be hooked over the crown beam support piece, wherein the forces are transmitted not only via the upper wall but

also via the opposite side walls, and a good distribution of forces is obtained.

[0017] The crown beam support piece and the crown beam profile are preferably embodied such that the crown beam support piece is hookable or snappable or slidable into the crown beam profile. For this purpose the crown beam profile can be provided with a number of slots provided at a pitch distance from each other, and the crown beam support pieces can each be provided with a protruding tongue which is hookable or snappable or slidable into a corresponding slot.

[0018] In this way the crown beam support pieces can be mounted against the crown beam profile in simple manner.

[0019] Preferably, the crown beam support piece has a rear side which is fixed against the crown beam profile, and the rear side is provided with hooks which hook into slots in the crown beam profile. Still more preferably, the crown beam profile has a front wall, a rear wall and an inner wall between the front and rear wall, wherein the front wall is connected via a number of intermediate walls to the inner wall. The slots are then preferably provided in the front wall, wherein the hooks support at least partially on the intermediate walls.

[0020] In this way a robust mounting of the crown beam support pieces on the crown beam profile can be ensured, and the acting forces are distributed properly.

[0021] The crown beam support pieces are preferably fixed to the crown beam profile by screws or bolts or rivets. In this way the crown beam support pieces can connect properly to the crown beam profile, and are fixed firmly onto the crown beam profile.

[0022] The rafter support piece is preferably provided with one or more supports for supporting the rafter profile. The rafter profile can for instance have opposite inner walls which are provided with one or more ribs which are supported on the one or more supports of the rafter support piece.

[0023] In this way the forces acting on a rafter profile can be transmitted to the rafter support piece in proper manner.

[0024] The rafter support piece is preferably provided with one or more protruding support ribs which are intended to make contact with opposite inner walls of the rafter profile. In this way the distribution of forces can be improved further.

[0025] The roof construction preferably further comprises a tightening plate with corresponding tightening means for making the rafter support piece connect to the crown beam profile. In a particularly advantageous embodiment the side walls of the rafter support piece have lower edges sloping downward toward the crown beam profile and the tightening plate is mounted against the downward sloping lower edges, and the tightening means is a screw or bolt which is tightened through the tightening plate into the crown beam support piece. The crown beam support piece then preferably has a corresponding downward sloping lower wall.

[0026] Using such a tightening plate with tightening means pulls the rafter support piece toward the crown beam profile. It is particularly when tightening of the tightening means results in a force with both a horizontal and a vertical component that the forces are transmitted even better to the crown beam profile.

[0027] The rafter profile is preferably provided with a central part with an outer end in which the rafter support piece is received and with two side parts in which an outer end of a panel is in each case receivable, wherein the side parts extend on opposite longitudinal sides of the central part.

[0028] In this way a panel can be provided between two rafter profiles in simple manner in order to thus form a closed roof construction.

[0029] The rafter support piece is preferably wholly receivable in an end of the rafter profile.

[0030] Preferably, the rafter profile is provided with a screw channel which extends in the length of the rafter profile and the rafter support piece is fixed in the rafter profile by a screw which is tightened into the screw channel. The rafter support piece is still more preferably provided with a receiving channel which extends in the length of the rafter profile and in which the screw channel is receivable, such that the head of a screw tightened into the screw channel strikes against an outer end of the receiving channel of the rafter support piece.

[0031] The crown beam support piece is preferably provided with a bore which extends substantially vertically, wherein the rafter support piece is provided with an opening in line with the bore and the rafter profile is provided with an opening in line with the bore, and wherein a screw fixes the rafter profile and rafter support piece to the crown beam support piece through these openings. The opening in the rafter support piece can optionally be elongate in the longitudinal direction of the rafter profile in order to allow some clearance.

[0032] In this way the rafter profile, the rafter support piece and the crown beam support piece can be connected firmly to each other.

[0033] A lower end of the rafter profile is preferably provided with a longitudinal channel with an open lower end in which an LED strip can be arranged, which longitudinal channel preferably extends to a position under the rafter support piece. The crown beam profile is then preferably provided with a recess at the position of the connection to the longitudinal channel of the rafter profile, all this such that the LED strip can be connected via this recess to an electric line in the crown beam profile.

[0034] The crown beam support piece is preferably a solid piece which is provided with a number of substantially horizontal screw channels. This results in a strong, robust construction.

[0035] The crown beam profile is preferably provided with a cavity, preferably an elongate cavity, in which a screen roller is receivable. It is however also possible to provide other elements, such as a strengthening profile or one or more other functional elements (electronics and

so on), in this cavity.

[0036] In this way the crown beam profile can be used to accommodate an unrollable screen that can be rolled out vertically downward from the crown beam profile through an open lower end of the crown beam profile.

[0037] The crown beam profile preferably has an upper wall, a front wall against which the crown beam support pieces are fixed, a rear wall and a lower wall, wherein a number of intermediate walls are provided between the front wall and an inner wall bounding the cavity.

[0038] In this way the crown beam profile takes on the side of the front wall at it were a double-walled form, with intermediate walls between the front wall and the inner wall, whereby additional load-bearing capacity is imparted to the front side of the crown beam profile against which the crown beam support pieces are fixed.

[0039] The rear wall of the crown beam profile is optionally configured to receive a cover element, preferably a cover profile.

[0040] The lower wall of the crown beam profile is optionally configured to receive one or more cover elements. One of the one or more cover elements can optionally be configured to receive an LED strip. One of the one or more cover elements can optionally be configured as a gutter for collecting water. Such a gutter then preferably extends over the whole length of the crown beam profile.

[0041] An elongate seal is typically provided between an edge of the gutter and the panels situated between two rafter profiles. This elongate seal is interrupted at the position of the rafter profiles. According to an advantageous embodiment, a rafter seal, preferably a substantially U-shaped rafter seal, is provided between the gutter and a lower end of the rafter support piece, wherein the rafter seal preferably extends into the rafter profile. The rafter seal preferably extends in a vertical plane from an edge of the gutter, at least to a position against the lower end of the rafter profile and preferably into the rafter profile. The rafter seal is preferably a plate-like element with a shape adapted to the shape of the rafter profile. When the rafter profile is provided with two side parts, the seal is preferably fixed against an outer end of the side parts. In such an embodiment the rafter seal can be a substantially U-shaped plate-like element, wherein the two legs of the U seal the outer ends of the two side parts. The rafter seal can for instance extend between an open end of a side part and an end plate fixed against the open end with interposing of the rafter seal.

[0042] According to a further aspect of the invention, a rafter profile assembly for a roof construction is provided, preferably a roof construction according to any one of the above described embodiments. The rafter profile assembly is provided with a central profile and with a side profile in which an outer end of the panel is receivable, wherein a sealing profile is received between the central profile and the side profile. The sealing profile has a base which is provided on one side with a protruding mounting foot which can be fixed in one of the side profile and the central profile. The base is provided on an opposite, other side with two protruding support legs and a sealing tongue which is connected thereto and is intended to make contact with the other of the side profile and the central profile. The support legs and the sealing tongue are shaped such that the sealing tongue lies at an angle to the base in the unmounted state and is substantially parallel to the base in the mounted state.

[0043] In this way a wide contact surface can be obtained between the sealing tongue and the other of the side profile and the central profile.

[0044] At least one of the support legs preferably takes a sufficiently flexible form to enable it to be deformed when the sealing profile is pressed against the other of the side profile and the central profile.

[0045] The upper support leg of the two support legs is preferably directed substantially horizontally in the mounted position.

[0046] The support legs and the sealing tongue are preferably shaped such that the sealing tongue extends over a contact surface with a width greater than 0.5 cm, more preferably greater than 1 cm.

[0047] The sealing tongue preferably has a length greater than the length of the side profile.

[0048] The other side of the base is preferably further provided with one or more additional sealing tongues which are connected to the base and are shaped to make contact with the other of the side profile and the central profile only with an end edge in the mounted position. These one or more additional sealing tongues form on one hand an additional guarantee against leakage and, on the other, do not prevent the sealing tongue from making proper contact with a wide contact surface, since they are shaped to make contact only with a resilient end edge.

[0049] The additional sealing tongues can optionally be mutually connected to a connecting leg at a distance from the base. In this way additional robustness is imparted to the sealing profile.

[0050] The one or more additional sealing tongues preferably extend at an angle relative to the base in the direction of the sealing tongue. In the mounted state the sealing tongue is preferably directed straight down and the additional sealing tongues are preferably directed obliquely upward.

[0051] The sealing profile is preferably an extruded profile, more preferably a co-extruded profile. The mounting foot is preferably manufactured from a less soft plastic than the support legs and sealing tongue.

[0052] According to a further aspect, a post is provided for the purpose of supporting a roof construction which preferably comprises one or more crown beams, wherein the post is provided with a post profile with a first double side wall and a second double side wall, wherein at least the first double side wall is provided with a passage for connecting a gutter of a crown beam to a drain, and wherein in a corner between the first and second double side wall a recess is provided in an outer wall of the first

and second double side wall for the purpose of allowing cables and the like to pass from a first crown beam to a second crown beam.

[0053] The post profile is preferably manufactured as one integral piece, for instance from aluminium.

[0054] The first and second double side wall preferably further each have an inner wall, wherein a number of intermediate walls connect the inner wall and the outer wall of the first and second double side wall to each other.

[0055] In a possible embodiment the post is further provided with a corner profile for forming a third and fourth side wall, which corner profile can be fixed releasably to the post profile.

[0056] In another possible embodiment the post profile further has a third double side wall. The recess can then optionally extend into an outer wall of the third double side wall. The third double side wall is then preferably also provided with a passage for connecting a gutter of a crown beam to a drain.

[0057] The post is optionally further provided with a cover profile for forming a fourth side wall, which cover profile can be fixed releasably to the post profile.

[0058] According to a further aspect, a crown beam profile for a roof construction is provided. The crown beam profile has an upper wall, a front wall against which rafter profiles are for instance mountable, a rear wall and a lower wall. The crown beam profile is provided with an elongate cavity in which a screen roller or a carrier profile is receivable, wherein a recess is provided between the rear wall and the lower wall for the purpose of allowing a screen of the screen roller to pass. The crown beam profile has an inner wall between the front wall and the rear wall, wherein the elongate cavity lies between the rear wall and the inner wall. The inner wall is connected by one or more intermediate walls to the front wall, preferably by at least two intermediate walls, more preferably at least three intermediate walls.

[0059] Such a crown beam profile allows for a determined span of the crown beam and therefore of the roof, this without a screen roller arranged therein or a carrier profile arranged therein being adversely affected by bending of the crown beam profile. The load on the crown beam profile, for instance the weight of the glass and optionally snow, is carried by a roof with a determined width and depth, and the geometry of the crown beam profile provides a certain resistance to bending and torsion.

[0060] The inner wall is preferably connected to the lower wall by one or more additional intermediate walls, preferably by at least two intermediate walls. The inner wall can optionally also be connected to the upper wall by one or more further intermediate walls. In this way a profile is obtained which is partially double-walled with intermediate walls, also referred to as intermediate ribs, which provides improved resistance to torsion.

[0061] In a possible embodiment a screen roller is arranged in the elongate cavity, and in unloaded state a height of an empty space above the screen roller is greater than 10 mm, preferably greater than 20 mm, for instance between 20 and 30 mm. By providing such an empty space the crown beam profile is better able to tolerate bending, within the elastic range of the material of the profile, typically aluminium.

[0062] The inner wall preferably has a curved wall part which is configured to support the screen roller at least partially.

[0063] The inner wall preferably has an upper wall part which extends opposite the upper wall of the crown beam profile, preferably roughly parallel to the upper wall.

[0064] The crown beam profile preferably takes substantially the form of a double-walled U-profile, wherein the upper and lower wall form part of the legs of the U. In this way a very stable form with a good angular stability is obtained.

[0065] The inner wall preferably has a lower wall part extending opposite the lower wall and preferably intended to extend in a substantially horizontal plane.

[0066] Preferably, a height of the crown beam profile lies between 18 and 28 cm and a width of the crown beam profile lies between 10 and 20 cm.

[0067] The rear wall is preferably configured to receive a cover element which can preferably be fixed pivotally to the rear wall. The cover element can optionally be provided with guide elements for guiding the screen roller and/or the screen of the screen roller.

[0068] The elongate cavity of the crown beam profile is preferably configured such that a carrier profile, such as an I-profile, arranged therein can provide added support in the case of a high load on the crown beam profile.

[0069] In a possible embodiment the elongate cavity of the crown beam profile is provided with a bottom wall, for instance a part of the inner wall of the crown beam profile, and an upper wall, for instance a part of the inner wall of the crown beam profile, between which a carrier profile, for instance an I-profile, is arranged.

[0070] The crown beam profile can optionally further comprise one or more brackets between the upper wall and the carrier profile, wherein the one or more brackets are configured to compensate for a height difference between the height of the carrier profile and the distance between the upper and bottom wall.

[0071] The crown beam profile is preferably manufactured as one integral piece, for instance from aluminium.

[0072] The invention further relates to a crown beam for a roof construction, comprising a crown beam profile according to any one of the foregoing embodiments. The crown beam can have further features which were described above.

[0073] The invention further relates to a roof construction comprising one or more crown beam profiles according to any one of the foregoing embodiments or one or more crown beams according to any one of the foregoing embodiments and one or more posts according to any one of the foregoing embodiments.

BRIEF DESCRIPTION OF THE FIGURES

[0074] The above and other advantageous features and objectives of the invention will become more apparent and the invention better understood with reference to the following detailed description when read in combination with the accompanying drawings, in which:

Figures 1A and 1B show a perspective view of an embodiment of a roof construction, when looking at respectively an underside and an upper side of the roof construction;
Figures 1C-1E illustrate top views of different roof constructions and figure 1F illustrates a perspective view of yet another roof construction;
Figures 2A and 2B illustrate respectively a perspective view and a cross-section of an embodiment of a crown beam profile with a crown beam support piece;
Figures 2C and 2D show respectively a cross-section and a perspective view of an embodiment of a crown beam profile with a cover element locked thereto;
Figures 2E and 2F show respective cross-sections of an embodiment of a crown beam profile with a screen roller and an I-profile;
Figures 2G and 2H illustrate perspective views of an outer end of a post against which a crown beam can be fixed;
Figures 2I and 2J show respectively a perspective view and a cross-section of an embodiment of a crown beam profile with an I-profile;
Figures 3A and 3B show respectively a cross-sectional perspective view and a perspective view, when looking at the underside of the roof construction, of the connection of a rafter profile to a crown beam profile;
Figure 4 shows a perspective view of the connection of a rafter profile to a crown beam profile, wherein the rafter profile is drawn transparently so as to make the rafter support piece visible;
Figures 5A and 5B show a perspective view of the rafter support piece, when looking at respectively a front side intended to connect to the crown beam profile and a rear side intended to extend in a rafter profile;
Figure 6 shows a perspective view of a rafter profile;
Figure 7 shows a cross-section of a rafter profile piece which is mounted in a rafter profile;
Figure 8A shows a perspective view of a rafter profile with a central part and two side parts, when looking at a first end of the rafter profile;
Figure 8B shows a perspective view of the rafter profile of Figure 8A, when looking at a second end of the rafter profile, wherein the rafter profile is drawn transparently so as to make the rafter support piece and an LED strip visible;
Figure 8C shows a perspective detail view of an outer end of the rafter profile with seal;
Figure 8D shows a perspective detail view of an outer end of the rafter profile with seal, wherein an end plate has been removed from a side part so as to make the seal visible;
Figure 8E illustrates a cross-section of a side part of the rafter profile in more detail;
Figure 8F illustrates a perspective detail view of an outer end of the rafter profile;
Figure 9 shows a perspective view of the connection of a panel of the roof construction to the crown beam profile and the rafter profile;
Figure 10A shows a perspective detail view of the seal at the position of the connection of the rafter profile to the crown beam profile;
Figure 10B shows a perspective detail view of the fixing of the crown beam profile by means of a wall support;
Figures 10C and 10D show respectively a perspective view and a cross-section of an embodiment of a crown beam profile with a cover element with gutter locked thereto;
Figures 11A and 11B show a section of a further embodiment of a rafter profile;
Figures 12A and 12B show perspective views of another embodiment of a crown beam profile with crown beam support pieces, and figures 12C and 12D show a section of this embodiment;
Figures 12E-12G illustrate further variants of embodiments with wall crown beam profiles;
Figures 13A-D illustrate perspective views of embodiments of a post;
Figures 13E-F illustrate cross-sectional views of embodiments of a post;
Figure 14 shows a perspective view of an embodiment of a post;
Figures 15A-C illustrate cross-sectional views of embodiments of a crown beam;
Figures 16A-F show perspective views of different embodiments with a wall support; and
Figure 16G shows a perspective view of a crown beam profile with a mounting bracket for fixing to a wall support.

DETAILED EMBODIMENTS

[0075] Figures 1A and 1B illustrate an embodiment of a roof construction comprising a crown beam profile 10 and a plurality of rafter profiles 20. This can be a freestanding roof construction on columns, or a roof construction fixed to a wall. The crown beam profiles 10 are typically supported at least partially by columns (not shown). A roof infill can be fixed between two rafter profiles (also referred to as rafters). The roof infill can be fixed or displaceable. In figures 1A and 1B the roof infill is formed by panels 50, which are for instance made at least partially from glass or plastic, such as PC or PMMA. These panels 50 can also be sandwich panels which can be manufactured

from any suitable material, or solar panels which may or may not be integrated into glass. Such a roof construction is typically supported by four (or more) columns (not shown) between which a wall infill (not shown) can be provided. Fewer columns can however also be used if the roof construction is supported by other structures, such as a wall of an already existing structure. The wall infill can be fixed or displaceable. Examples are a retractable cloth or screen, or movable, i.e. slidable or foldable, panels.

[0076] The crown beam profiles 10 and/or the rafter profiles 20 and/or the columns can be adapted to provide lines to electrical/electronic equipment and/or to comprise electrical/electronic components such as lighting and/or to comprise discharge pipes or gutters for discharge of precipitation and/or to comprise guiding or cover profiles.

[0077] The crown beam profile 10 forms part of a crown beam which, besides the crown beam profile, can also comprise other elements such as one or more cover profiles. Figures 1C-1F illustrate possible roof constructions with different combinations of crown beams. As will be apparent from these figures, posts or no posts can be used and wall supports or no wall supports can be used, depending on the availability of walls.

[0078] In the arrangement of Figure 1C four crown beams 100a, 100b, 100c, 100d are provided, one crown beam 100a of which is embodied with a gutter profile 110a' as will be further described below. One or more rafter profiles 20 can further be provided. The crown beams are supported by four posts 400a, 400b, 400c, 400d. One or more rafter profiles 20 can further be provided.

[0079] The roof construction of Figure 1D comprises a similar crown beam 100a, while a slenderer wall version is provided for the other crown beams 100b', 100c', 100d'. In this variant the roof construction adjoins three walls M. The crown beam 100a is carried here by two wall supports 900a, 900b, which will be described in more detail below with reference to Figures 16A-16G. The crown beams 100b' and 100c' are connected to crown beam 100d' by means of respective corner brackets 1000a, 1000b. These corner brackets 1000a, 1000b will be described in more detail below with reference to Figure 12G. One or more rafter profiles 20 can further be provided.

[0080] In the arrangement of Figure 1E two crown beams 100a are arranged mutually in line between posts 400a, 400b, with interposing of a post 400e. Crown beams 100b, 100c are further provided between respective posts 400a and 400b and wall supports 900a and 900b. Finally, a slenderer crown beam profile 100d' is provided on the wall side M. The crown beam 100a is embodied with a gutter profile 110a' as will be further described below. One or more rafter profiles 20 can further be provided.

[0081] The roof construction of Figure 1F comprises two wider crown beams 100a, 100b, while a slenderer wall version is provided for the other crown beams 100c', 100d'. In this variant the roof construction adjoins two walls M. The crown beam 100a, 100b is supported here by a respective wall support 900a, 900b and the post 400a. The crown beam 100c', 100d' extends between a corner bracket 1000a and a respective wall support 900a, 900b. One or more rafter profiles 20 can further be provided.

[0082] Figures 2A-2F illustrate possible embodiments of the crown beam in more detail. The crown beam comprises a crown beam profile 10 and a gutter profile, for instance a gutter profile 110a', see Figure 2F, for collecting precipitation, or a gutter profile 110a for receiving conduits, see Figure 2E.

[0083] The crown beam profile 10 has an upper wall 11, a front wall 12 against which rafter profiles 20 can for instance be fixed, a rear wall 13 and a lower wall 14. The crown beam profile 10 is provided with an elongate cavity 16 in which a screen roller 200, see Figure 2E, or a carrier profile 300, see Figure 2F, is receivable. The lower wall 14 is configured to be coupled to the gutter profile 110a, 110a'. The gutter profile 110a, 110a' can be fixed pivotally to lower wall 14 and an intermediate profile 120 can be mounted removably between a bottom 114 of the gutter profile 110a, 110a' and the lower wall 14 of the crown beam profile 10.

[0084] Gutter profile 110a' preferably has a first gutter wall 113 and a second gutter wall 112 which extend on either side of bottom 114, wherein gutter profile 110a' is configured to protrude at the front wall 12 of the crown beam profile 10, all this such that precipitation can be collected between first gutter wall 113 and crown beam profile 10. The intermediate profile 120 preferably extends between the first and second gutter wall 113, 112. As will be further elucidated with reference to Figure 10A, a waste catching grate 111 is preferably provided in the gutter profile 110a', wherein waste catching grate 111 extends between front wall 12 and first gutter wall 113.

[0085] The intermediate profile 120 which is used for fixing of the gutter profiles 110a, 110a' is preferably a substantially plate-like element with an upper end 121 on which a first thickened portion is provided and a lower end 122 on which a second thickened portion is provided. The lower wall 14 of crown beam profile 10 is provided with a first groove 141 in which the first thickened portion is receivable, for instance slidable, and the bottom 114 of gutter profile 110a, 110a' is provided with a second groove 142 in which the second thickened portion is receivable, for instance slidable.

[0086] The bottom 114 of gutter profile 110a, 110a' preferably takes a substantially double-walled form. The bottom 114 of gutter profile 110a, 110a' has a bottom wall in which can be provided an elongate recess 125 for receiving a functional element, such as an LED profile 195.

[0087] The crown beam profile 10 preferably has an inner wall 17 between the front wall 12 and the rear wall 13, and the elongate cavity 16 lies between the rear wall

13 and the inner wall 17. Inner wall 17 is connected by one or more intermediate walls 18 to front wall 12, preferably by at least two intermediate walls 18, more preferably at least three intermediate walls 18. Inner wall 17 preferably has a curve and is configured to support the screen roller 200.

[0088] Inner wall 17 is preferably connected to lower wall 14 by one or more additional intermediate walls 18c, preferably by at least two additional intermediate walls 18c. Inner wall 17 is optionally connected to upper wall 11 by one or more further intermediate walls 18b. In the illustrated embodiment inner wall 17 has a curved wall part 17a, an upper wall part 17b extending opposite upper wall 11, preferably roughly parallel to upper wall 11, and a lower wall part 17c extending opposite lower wall 14 and preferably intended to extend in a substantially horizontal plane. Inner wall 17 is configured to support the screen roller.

[0089] The crown beam profile preferably has substantially the form of a double-walled U-profile, wherein the upper and lower wall 11, 14 form part of the legs of the U, and the front wall 12 forms part of the connecting leg of the U. The inner wall of the U is formed by inner wall 17. Provided between the outer and inner wall of the double-walled U-profile are intermediate walls 18, 18b and 18c. In this way a very stable form with a good angular stability is obtained.

[0090] As shown in Figure 2E, a screen roller can be arranged in the elongate cavity 16, wherein in unloaded state a height (v) of an empty space above the screen roller is greater than 10 mm, preferably greater than 20 mm, for instance between 20 mm and 35 mm. The screen roller for instance has a diameter (D) smaller than 130 mm, more preferably between 110 mm and 130 mm. Preferably, a height (h) of the crown beam profile lies between 18 and 30 cm and a width (b) of the crown beam profile lies between 10 and 20 cm. The height of the I-profile 300 shown in Figure 2F preferably lies between 110 mm and 130 mm.

[0091] Rear wall 13 is configured to receive a cover element 110c which can preferably be fixed pivotally to the rear wall. The cover element 110c can be provided with guide elements for guiding the screen roller 200 and/or the cloth 210 of the screen roller.

[0092] Gutter profile 110a' is provided with a precipitation collecting compartment 115a and can be provided with an elongate compartment 115b which lies adjacently thereof and which is closable by a cover element 110e, wherein the elongate compartment 115b is configured to receive conduits and the like.

[0093] As can be seen most clearly in Figures 2E and 2F, the elongate cavity 16 of crown beam profile 10 is configured such that a carrier profile 300, here an I-profile, arranged therein can provide added support in the case of a heavy load on crown beam profile 10. The elongate cavity 16 of crown beam profile 10 is provided with a bottom wall 161 and an upper wall 162, between which a carrier profile 300, for instance an I-profile, can be arranged. Upper wall 161 and lower wall 162 can form part of inner wall 17, and in the illustrated embodiment correspond with wall parts 17b and 17c of inner wall 17. One or more brackets 700 can optionally be provided between the upper wall 162 and the carrier profile 300, wherein the bracket 700 is configured to compensate for a height difference between the height of carrier profile 300 and the distance between the upper and bottom wall 161, 162. Depending on the desired load-bearing capacity, a different carrier profile 300 can be provided, with corresponding brackets 700.

[0094] The load-bearing capacity of the roof construction can be increased considerably by using a carrier profile 300 such as an I-profile. In some cases the load-bearing capacity can be up to more than 1.5 times higher than without the carrier profile 300. As can be seen in Figure 2F, some space can be provided between carrier profile 300 and the lower wall 161 of cavity 16 in a state of the crown beam in which the load thereon is low, since carrier profile 300 bends more than crown beam profile 10. In such a state the weight will not be carried, or hardly so, by the carrier profile 300. When loaded however, for instance in the case of snow load, carrier profile 300 will also begin to carry.

[0095] Figures 2H and 2I illustrate how an outer end of a carrier profile 300 is supported at a post 400a using a support structure 1110, 1120, 1130 which is fixed to the post 400a, see also Figure 14. The support structure can for instance comprise a tube 1110 with an end plate 1120 welded thereon, wherein the tube 1110 protrudes into an upper end of the post profile 400, wherein the end plate 1120 is fixed via screws to the post profile 400. The support structure further comprises a carrier profile support 1130 which is fixed between the inner wall 412, 422 and the outer wall 411, 421. Carrier profile 300 is supported on the carrier profile support 1130. The carrier profile support 1130 is here a substantially L-shaped profile with a horizontal wall 1131 which is fixed with screws to the outer wall 411, 421 and with a vertical wall 1132 which is fixed to the tube 1110 using screws, wherein the screws protrude through the inner wall 412, 422 into tube 1110. Figure 2J illustrates how carrier profile 300 can be inserted into/removed from the screen cavity 16. The cover element 110c is preferably removed for this purpose.

[0096] The crown beam profile 10 can be fixed to support structure 1110 through bolt bores 1111 and to end plate 1120, see bores 1121, see Figure 2H.

[0097] Figure 2G illustrates how a screen roller can be fixed to post 400a. A screen motor support 1210, which is fixed to post 400a, and preferably to tube 1110 and to an inner wall 412 of a first double side wall 410 of post profile 400, can be provided for a motor end of screen roller 200. A free-running support 1220, which is fixed to post 400a, and preferably to tube 1110 and to an inner wall 422 of a second double side wall 420 of post profile 400, can be provided for a free-running end of screen roller 200. It will be apparent that these supports 1210, 1220 can be fixed

to any side wall of the post profile as needed. A cloth guide 1300 for guiding the cloth 210 of screen roller 200 can further be provided in the post profile.

[0098] Figures 13A-13G illustrate in more detail a post 400a, 400f for supporting a roof construction which preferably comprises one or more crown beams. The post 400a, 400f is provided with a post profile 400 with a first double side wall 410 and a second double side wall 420. At least the first double side wall 410 is provided with a passage 415 for connecting a gutter of a crown beam to a drain. In a corner between the first and second double side wall a recess 450 is provided in an outer wall 411, 421 of the first and second double side wall 410, 420 for the purpose of allowing passage of cables or other elements from a first crown beam to a second crown beam. The first and second double side wall 410, 420 each have an inner wall 412, 422 and a number of intermediate walls 413, 423 which connect the inner wall and the outer wall of the first and second double side wall to each other.

[0099] The post 400a, see Figure 13A, is further provided with a corner profile 500 for forming a third and fourth side wall, which corner profile can be fixed removably to the post profile.

[0100] The post 400f, see Figure 13C, comprises a post profile 400 with a third double side wall 430, and can thus be used for fixing of three crown beams. The recess 450 extends here into an outer wall 431 of the third double side wall 430. The third double side wall 430 is optionally provided with a passage 435 for connecting a gutter of a crown beam to a drain. Post 400f is further provided with a cover profile 600 for forming a fourth side wall, which cover profile 600 can be fixed removably to the post profile.

[0101] Figures 13E and 13F illustrate that the post profile 400 of a post 400a, 400f can be configured to receive an insert profile 1410 for receiving a panel 50 and/or an insert profile 1420 for receiving a guide profile 1430 for the cloth 210 of screen roller 200. A seal 1415 can be provided between insert profile 1410 and panel 50. The seal can be adapted to the thickness of the panel 50, and several seals 1415 can be provided depending on the thickness of the panel 50. Figure 13F illustrates in more detail the fixing of an insert profile 1410' in the post profile 400. Insert profile 1410' is here a profile that can be used if this profile need not fulfil any further function besides covering, but this can also be the insert profile 1410 or 1420 of figure 13F. Post profile 400 is provided with a recessed channel 1440, here between an inner wall 422 of a double-walled side wall 420 and a channel wall 422b parallel thereto. The bottom of the channel 1440 is provided with one or more screw ports 1445. The insert profile 1410, 1410', 1420 is fixed to post profile 400 by means of one or more screws 1450 in the one or more screw ports 1445. The channel 1440 has here a curved bottom 1441 and outward-diverging side walls 1442, 1443. The insert profile 1410, 1410', 1420 is likewise provided with a groove with outward-diverging side walls 1412, 1413 co-acting therewith, so that the screw 1450 can be arranged countersunk in the post profile 400. The cover profile 500 can be arranged over the insert profile 1410, 1410'. Figure 13E illustrates that similar insert profiles 1420 can be provided in post 400f.

[0102] Figure 14 illustrates that the post can further be provided with a strengthening consisting of a tube 1110 and an end plate 1120 connected thereto. End plate 1120 can for instance be welded onto tube 1110. Tube 1110 can be arranged in the post profile 400, wherein end plate 1120 is fixed to an upper end of post profile 400.

[0103] The roof construction can comprise a plurality of crown beam support pieces 30, which are fixed transversely of a front wall 12 of crown beam profile 10 at a pitch distance from each other, see Figures 2A and 2B, and a plurality of rafter support pieces 40 which are configured to co-act with the plurality of crown beam support pieces 30, see Figures 3A and 3B. Each rafter support piece 40 is either configured to be fixed to an end of a rafter profile 20, as illustrated in Figures 3A and 3B, or integrated with a rafter profile 20 (not illustrated). In the variant of Figure 2A the rear wall 13 of crown beam profile 10 is typically, though not exclusively, intended to form the edge of a roof, on a flank not adjoining a facade wall or coupled roof, although according to another variant, the crown beam profile 10 can be given a different form, for instance symmetrical, and crown beam support pieces 30 can be provided on both front wall 12 and rear wall 13. This can be advantageous for making for instance coupled roofs, with crown beam support pieces on one side or on both sides. In this way roofs with different roof infills (rafters, plates, slats, wood, sunblind fabric, and so on) can be made.

[0104] According to the variant of Figure 10B, the crown beam profile 10 is intended to be mounted against an outer wall by means of one or more supports 200, wherein support posts are not needed. This is typically applied when it is desirable to have a gutter on a wall side or when the beam extends further than the wall, so that the roof is supported by one or more supports 200 and a plurality of posts. The supports 200 have a rear wall 220 intended for fixing against the wall side, for instance using a number of screws, and two side flanges 230 protruding from rear wall 220 into the cavity 16. The two side flanges 230 can be connected by an upper wall 210 which rests against an inner wall 16a of cavity 16.

[0105] According to another variant, which is illustrated in Figures 12A-G, the crown beam profile 10 is a slenderer wall profile, typically without gutter, which is provided with the same crown beam support pieces 30. This variant is intended particularly for mounting against a wall for roofs supported by a wall. The wall here also provides for the load-bearing capacity, and not much internal space is needed in the beam. Such profiles can be used on a wall side, see Figures 1D-1F. Figure 12E illustrates a crown beam profile 10 provided with a side part 1023 which is similar to the side part 23b, 23c described for the rafter profile. Figure 12G illustrates a corner bracket 1000 for fixing two outer ends of crown beam profiles 10 in a

corner.

[0106] Each crown beam support piece 30 is provided with opposite sides 31, 32, see Figure 2A. Each rafter support piece 40 is shaped such that an outer end thereof is arrangeable over a corresponding crown beam support piece 30 such that forces are preferably transmitted via inter alia the opposite sides 31, 32.

[0107] The rafter profiles 20 can then be placed in simple manner by arranging the rafter support pieces 40 over the corresponding crown beam support pieces 30, wherein a good distribution of forces is obtained, inter alia by transmission of forces acting on rafter profile 20 to the sides 31, 32 of the crown beam support pieces 30.

[0108] As can be seen most clearly in Figures 5A and 5B, rafter support piece 40 is preferably provided with a cavity 45 in which the crown beam support piece 30 can be arranged at least partially, see also Figure 3A. The cavity 45 is bounded by an open underside 43, along which the crown beam support piece 30 is insertable, an open rear side 44 intended to be directed toward the crown beam profile 10, an upper wall 46 and opposite side walls 41, 42 connecting to the opposite sides 31, 32 of the crown beam support piece 30.

[0109] In this way the rafter support piece 40 can as it were be hooked over the crown beam support piece 30, wherein the forces are transmitted not only via the upper wall 46 but also via the opposite side walls 41, 42, and a good distribution of forces is obtained.

[0110] The crown beam support piece 30 and the crown beam profile 10 are preferably embodied such that the crown beam support piece 30 is hookable or snappable or slidable into crown beam profile 10. The embodiment of Figure 2B and Figure 3A illustrates that the crown beam profile 10 can for instance be provided with one or more slots 15 provided at a pitch distance from each other, and the crown beam support pieces 30 can each be provided with one or more protruding tongues 35 which are hookable into the one or more corresponding slots 15. In other variants the slots can take a different form, for instance T-shaped slots, and the tongues can for instance be slidable into the slots.

[0111] In the variant of Figure 2A the crown beam profile 10 has an upper wall 11, a front wall 12, a rear wall 13 and an inner wall 17 between the front and rear wall 12, 13. The front wall 12 is connected via a number of intermediate walls 18 to inner wall 17. The slots 15 are then preferably provided in the front wall 12, wherein the hooks 35 support at least partially on the intermediate walls 18. In this way a robust mounting of the crown beam support pieces 30 on crown beam profile 10 can be ensured, and the acting forces are distributed properly. According to the slenderer embodiment of Figures 12A-D, no inner wall 17 is provided and intermediate walls 18 extend directly between front wall 12 and rear wall 13. One of the hooks 35 here also supports on an intermediate wall 18.

[0112] The crown beam support piece 30 is preferably a solid piece which is provided with one or more substantially horizontal screw channels 36 for one or more screws 60 or bolts or rivets. The crown beam support pieces 30 are preferably further fixed to crown beam profile 10 by the one or more screws 60 or bolts or rivets, see Figures 2B and 3A. In this way the crown beam support pieces 30 can connect properly to the crown beam profile 10, and are fixed firmly onto crown beam profile 10.

[0113] As illustrated in Figures 5A, 5B and 7, the rafter support piece 40 is preferably provided with one or more supports 47 for the purpose of supporting the rafter profile 20. As shown in Figure 6, the rafter profile 20 can for instance have opposite inner walls 21, 22 which are provided with one or more ribs 27 which are supported on the one or more supports 47 of the rafter support piece 40. The rafter support piece 40 is preferably wholly receivable in an end of the rafter profile 20. In this way the forces acting on a rafter profile 20 can be transmitted to the rafter support piece 40 in proper manner. The supports 47 here take the form of guides for the ribs 27, although the skilled person will appreciate that the supports 47 can take many forms. The rafter support piece 40 is further preferably provided with one or more protruding support ribs 48 which are intended to make contact with opposite inner walls 21, 22 of rafter profile 20. In this way the distribution of forces can be improved further.

[0114] As can be seen most clearly in Figures 2A and 3A, the roof construction can further comprise a tightening plate 70 with corresponding tightening means 71 for making the rafter support piece 40 connect to the crown beam profile 10. In a particularly advantageous embodiment the side walls 41, 42 of rafter support piece 40 have lower edges 49 sloping downward toward the crown beam profile 10, the tightening plate 70 is mounted against the downward sloping lower edges 49, and the tightening means 71 is a screw or bolt which is tightened through the tightening plate 70 into the crown beam support piece 30. The crown beam support piece 30 then preferably has a corresponding downward sloping lower wall 39. Using such a tightening plate 70 with tightening means 71 pushes the rafter support piece 40 toward crown beam profile 10 in both horizontal and vertical direction, whereby the forces are transmitted even better to crown beam profile 10.

[0115] For mounting of a crown beam support piece 30 the screws 60 are fixed first, after which the rafter profile 20 with rafter support piece 40 is placed, tightening plate 70 is turned to the correct position and tightening means 71 is tightened.

[0116] In a possible embodiment illustrated in Figures 8A and 8B, rafter profile 20 is provided with a central part 23a with an outer end in which the rafter support piece 40 is received and with two side parts 23b, 23c in which an outer end of a panel 50 is in each case receivable, see also Figures 1A and 1B, wherein the side parts 23b, 23c extend on opposite longitudinal sides of the central part 23a. In this way a panel 50 can be provided between two

rafter profiles 20 in simple manner in order to thus form a closed roof construction. Note that the central part 23a can also be provided with one side part 23b instead of two side parts 23b, 23c.

[0117] Figure 8E illustrates one of the side parts 23b in more detail. The side part 23b is here a combined side profile consisting of an upper and lower side profile 123a, 123b which hook into each other. The side part 23b is provided with an opening bounded by an upper elongate support edge 193 and a lower elongate support edge 194. An outer end of the panel 50 is receivable in this opening. The upper elongate support edge 193 can be configured to co-act with a seal 203 which is provided between panel 50 and the upper support edge 193. The lower elongate support edge 194 can be configured to co-act with a seal 204 which is provided between panel 50 and the lower support edge 194. A stop 206 against which the panel 50 strikes can further be provided in the side part 23b. The side part 23b can be fixed to central part 23a by screws 205.

[0118] In the embodiment of Figures 5A, 5B, 6 and 7 the rafter profile 20 is provided with a screw channel 208 which extends in the length of rafter profile 20, and the rafter support piece 40 is fixed in rafter profile 20 by a screw 80 which is tightened into the screw channel 208. The rafter support piece 40 is still more preferably provided with a receiving channel 408 which extends in the length of rafter profile 20 and in which the screw channel 208 is receivable with some clearance, such that the head of a screw 80 tightened into screw channel 208 strikes against an outer end of the receiving channel 408 of rafter support piece 40.

[0119] Figure 3A shows that the crown beam support piece 30 is provided with a bore 109 which extends substantially vertically. Figures 5A and 5B show that the rafter support piece 40 is provided with an opening 409 in line with the bore 109 and Figure 6 shows that the rafter profile 20 is provided with an opening 209 in line with the bore 109. A screw 90 protrudes through these openings 209, 409 in order to fix rafter profile 20 and rafter support piece 40 to the crown beam support piece 30, see Figure 3A. The opening 409 in rafter support piece 40 and/or the opening 209 in rafter profile 20 can optionally be elongate in the longitudinal direction of rafter profile 20 in order to allow some clearance. In this way the rafter profile 20, the rafter support piece 40 and the crown beam support piece 30 can be connected firmly to each other.

[0120] Figures 6 and 7 further illustrate that a lower end of rafter profile 20 can be provided with a longitudinal channel 29 with an open lower end, in which an LED strip 95 can be arranged. The longitudinal channel 29 preferably extends to a position under the rafter support piece 40. As can be seen most clearly in Figure 3B and Figure 4, the crown beam profile 10 is then preferably provided with a recess 19 at the position of the connection to the longitudinal channel 29 of rafter profile 20, all this such that the LED strip 95 can be connected via this recess 19 to an electric line (not shown) in or along the crown beam profile 10. Figure 2A also shows the recess 19, and Figures 2A and 2B show that the crown beam profile 10 can be provided with one or more cover elements 110a, 110b for the purpose of forming one or more compartments 115a, 115b, and so on extending in the longitudinal direction of the profile 10, for instance a compartment 115a for receiving electrical conduits. In the embodiment of Figures 12A-D the crown beam profile 10 is also provided with a cover element 110a for the purpose of forming a compartment 115a extending in the longitudinal direction of profile 10, for instance a compartment 115a for receiving electrical conduits and/or electronics and/or fastenings.

[0121] Figure 11A illustrates another variant in which, instead of LED strip 95, a different mounting profile 96 is fixed in the lower end of rafter profile 20. In the illustrated embodiment lighting elements are accommodated in the mounting profile 96. The skilled person will appreciate that different typical elements, such as a sensor, a lighting element, a heating element, an atomizer, a ventilation element, electric cabling, a partition wall, and so on are receivable in the lower end of rafter profile 20, optionally using an additional mounting profile 96. If no additional functionalities need be provided, a simple cover profile can also be arranged instead of the mounting profile 96 in order to cover the channel in the lower wall of rafter profile 20, see Figure 11B.

[0122] In the illustrated embodiment of Figure 2B a first cover profile 110a is fixed pivotally to a lower end of the crown beam profile 10 and secured using a partition 120. A second cover profile 110b can further be provided to close the compartment 115a. The first cover profile 110a is configured here to receive an LED strip 195, wherein an additional opaque cover element 110d can also be provided for the purpose of closing the channel in which the LED strip 195 is received. As illustrated in Figures 2C and 2D, the cover profile 110a can optionally be locked onto crown beam profile 10. For this purpose one or more adjusting screws 114a can for instance be fixed with one or more corresponding clamping blocks 112a in the crown beam profile 10, wherein the adjusting screws 114a strike against a stop 116a of cover profile 110a. This stop 116a is provided such that a pivoting of cover profile 110a is counteracted when the adjusting screw 114a pushes against the stop 116a, and thus provides for a blocking of the cover profile 110a. A plurality of adjusting screws 114a can optionally be mounted over the length of the crown beam profile 10 as needed.

[0123] The cover profile 110a can be mounted as follows. Cover profile 110a is pivoted in crown beam profile 10. Partition 20 is then placed. The clamping block 112a is mounted by having it drop together with the corresponding adjusting screw 114a into a slot 112b in crown beam profile 10 intended for this purpose. The adjusting screw 114a is tightened until the cover profile 110a is blocked against the stops 116a of crown beam profile 10.

[0124] A cover profile 110a', see Figure 10A, can op-

tionally be configured to form a gutter-like compartment 115a for collecting water. Such a gutter-like compartment 115a then preferably extends over the whole length of the crown beam profile 10. One or more removable filter elements 111 can optionally be provided in the gutter-like compartment 115a in order to stop dirt and the like. A plurality of filter elements 111 are preferably arranged adjacently of each other in the gutter -like compartment 115a. When a filter element requires cleaning or replacing, a user can in this way remove and replace it in simple manner. The filter elements 111 can for instance be flexible and/or pre-formed perforated plates, profiles or grates. The filter elements 111 preferably extend between the front wall 12 of crown beam profile 10 and a front gutter wall 113 of the gutter-like compartment 115a.

[0125] The cover profile 110a' can optionally be locked in the same manner with one or more adjusting screws 114a and corresponding clamping blocks 112a, as was described above with reference to Figures 2C and 2D. Additional locking elements can optionally also be provided, as is illustrated in Figure 10C. An additional screw 118a, which can be screwed (in concealed manner) into a rafter profile 20 in order to eliminate any flexibility of the gutter, can optionally be provided. An outer end of the additional screw 118a is here fixed in rafter profile 20. A gutter end plate 119a can also be provided on both outer ends of the cover profile 110a', which gutter end plate 119a follows the contour of the crown beam profile 10 and so blocks the cover profile 110a' in the desired position. Mounting of cover profile 110a' can take place in the same manner as that of cover profile 110a, wherein further gutter end plate 119a is optionally mounted with a plurality of screws. An additional screw 118a can further be screwed (in concealed manner) into rafter profile 20, for instance at the construction site, in order to prevent sagging of the gutter.

[0126] In the illustrated embodiment of Figures 12A-D the cover profile 110a is fixed pivotally to a lower end of the crown beam profile 10 and can be secured at the outer ends. The cover profile 110a is configured to receive an LED strip 195, wherein another additional opaque cover element 110d can be provided for the purpose of closing the channel in which the LED strip 195 is received.

[0127] Figure 2B further shows that the crown beam profile 10 can be provided with a cavity 16, for instance a screen roller cavity 16 in which a screen roller (not shown) is receivable, although this cavity can also be used to accommodate one or more other functional elements, such as a strengthening profile, for instance an I-profile, electronic components, and so on. The cavity allows for provision of a screen which can be moved via an opening at the lower end of crown beam profile 10 vertically outward in order to extend for instance between two columns on either side of crown beam profile 10. The cavity 16 is preferably provided between the inner wall 17 and the rear wall 13 of the crown beam profile, and a number of intermediate walls 18 are preferably provided between the front wall 12 and the inner wall 17 bounding the cavity. In this way the crown beam profile 10 takes on the side of the front wall 12 at it were a double-walled form, with intermediate walls 18 between front wall 12 and inner wall 17, whereby additional load-bearing capacity is imparted to the front side of the crown beam profile 10 against which the crown beam support pieces 30 are fixed. The rear wall 13 of crown beam profile 10 is optionally configured to receive a cover element 110c which forms a wall of a guide channel for the screen that can be rolled out. The lower wall 14 of the crown beam profile 10 is optionally configured to receive one or more cover profiles 110a, 110b, as was described above.

[0128] Figures 9 and 10A show that an elongate seal 170 is provided between an edge of the gutter-like compartment 115a and the panels 50 situated between two rafter profiles 20. This seal 170 is interrupted at the position of the rafter profiles 20. According to an advantageous embodiment, an additional rafter seal 160, preferably a substantially U-shaped rafter seal, is provided between the gutter-like compartment 115a and a lower end of the rafter support piece 40, wherein the rafter seal 160 preferably extends into the rafter profile 20, as can be seen more clearly in Figures 8C and 8D. In the variant of Figure 8C the rafter seal 160 protrudes slightly further into rafter profile 20 than in the variant of Figure 8D. The rafter seal 160 preferably extends in a vertical plane from an edge of the gutter-like compartment 115a, at least to a position against the lower end of rafter profile 20 and preferably into rafter profile 20. The rafter seal 160 is preferably a plate-like element with a shape adapted to the shape of the rafter profile 20. When rafter profile 20 is provided with two side parts 23b, 23c, the rafter seal 160 is preferably fixed against an outer end of the side parts 23b, 23c. In such an embodiment the rafter seal 160 can be a substantially U-shaped plate-like element, wherein the two legs of the U seal the outer ends of the two side parts 23b, 23c. Rafter seal 160 can for instance extend between an open end of a side part 23b, 23c and an end plate 24b, 24c which is fixed by means of screws 25b, 25c against the open end with interposing of the rafter seal 160, see Figure 8C. In Figure 8D the end plate 25c has been omitted in order to make the rafter seal 160 more clearly visible.

[0129] When rafter profile 20 is provided with a side part 23b, 23c, a lateral seal 180, here a sealing profile, is preferably arranged between the central part 23a and the side part 23b, 23c, see Figure 8C. This lateral seal 180 is preferably shaped to seal optimally when the side part 23b is screwed against the central part 23a.

[0130] Figures 8E and 8F illustrate in more detail an advantageous embodiment of the lateral seal 180. The lateral seal comprises a base 181 which is provided on one side with a protruding mounting foot 182 which can be fixed in the side part 23b and is provided on an opposite, other side with two protruding support legs 183, 184 and a sealing tongue 185 connected thereto. The support legs 183, 184 and the sealing tongue 185 are preferably shaped such that the sealing tongue 185 lies at

an angle to the base 181 in the unmounted state and is substantially parallel to the base 181 in the mounted state. For this purpose one of the support legs 184 preferably takes a sufficiently flexible form to enable it to be deformed when seal 180 is pressed against central part 23a. Sealing tongue 185 is thus as it were arranged pivotally and directed downward here. The upper support leg 183 is preferably directed substantially horizontally in the mounted position. In this way any stagnant water can be avoided or reduced. This water would otherwise expand in freezing temperatures and could push beyond the seal. The aluminium glazing bar cover profile also connects to the contact surface of the sealing tongue 185.

[0131] The support legs 183, 184 and the sealing tongue 185 are preferably shaped such that the sealing tongue 185 extends over a contact surface with a width greater than 0.5 cm, more preferably greater than 1 cm. In this way production tolerances and the roughness of textured paint can be accommodated. The sealing tongue 185 preferably has a length greater than the length of the side part 23b, see Figure 8F, and preferably protrudes beyond the seal 160 and for instance to a position beyond end plate 24b, 24c, so that water is discharged in the gutter-like compartment 115a without problem, see also Figure 10A.

[0132] One or more additional sealing tongues 186, 187 are optionally also provided, these being connected to the base and shaped to make contact with the central part 23a only with an end edge in the mounted position, and so over an area much smaller than the area over which the sealing tongue 185 makes contact with the central part 23a. These additional sealing tongues 186, 187 can optionally be mutually connected to a connecting leg 188 at a distance from the base in order to increase the integrity of seal 180. The additional sealing tongues 186, 187 preferably extend at an angle relative to the base 181 toward the sealing tongue 185, and are therefore directed upward here. The additional sealing tongues 186, 187 are oriented upward and settle along the central part 23a. The shape is such that an end edge 186a, 187a maintains contact with the central part 23a and the other end edge is connected to the base 181. In this way one or more gutters, here two gutters 186b, 187b, are created, which can discharge water if it were to still make its way beyond the upper sealing tongue 185 unexpectedly.

[0133] The lateral seal 180 is preferably an extruded profile, more preferably a co-extruded profile wherein the mounting foot 182 is manufactured from a less soft plastic than the support legs 183, 184 and the sealing tongues 185, 186, 187. The plastic and shape of the mounting foot 182 preferably allow it to be pushed through into a groove of side part 23b and/or to be pulled through the groove 192 in simple manner. Mounting foot 182 preferably has a support leg 182a which is for instance oriented substantially perpendicularly of the base 181 and a head 182b which protrudes relative to the support leg and is intended to lock the mounting foot to 182 into the groove 192 of side part 23b.

[0134] Figures 15A-C illustrate that profiles 1510, 1520, 1530 for wall systems can be arranged in a crown beam profile 10 in concealed manner. Profiles 1510, 1520 are intended for receiving a wall panel, for instance a wooden wall panel or a glass wall panel. Profile 1530 is intended for a sliding wall system and can optionally be provided with brushes. Profile 1540 is intended for fixing to the lower edge of a cloth 210.

[0135] Figures 16A-G illustrate a possible embodiment of a wall support 900, which can be used in the roof constructions of Figures 1D-F, in more detail. The wall support 900 preferably has a mounting wall 910 and at least two side walls 920, 930. Figure 16B shows that the mounting wall 910 can be provided with a screen motor support 1210 and figure 16C shows that the mounting wall 910 can be provided with a free-running support 1220. Figure 16G illustrates that the crown beam 10 can be provided at an outer end with a mounting bracket 1600 for fixing of screen roller 200 and crown beam profile 10 to the wall support 900. The mounting bracket 1600 has an upper flange 1610 which can be fixed by means of screws 1620 to the crown beam profile 10, and a mounting flange 1630 with slots 1640 for fixing to the wall support 900. Figure 16A shows nut-bolt assemblies 1660, wherein a slot 1640 hooks over a nut, behind a bolt. The mounting flange 1630 is fixed to crown beam profile 10 by means of screws 1650. The mounting bracket 1600 is invisible following installation, and allows the cloth 210 to protrude from the crown beam profile 10 and to be guided in a guide profile similar to guide profile 1300 in Figure 2G.

[0136] The skilled person will appreciate that the invention is not limited to the above described embodiments and that many modifications and variants are possible within the scope of the invention, which is defined solely by the following claims.

Claims

1. Crown beam profile (10) for a roof construction, wherein the crown beam profile (10) has an upper wall (11), a front wall (12) against which rafter profiles are for instance fixable, a rear wall (13) and a lower wall (14), wherein the crown beam profile (10) is provided with an elongate cavity (16) in which a screen roller (200) or a carrier profile (300) is receivable, wherein a recess is provided between the rear wall and the lower wall for the purpose of allowing a screen of the screen roller to pass, **characterized in that** the crown beam profile (10) has an inner wall (17) between the front wall (12) and the rear wall (13), and wherein the elongate cavity (16) lies between the rear wall and the inner wall; wherein the inner wall (17) is connected to the front wall by one or more intermediate walls (18), preferably by at least two intermediate walls, more preferably at least three

intermediate walls.

2. Crown beam profile (10) according to claim 1, wherein the inner wall (17) is connected to the lower wall by one or more additional intermediate walls (18c), preferably by at least two additional intermediate walls (18c).

3. Crown beam profile (10) according to claim 1 or 2, wherein a screen roller is arranged in the elongate cavity (16), wherein in unloaded state a height (v) of an empty space above the screen roller is greater than 10 mm, preferably greater than 20 mm.

4. Crown beam profile (10) according to any one of the foregoing claims, wherein the inner wall has a curved wall part which (17a) which is configured to support the screen roller at least partially.

5. Crown beam profile (10) according to any one of the foregoing claims, wherein the inner wall has an upper wall part (17b) which extends opposite the upper wall, preferably roughly parallel to the upper wall (11).

6. Crown beam profile (10) according to any one of the foregoing claims, wherein the inner wall has a lower wall part (17c) extending opposite the lower wall (14) and is preferably intended to extend in a substantially horizontal plane.

7. Crown beam profile (10) according to any one of the foregoing claims, wherein the crown beam profile is manufactured integrally and substantially takes the form of a double-walled U-profile, wherein a height (h) of the crown beam profile preferably lies between 18 and 30 cm and a width (b) of the crown beam profile preferably lies between 10 and 20 cm.

8. Crown beam profile (10) according to any one of the foregoing claims, wherein the rear wall (13) is configured to receive a cover element (110c) which can preferably be fixed pivotally to the rear wall.

9. Crown beam profile (10) according to the foregoing claim, wherein the cover element is provided with guide elements for guiding the screen roller and/or the screen of the screen roller.

10. Crown beam profile (10) according to any one of the foregoing claims, wherein the elongate cavity (16) of the crown beam profile is configured such that a carrier profile, such as an I-profile, arranged therein can provide added support in the case of a high load on the crown beam profile;

    wherein the elongate cavity (16) of the crown beam profile is provided with a bottom wall (161) and an upper wall (162), between which a carrier profile (300), for instance an I-profile, can be arranged;
    optionally further comprising one or more brackets (700) between the upper wall and the carrier profile, wherein the one or more brackets are configured to compensate for a height difference between the height of the carrier profile and the distance between the upper and bottom wall.

11. Crown beam (100a, 100b, 100c, 100d) for a roof construction, comprising a crown beam profile (10) according to any one of the foregoing claims and a gutter profile (110a, 110a'), for instance a gutter profile for collecting precipitation or a gutter profile for receiving conduits, wherein the lower wall of the crown beam profile is configured to be coupled to the gutter profile (110a, 110a'), wherein the gutter profile can be fixed pivotally to the lower wall and an intermediate profile (120) can be mounted removably between a bottom (114) of the gutter profile and the lower wall of the crown beam profile.

12. Crown beam according to claim 11, wherein the gutter profile (110a') comprises a first gutter wall (113) and a second gutter wall (112) which extend on either side of the bottom (114), wherein the gutter profile is configured to protrude at the front wall (12) of the crown beam profile, all this such that precipitation can be collected between the first gutter wall (113) and the crown beam profile (10); and/or

    wherein the intermediate profile (120) extends between the first and second gutter wall; and/or
    wherein a waste catching grate (111) is provided in the gutter profile, wherein the waste catching grate extends between the front wall (12) and the first gutter wall (113).

13. Crown beam according to claim 11 or 12, wherein the intermediate profile (120) is a substantially plate-like element with an upper end (121) on which a first thickened portion is provided and a lower end (122) on which a second thickened portion is provided, wherein the lower wall (14) of the crown beam profile is provided with a first groove (141) in which the first thickened portion is receivable, for instance slidable, and the bottom (114) of the gutter profile is provided with a second groove (142) in which the second thickened portion is receivable, for instance slidable; and/or

    wherein the bottom (114) of the gutter profile (110a, 110a') takes a substantially double-walled form; and/or
    wherein the bottom (114) of the gutter profile (110a, 110a') has a bottom wall in which is provided an elongate recess (125) for receiving

a functional element, such as an LED profile (195); and/or
wherein the gutter profile is provided with a precipitation collecting compartment (115a) and with an elongate compartment (115b) which lies adjacently thereof and which is closable by a cover element, wherein the elongate compartment is configured to receive conduits and the like.

14. Crown beam according to any one of the claims 11-13, further comprising a plurality of crown beam support pieces (30) which are fixed transversely of a front wall (12) of the crown beam profile at a pitch distance from each other and are intended to support a plurality of rafter profiles;
wherein the crown beam support piece (30) and the crown beam profile (10) are preferably embodied such that the crown beam support piece is hookable or snappable or slidable into the crown beam profile.

15. Roof construction comprising one or more crown beam profiles according to any one of the claims 1-11 or one or more crown beams according to any one of the claims 12-14 and one or more posts, wherein a post of the one or more posts is provided with a post profile (400) with a first double side wall (410) and a second double side wall (420), wherein at least the first double side wall (410) is provided with a passage (415) for connecting a gutter of a crown beam to a drain, and wherein in a corner between the first and second double side wall a recess (450) is provided in an outer wall (411, 421) of the first and second double side wall (410, 420) for the purpose of allowing cables and the like to pass from a first crown beam to a second crown beam.

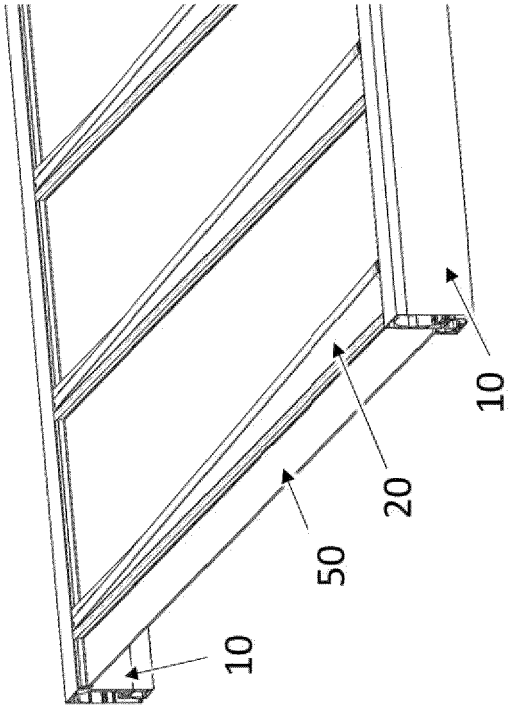

FIG. 1B

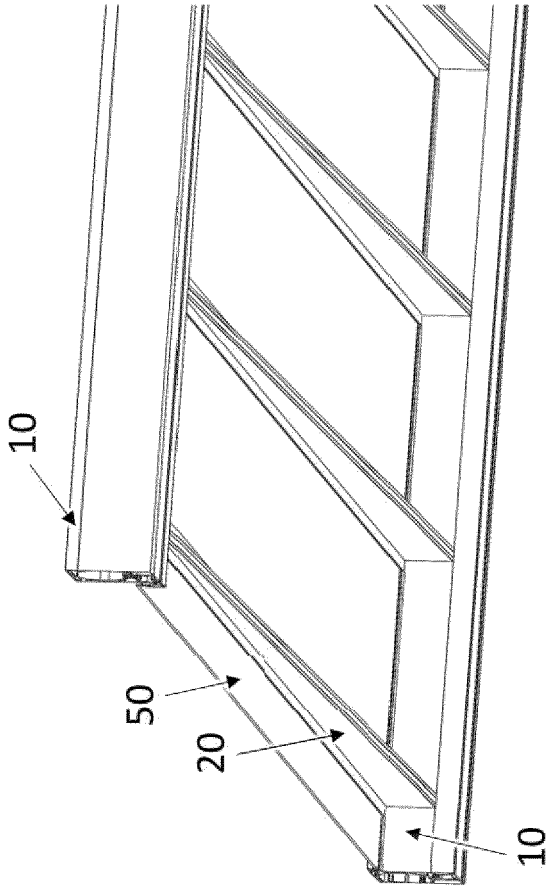

FIG. 1A

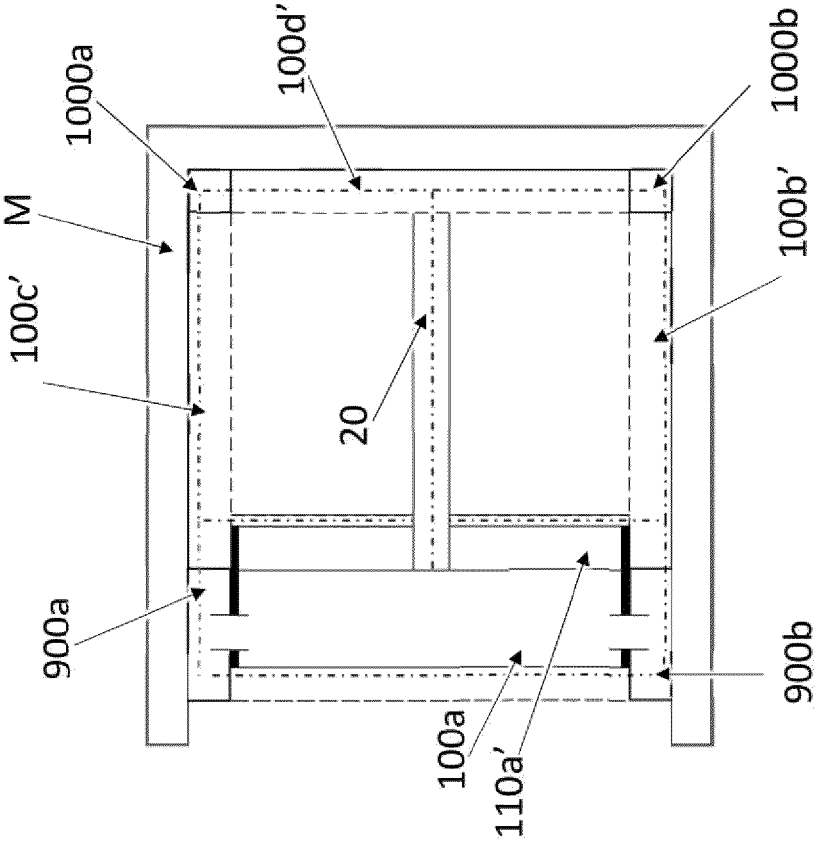
1000a
100d'
1000b
M
100b'
100c'
20
900a
900b
100a
110a'

FIG. 1D

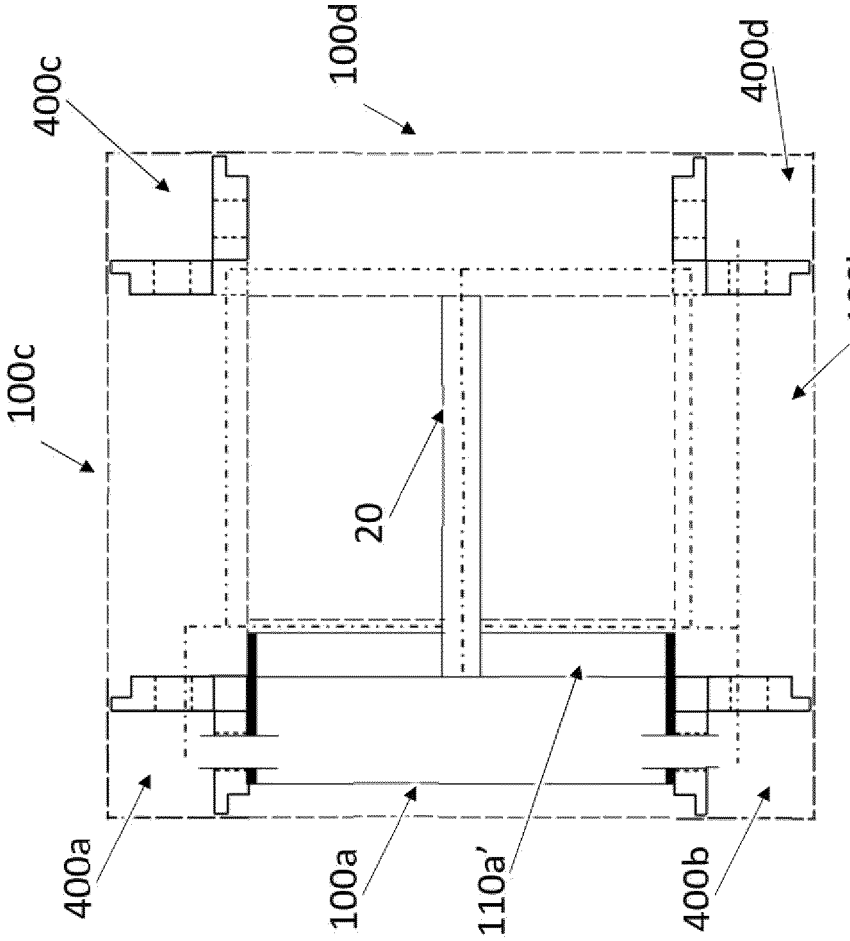
400c
100d
400d
100b
100c
20
400a
100a
110a'
400b

FIG. 1C

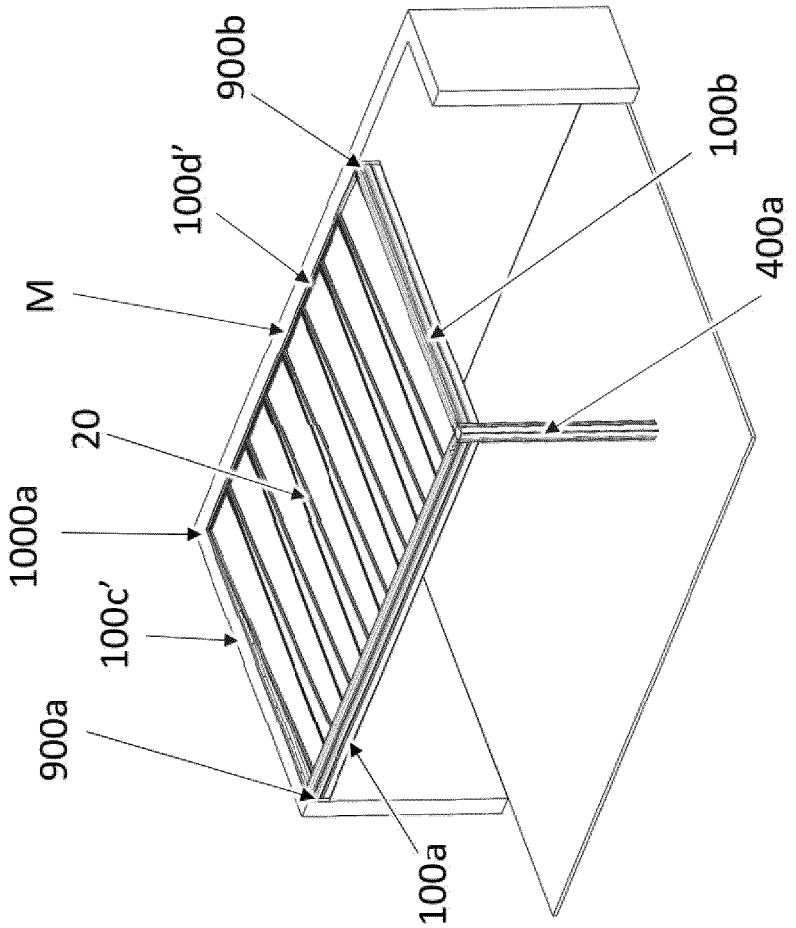
900b
100d'
M
20
1000a
100c'
900a
100a
100b
400a

FIG. 1F

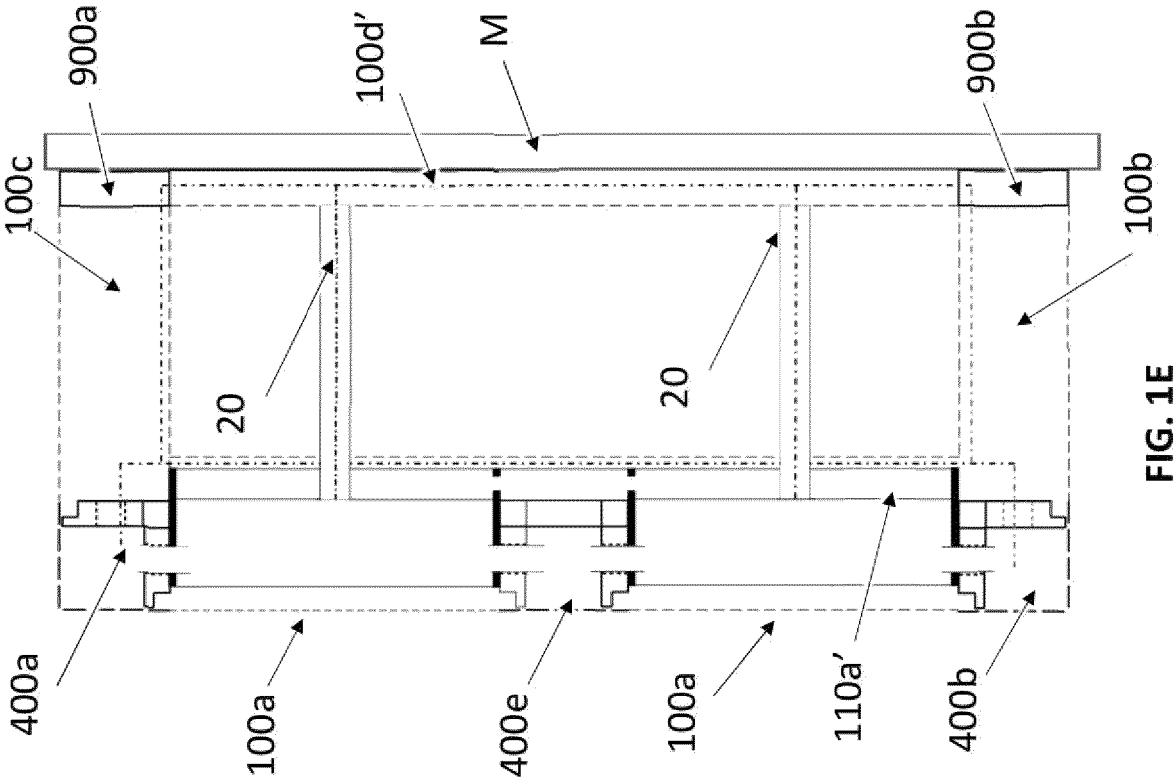
900a
100d'
M
900b
100c
100b
20
20
400a
100a
400e
100a
110a'
400b

FIG. 1E

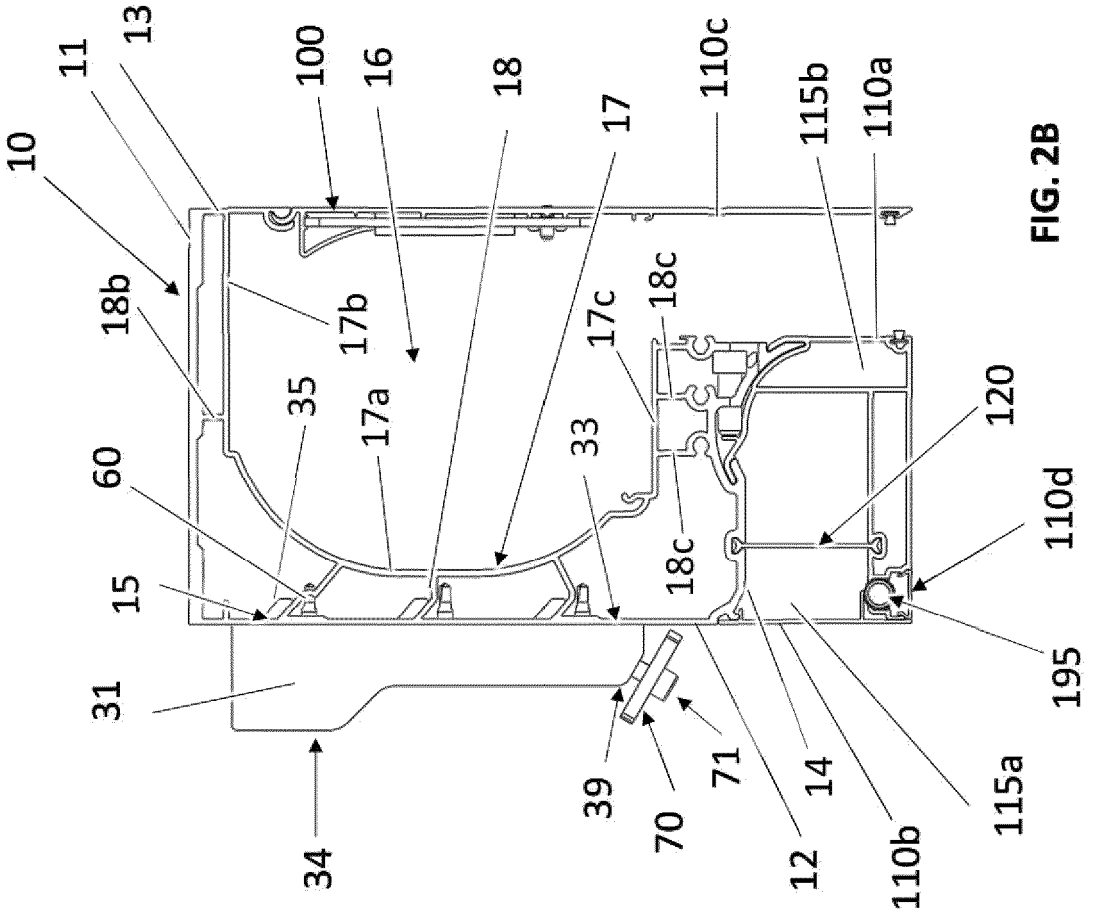
10
11
13
100
16
18
17
110c
115b
110a
18b
17b
17c
18c
35
17a
33
120
60
110d
15
18c
195
31
39
71
14
115a
70
12
110b
34

FIG. 2B

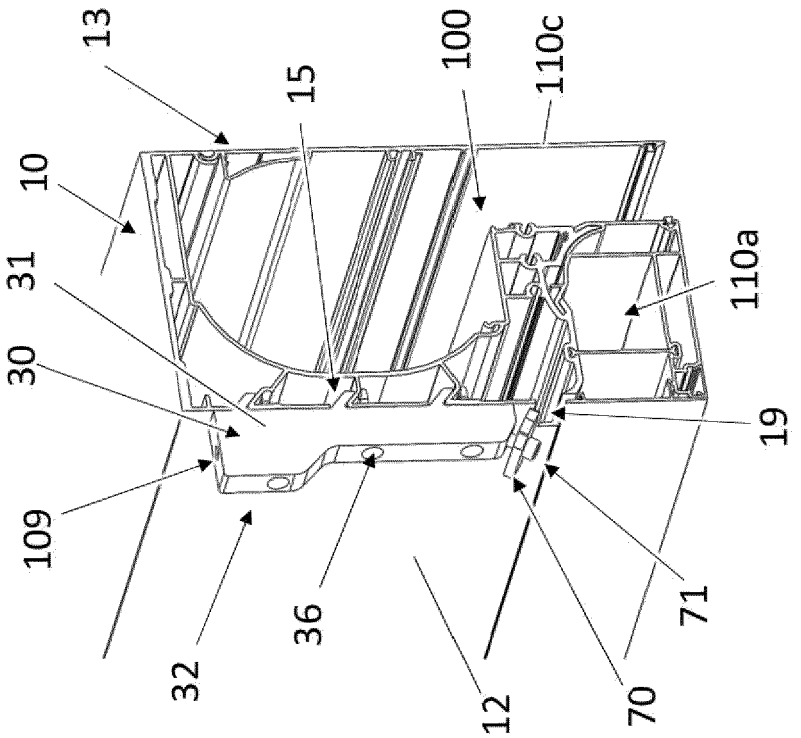
13
15
100
110c
10
31
110a
30
19
109
71
36
32
12
70

FIG. 2A

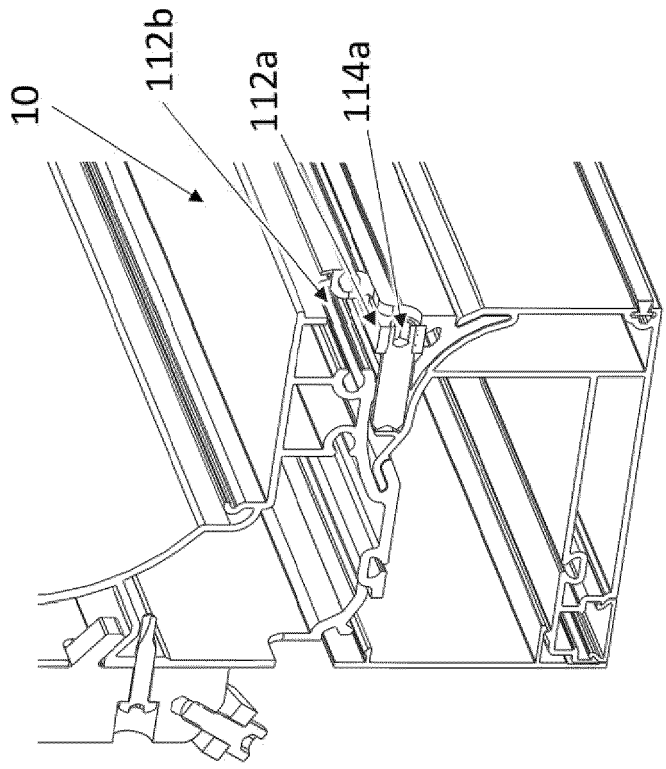
10
112b
112a
114a

FIG. 2D

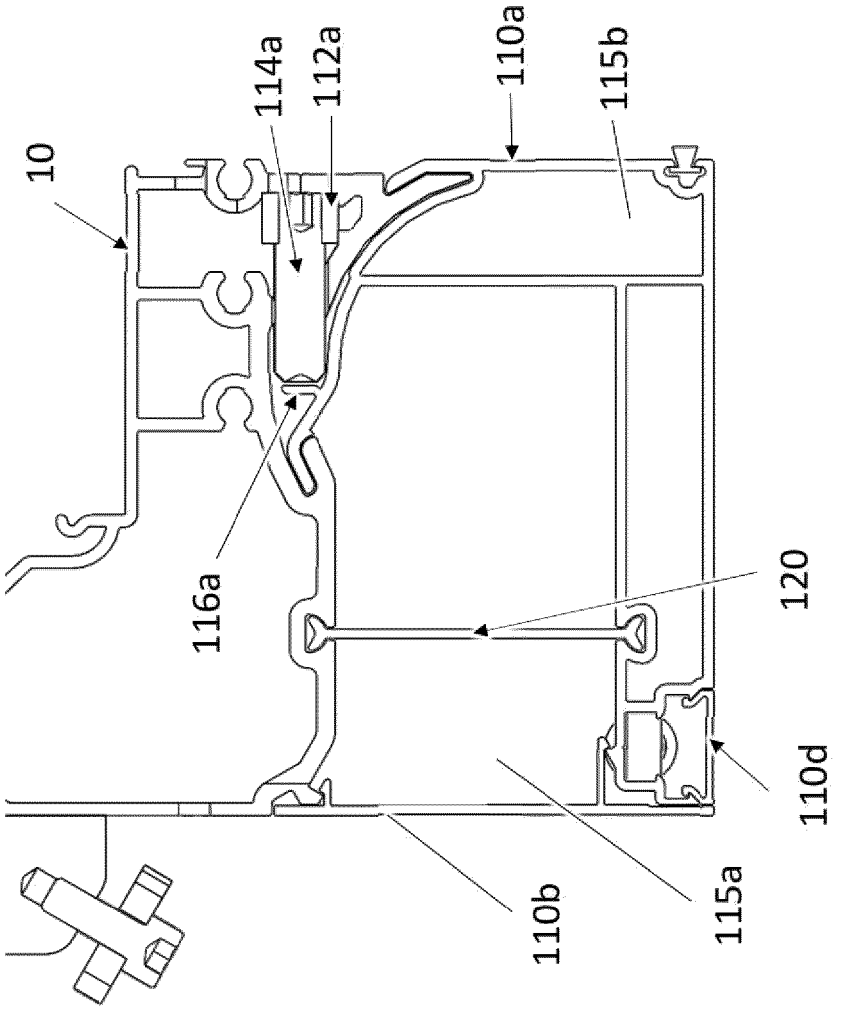
10
114a
112a
110a
115b
116a
120
110d
110b
115a

FIG. 2C

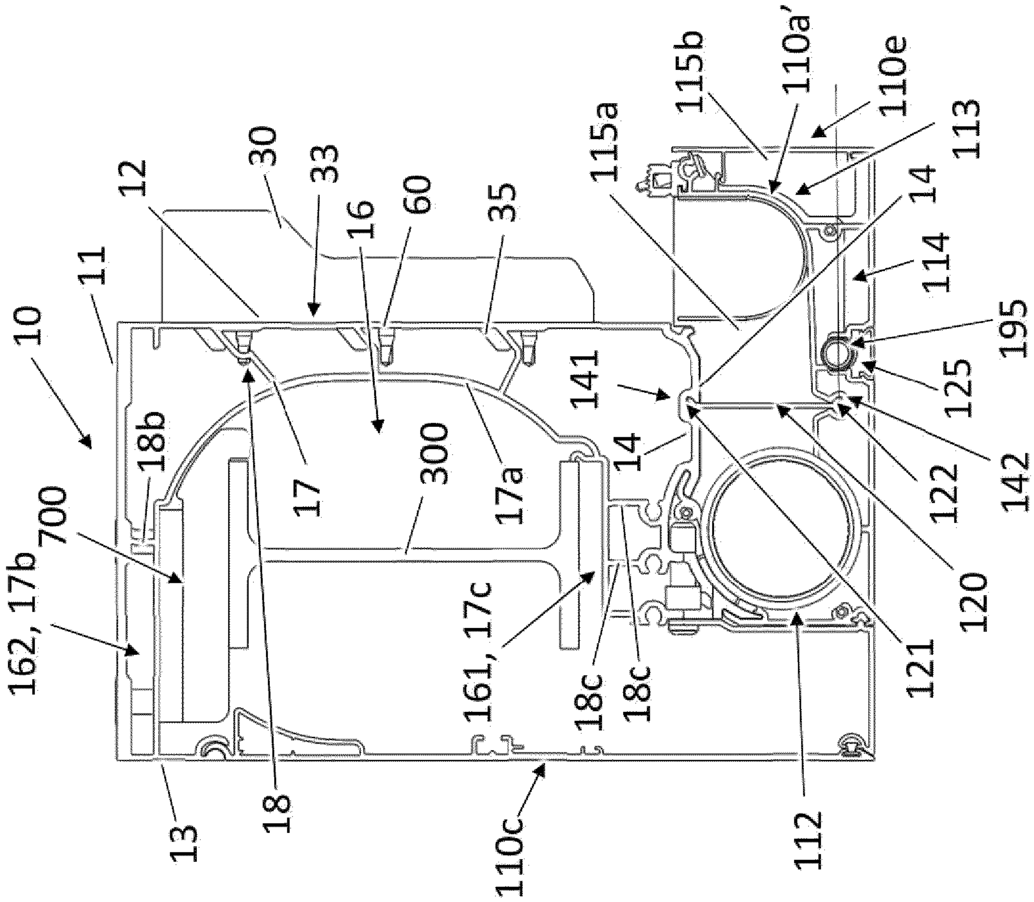
10
11
12
30
33
16
60
35
115a
115b
110a'
110e
113
14
114
195
125
142
122
120
121
141
14
17a
300
17
18b
700
162, 17b
161, 17c
18c
18c
18
13
110c
112

FIG. 2F

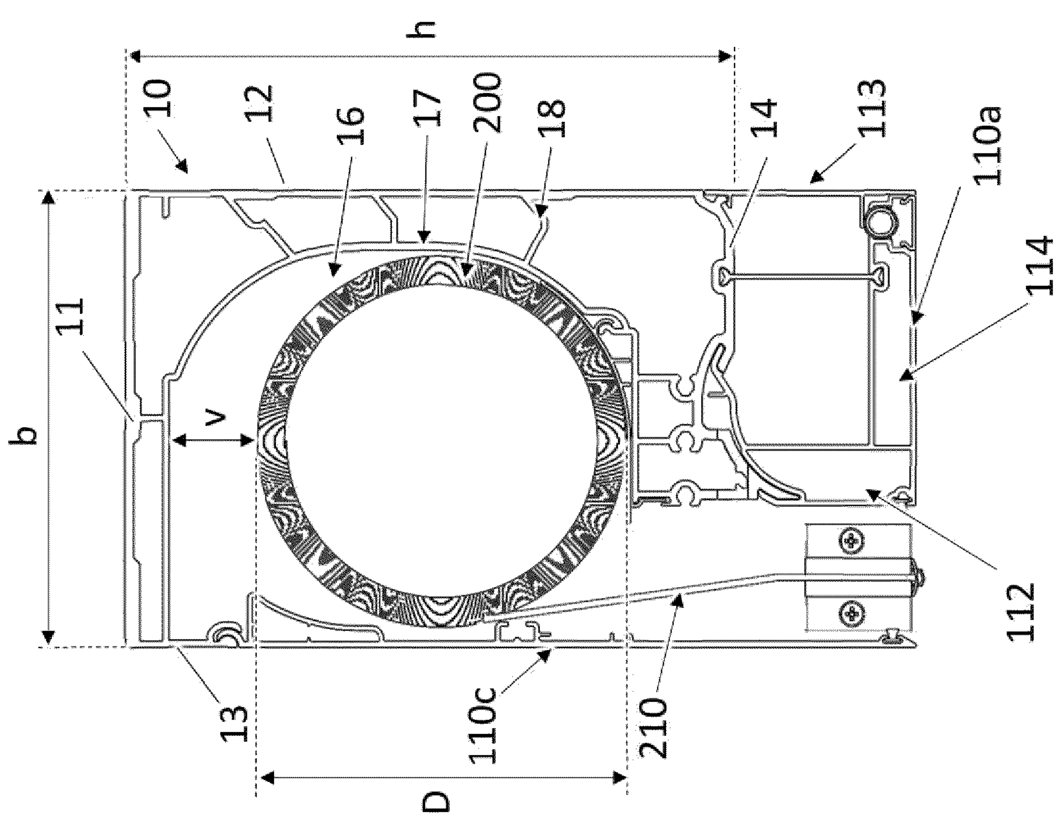
h
b
10
12
16
17
200
18
14
113
110a
114
11
11
v
112
13
110c
210
D

FIG. 2E

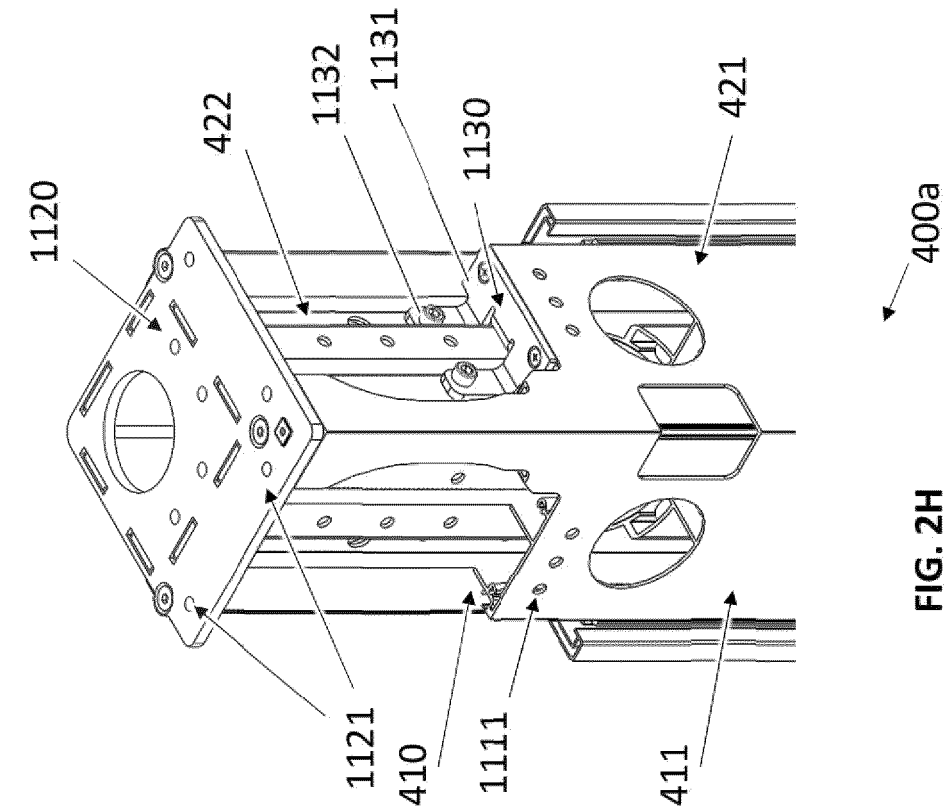
1120
422
1132
1131
1130
421
400a
1121
410
1111
411

FIG. 2H

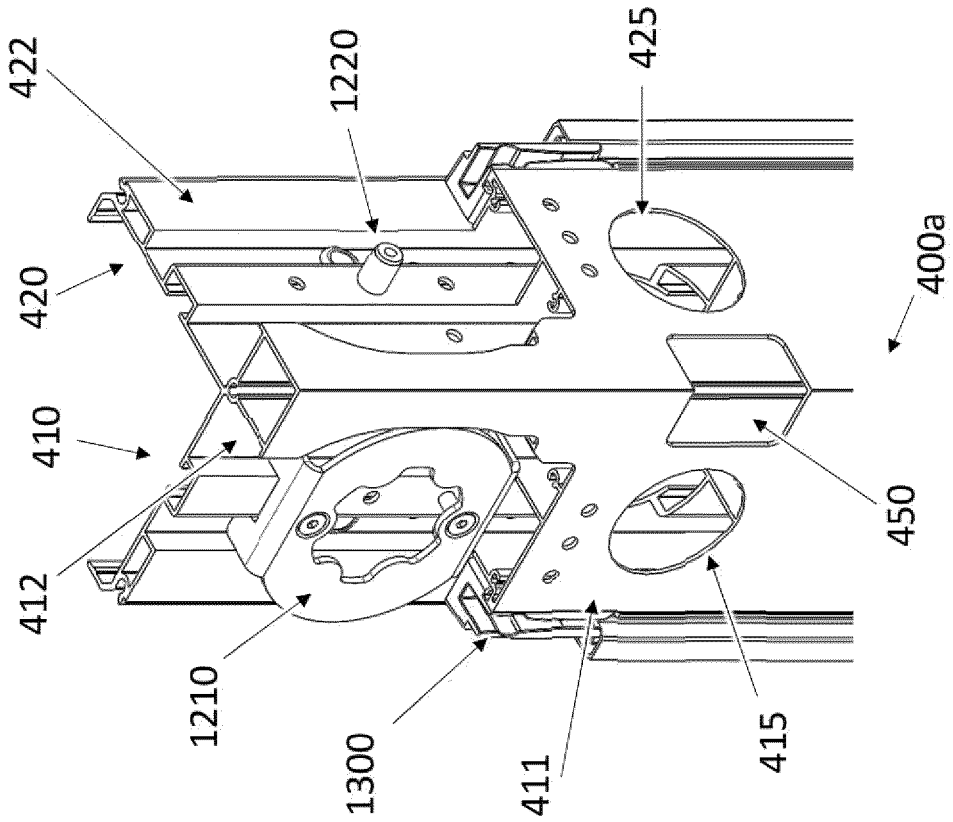
422
1220
425
420
400a
410
412
450
1210
1300
411
415

FIG. 2G

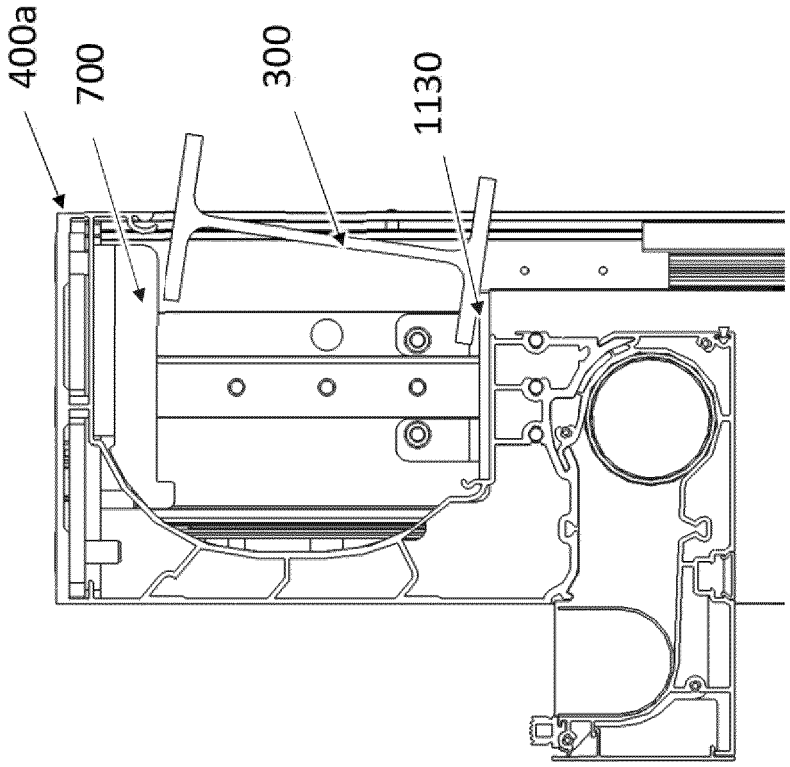

FIG. 2J

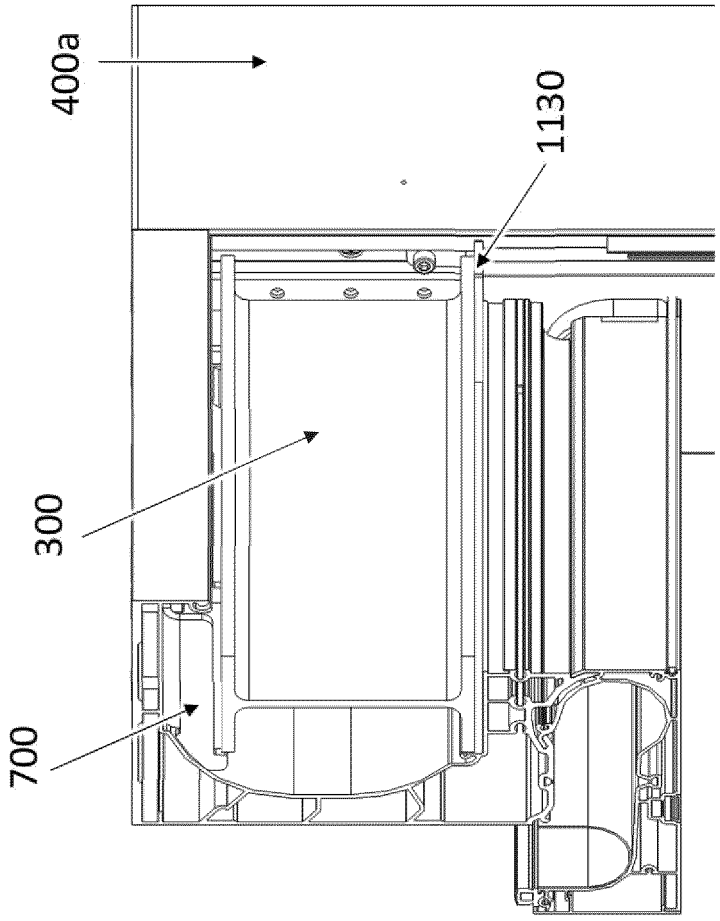

FIG. 2I

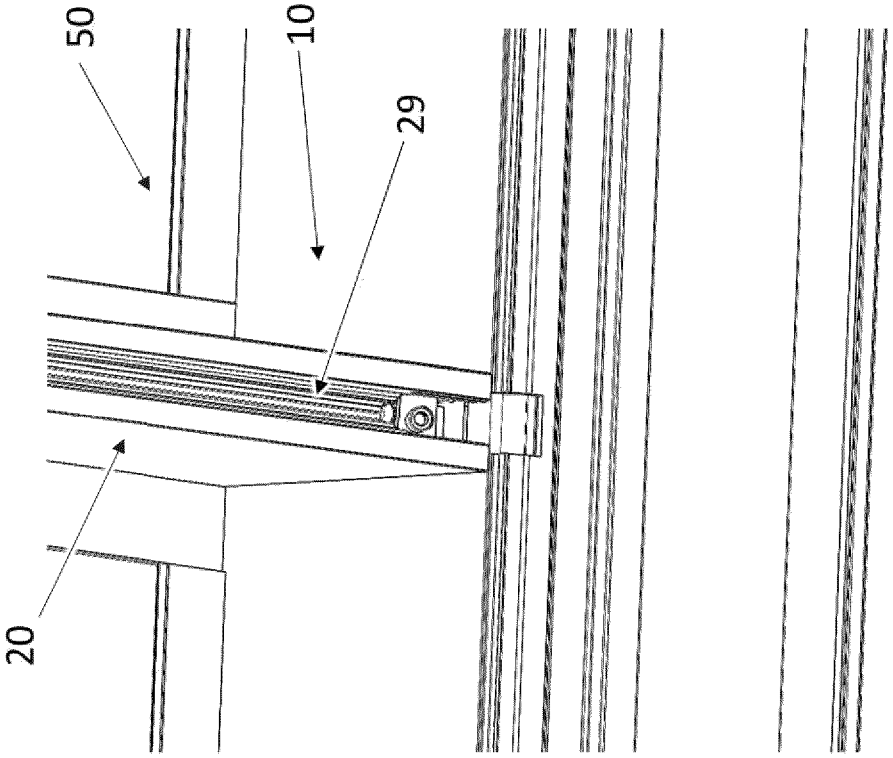

FIG. 3B

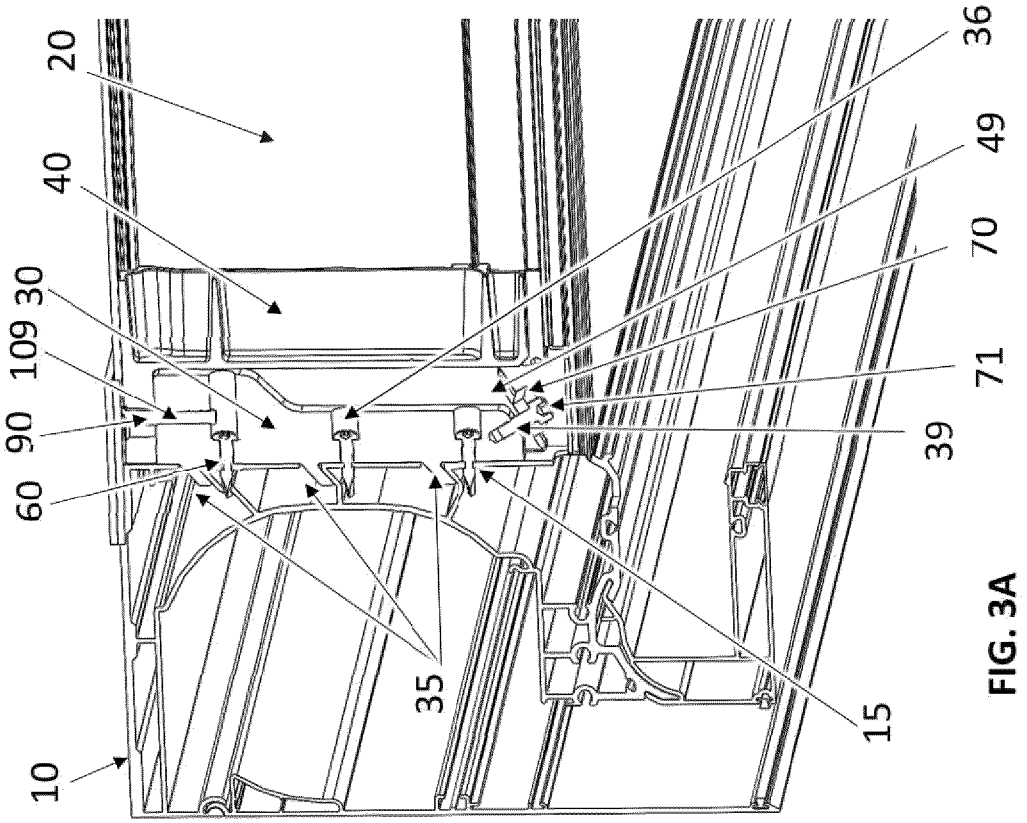

FIG. 3A

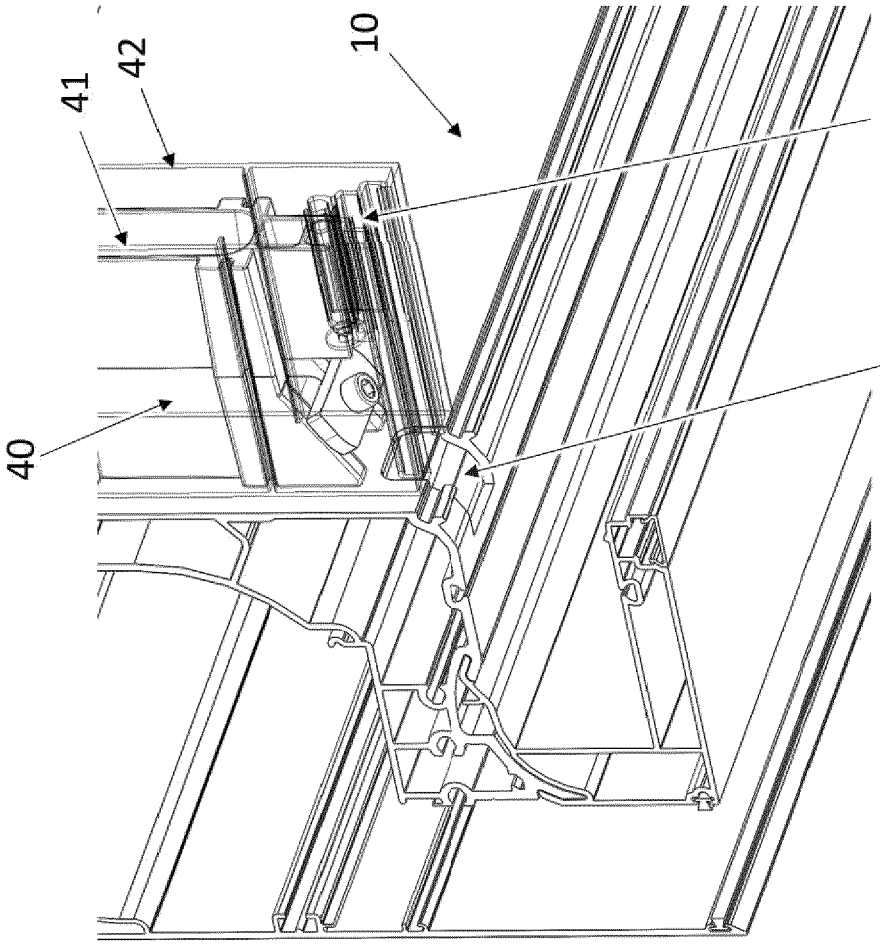

FIG. 4

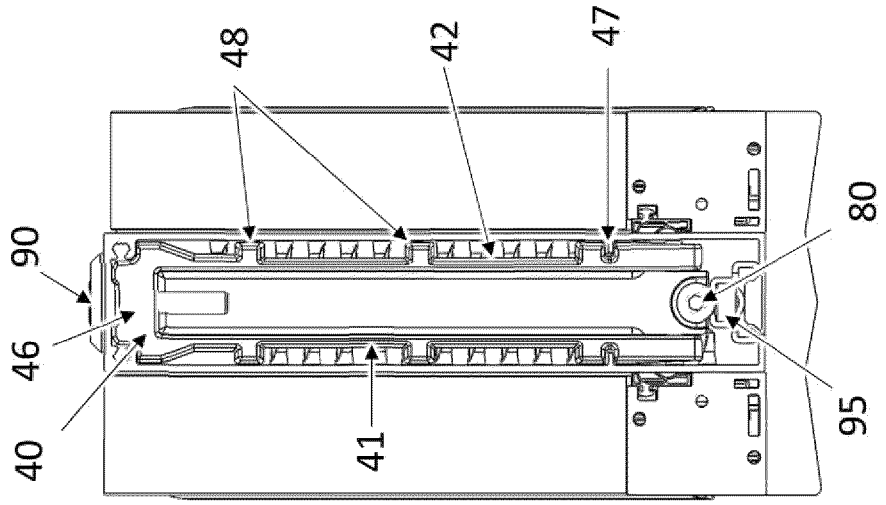

FIG. 7

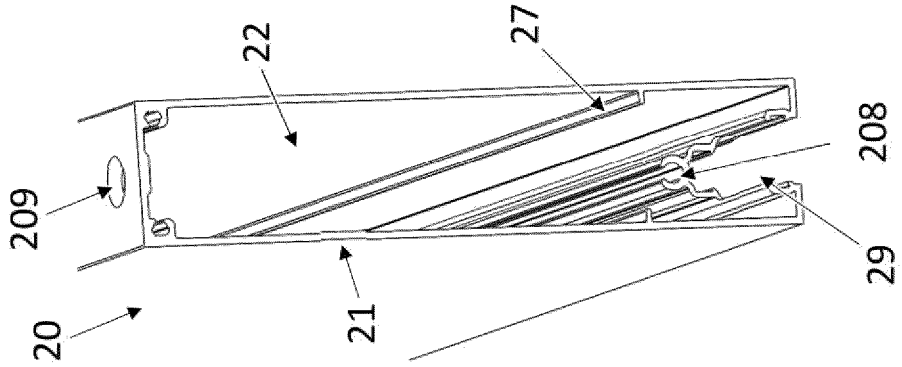

FIG. 6

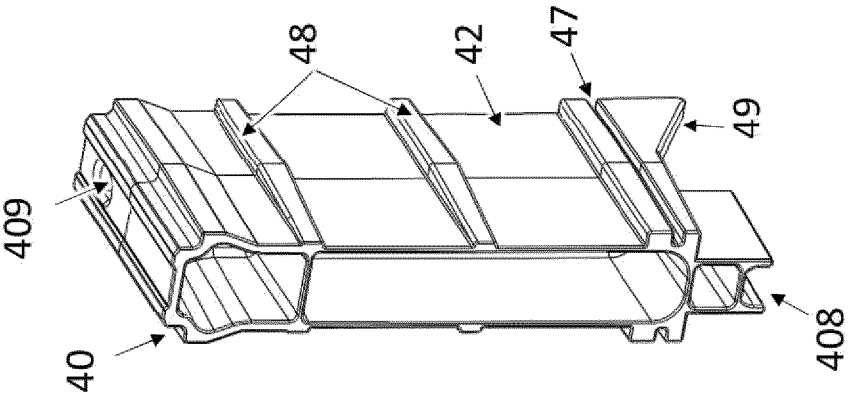

FIG. 5B

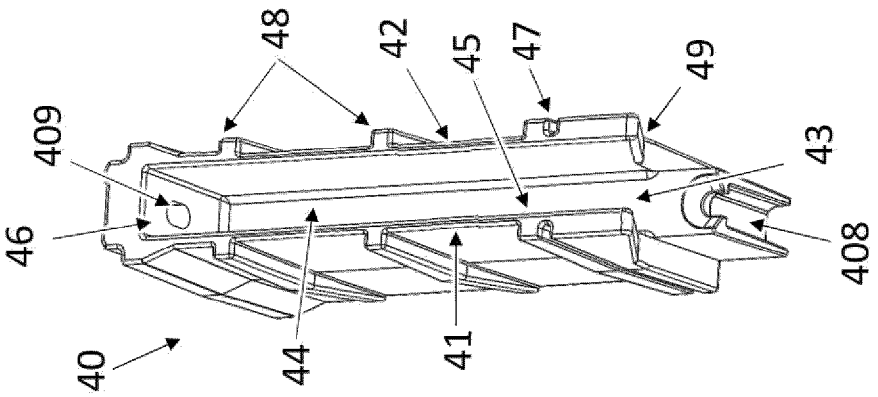

FIG. 5A

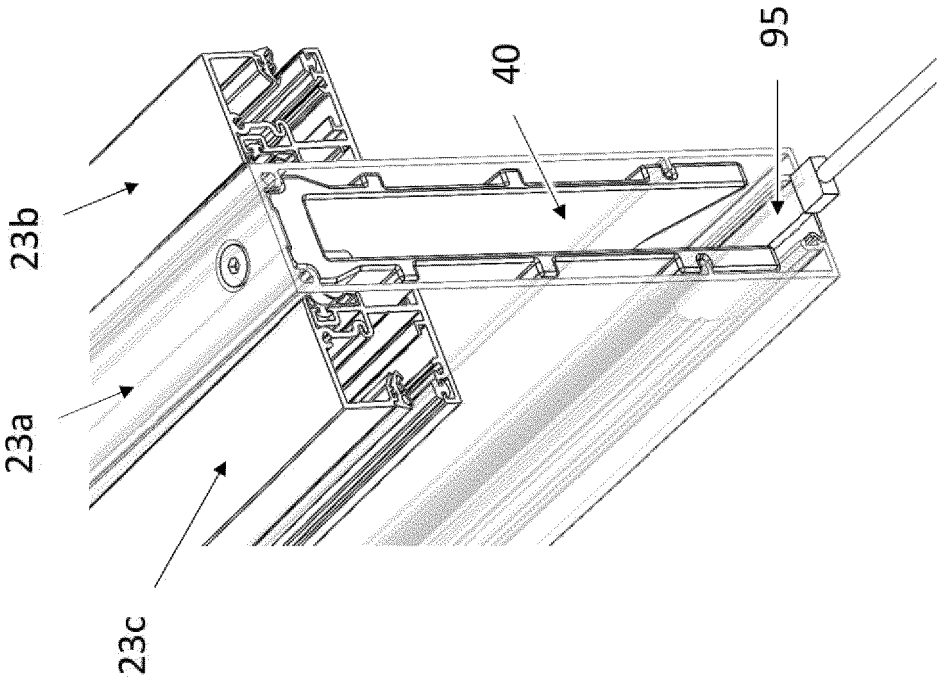

FIG. 8B

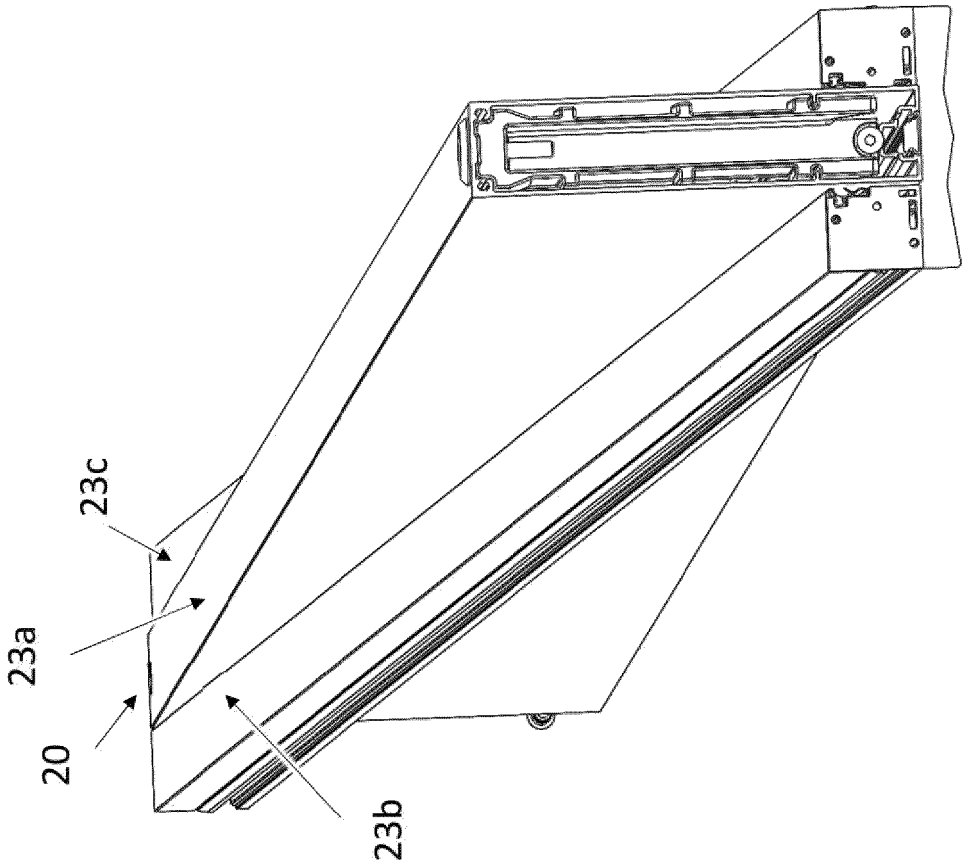

FIG. 8A

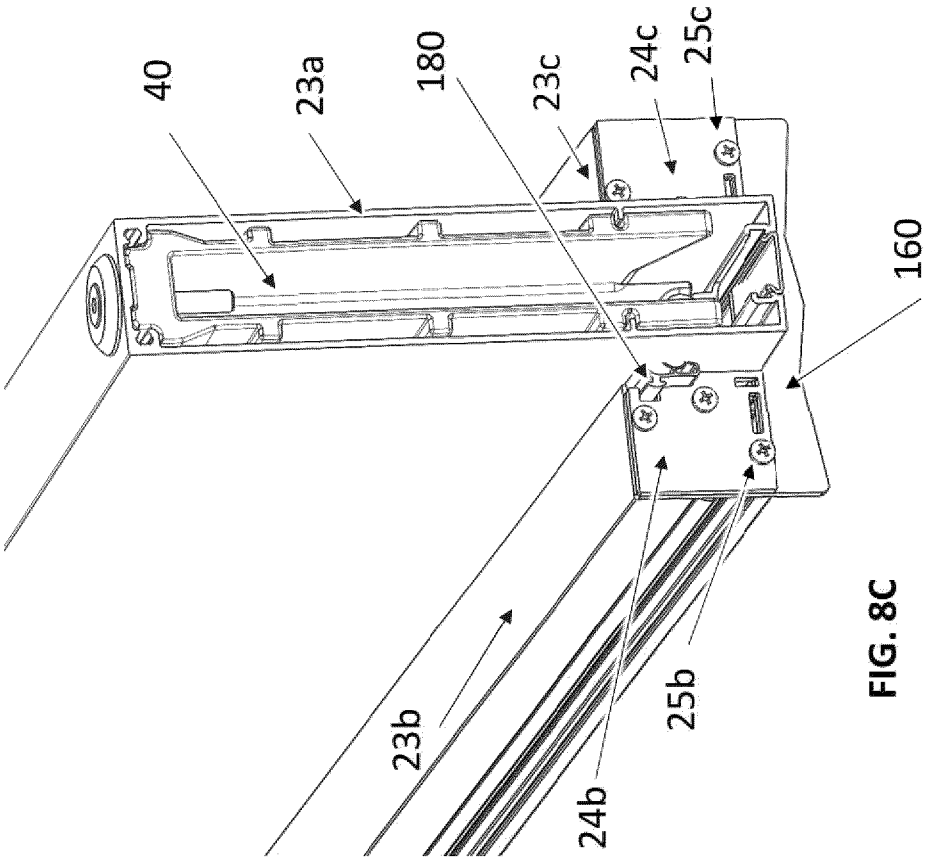

FIG. 8C

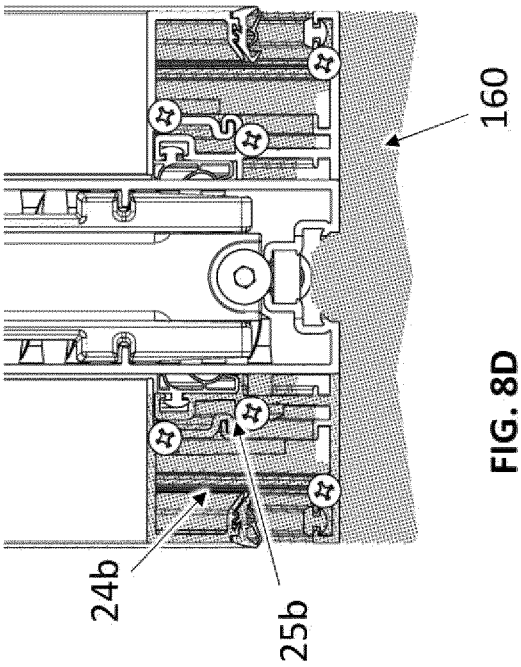

FIG. 8D

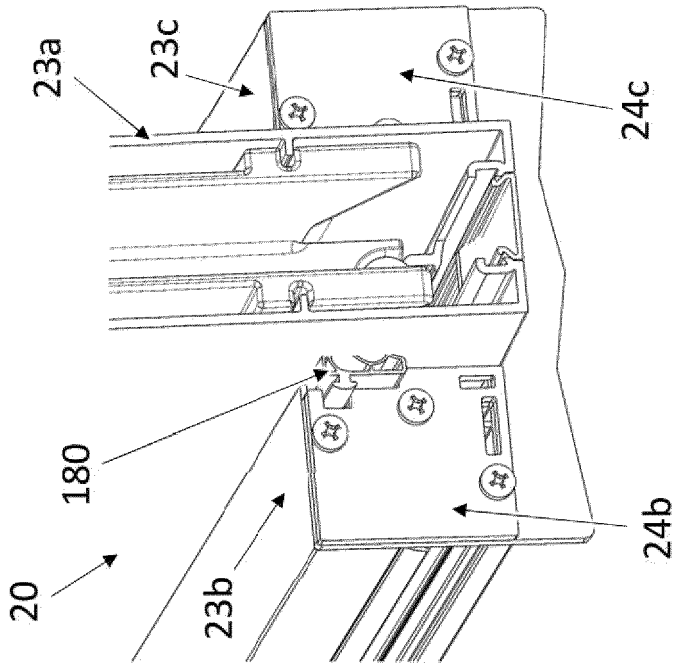
23a
23c
24c
180
20
23b
24b

FIG. 8F

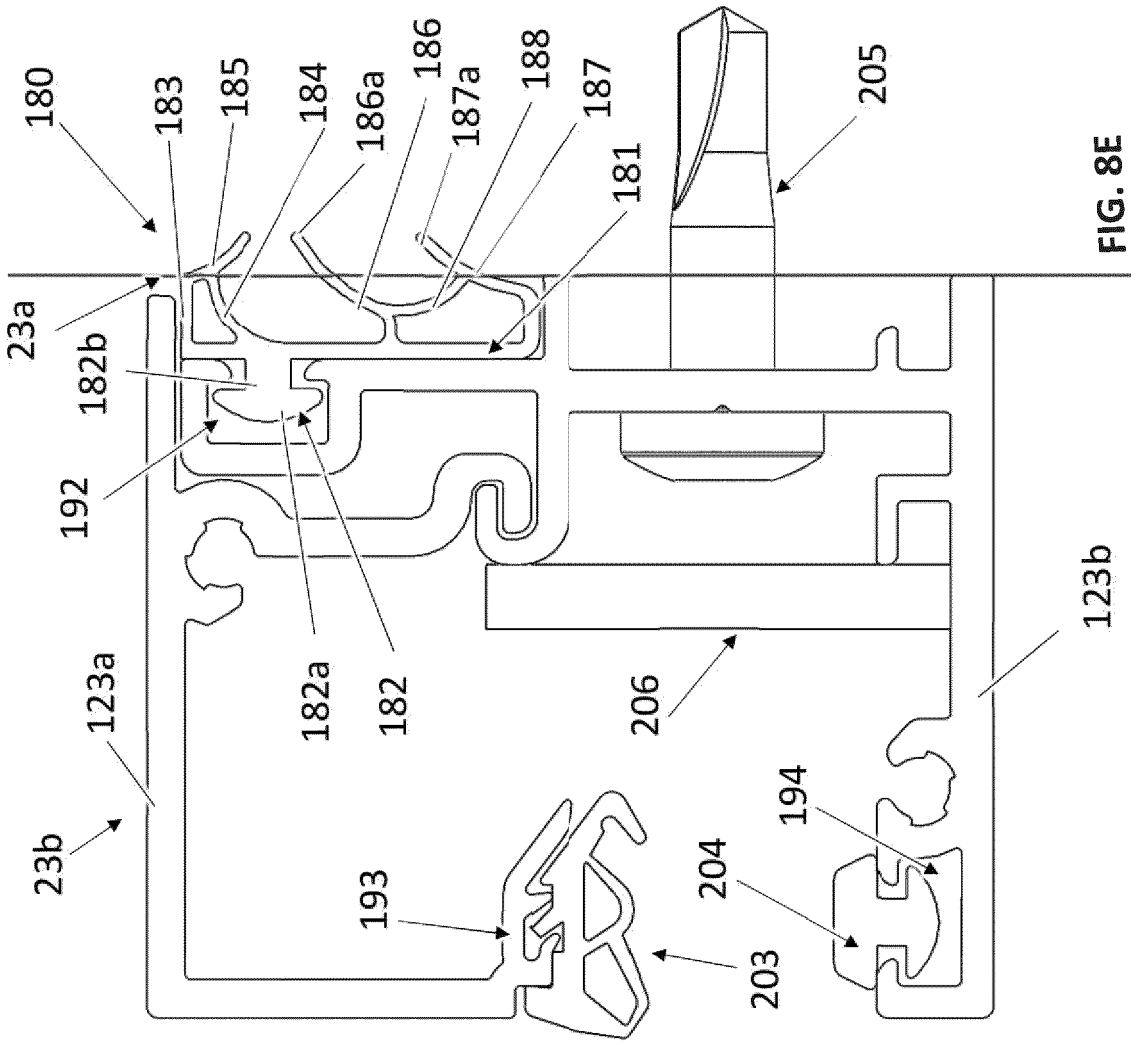
180
183
185
184
186a
186
187a
188
187
181
205
23a
182b
192
123a
23b
182a
182
206
123b
194
193
204
203

FIG. 8E

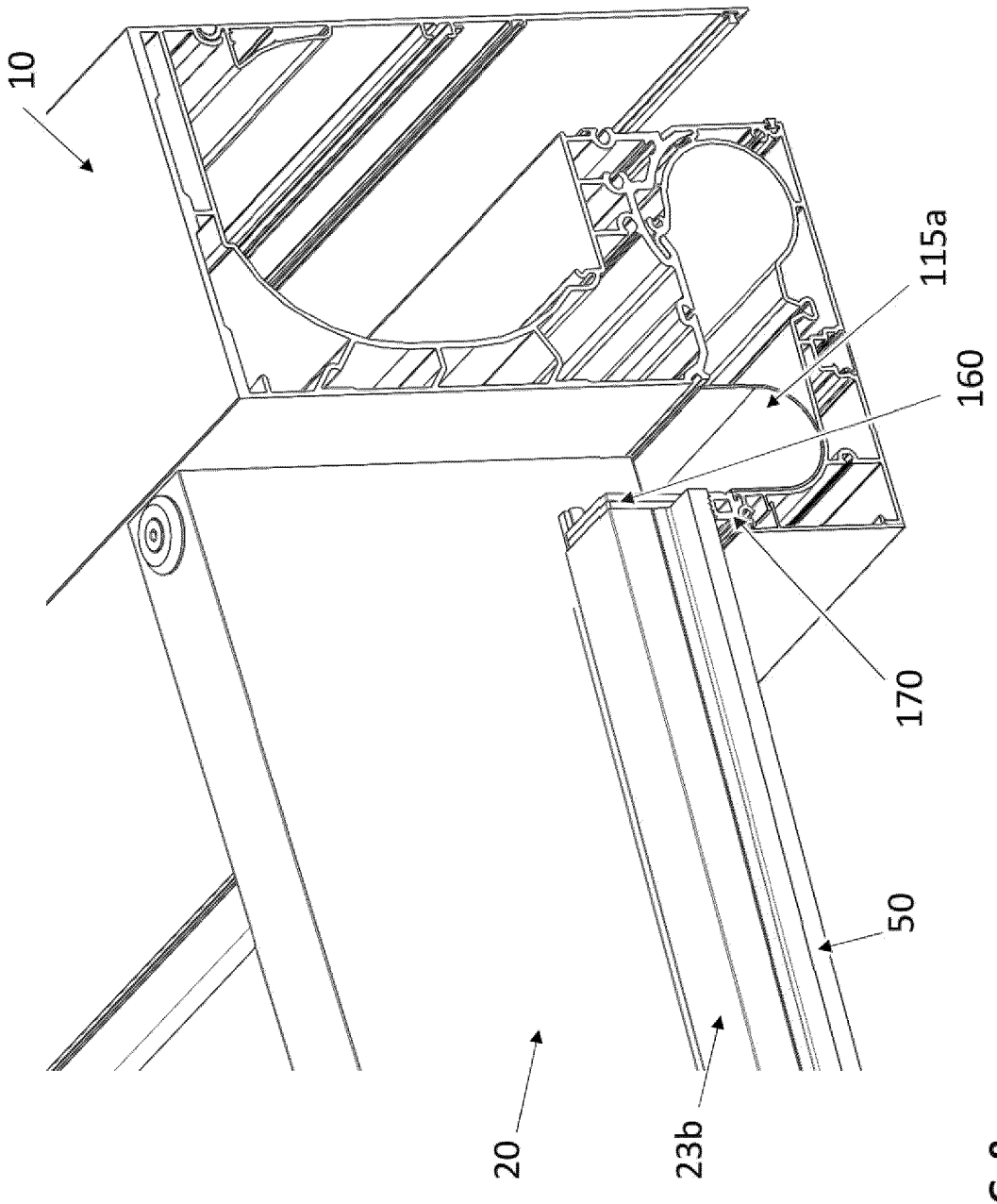

FIG. 9

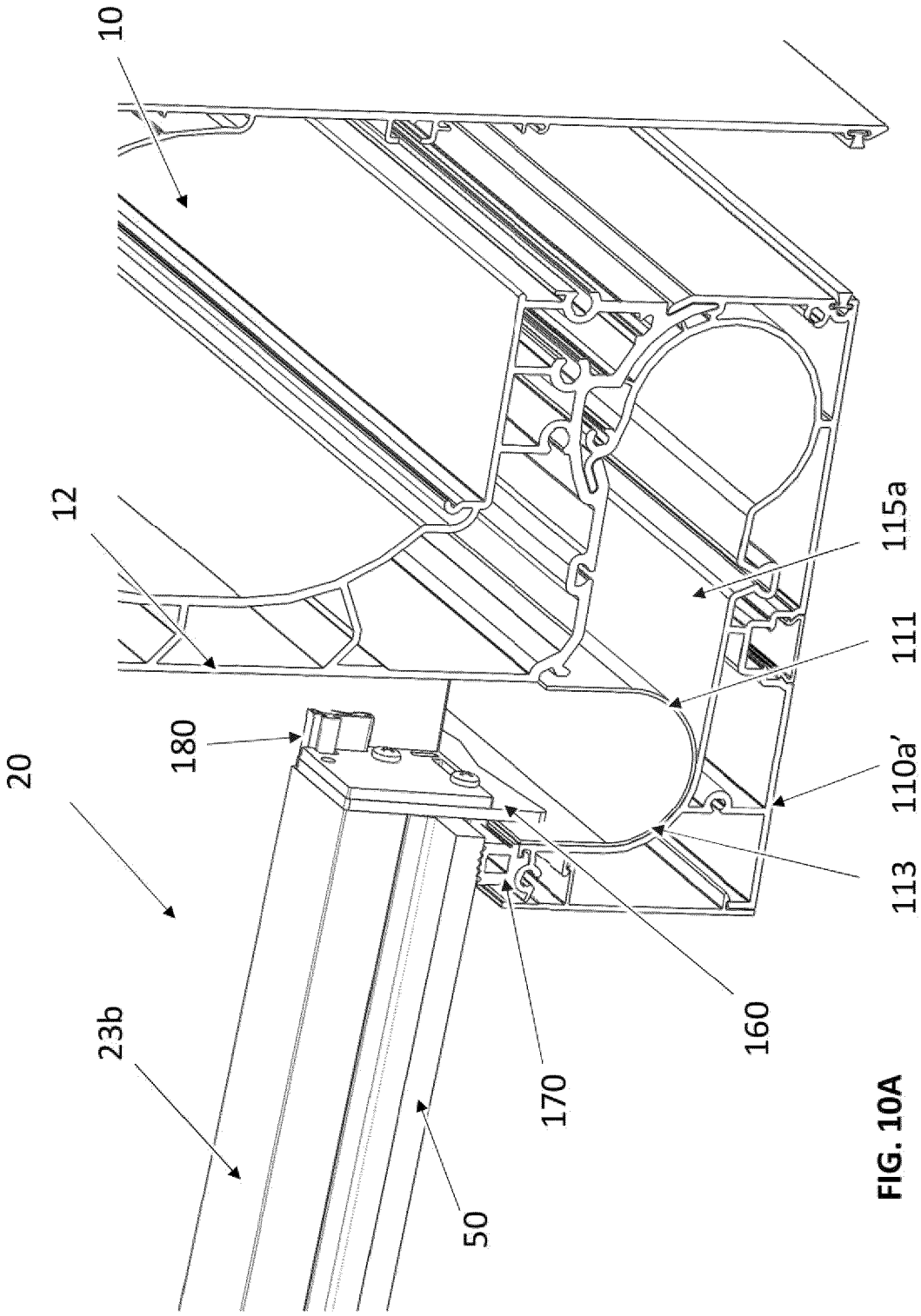

FIG. 10A

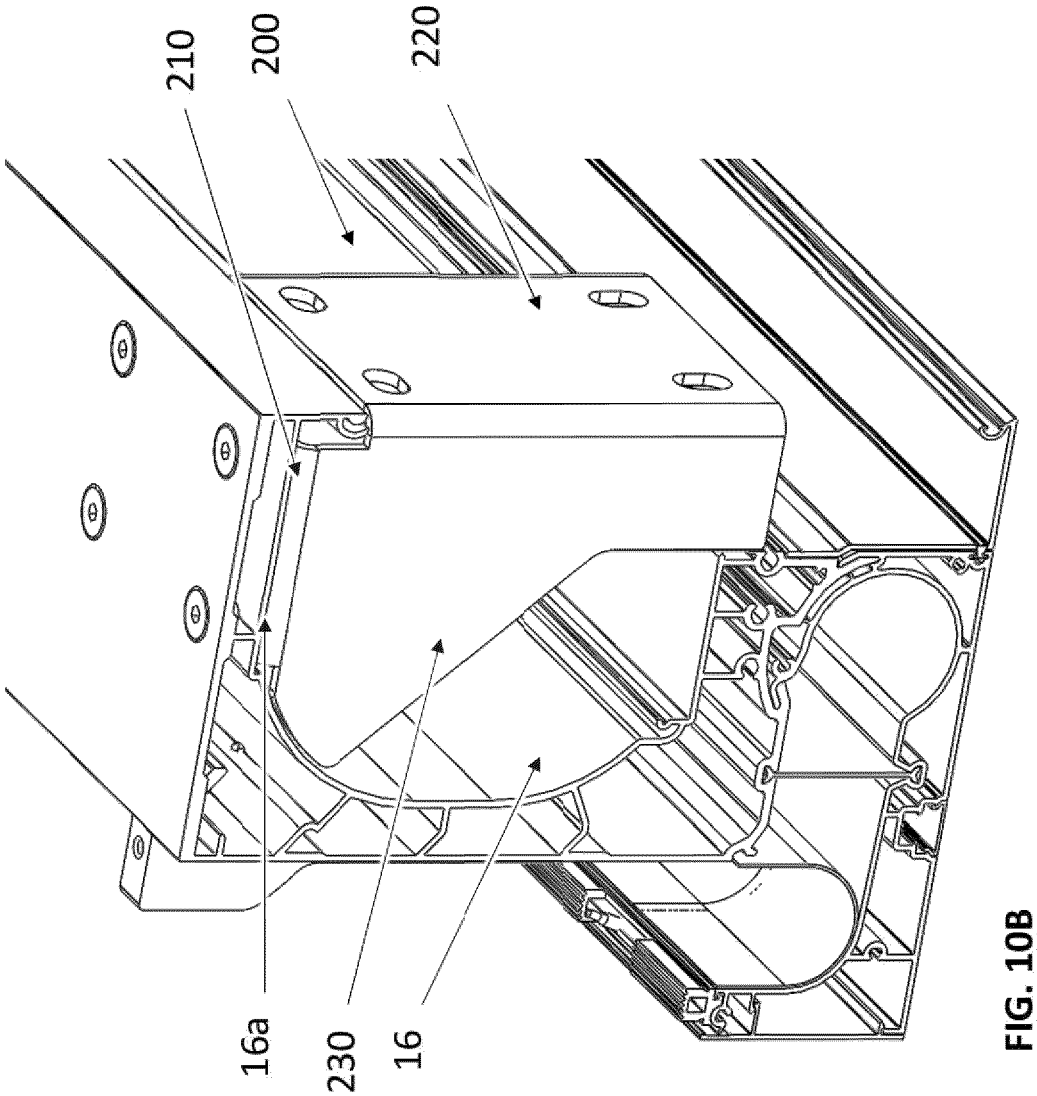

FIG. 10B

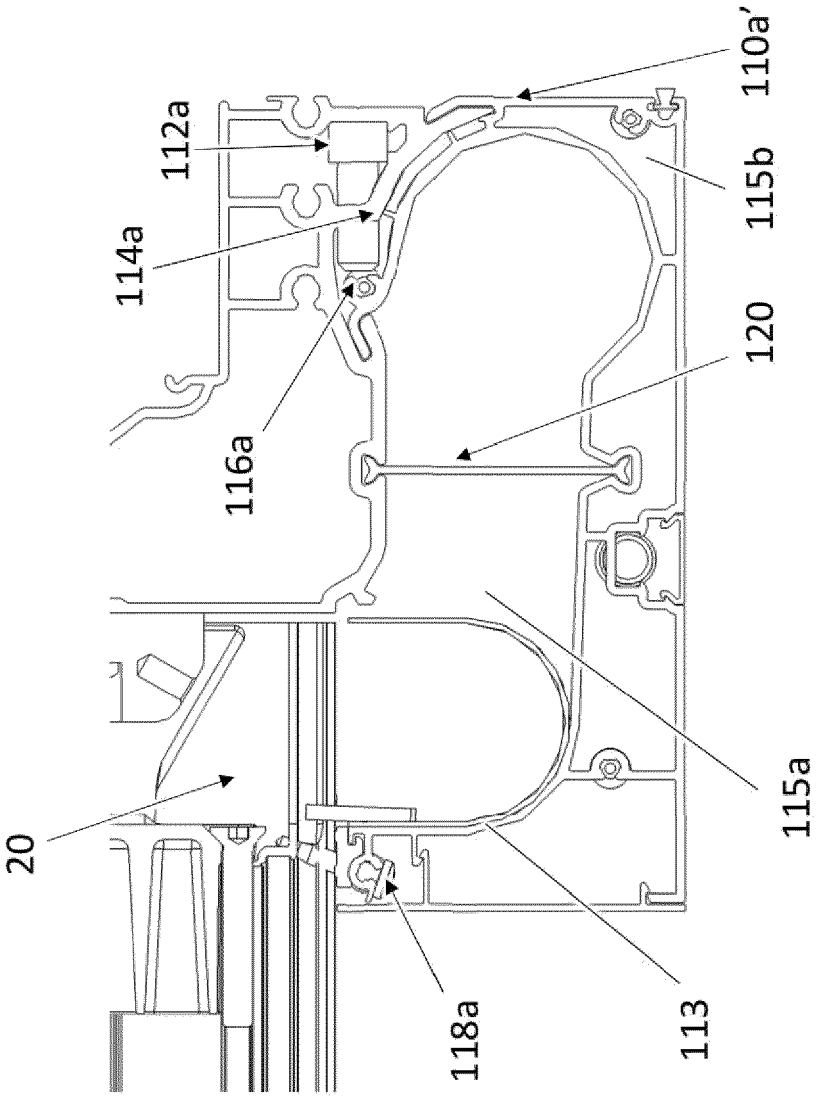

FIG. 10D

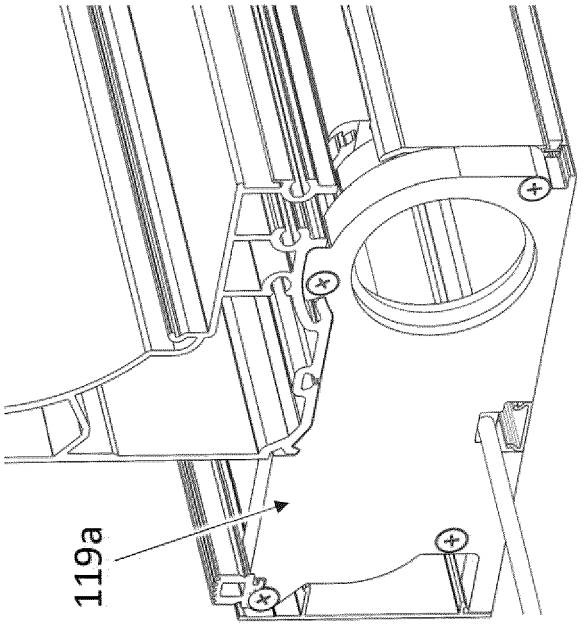

FIG. 10C

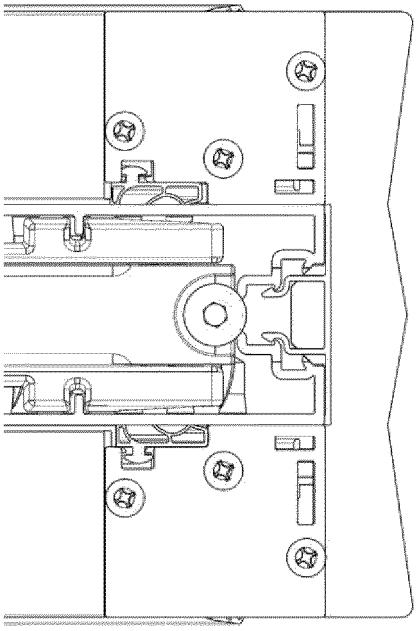

FIG. 11B

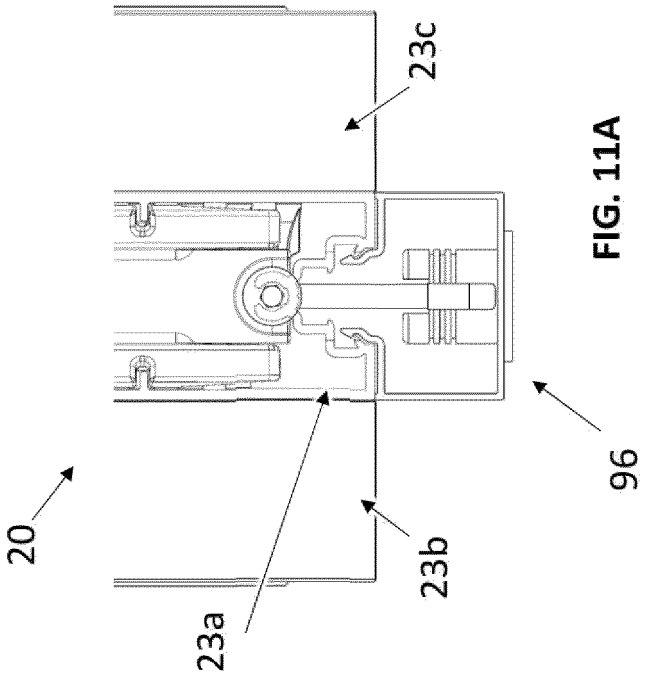

FIG. 11A

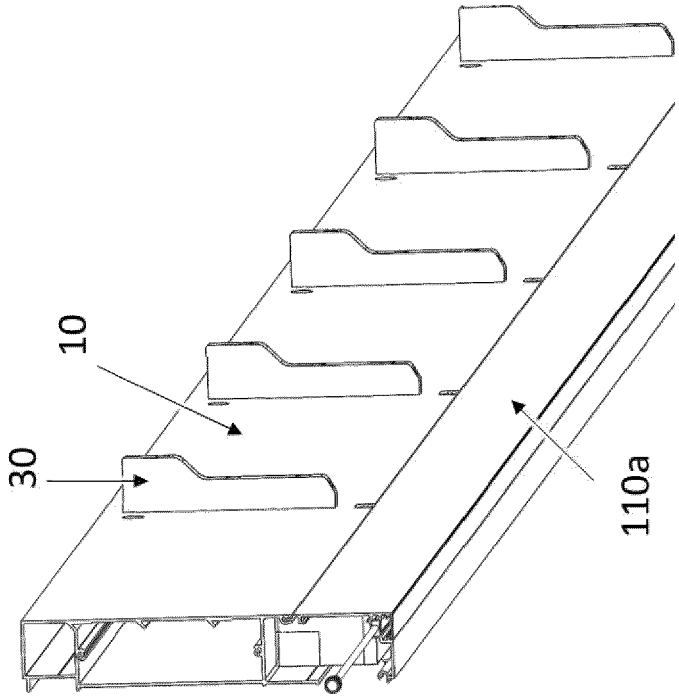

FIG. 12B

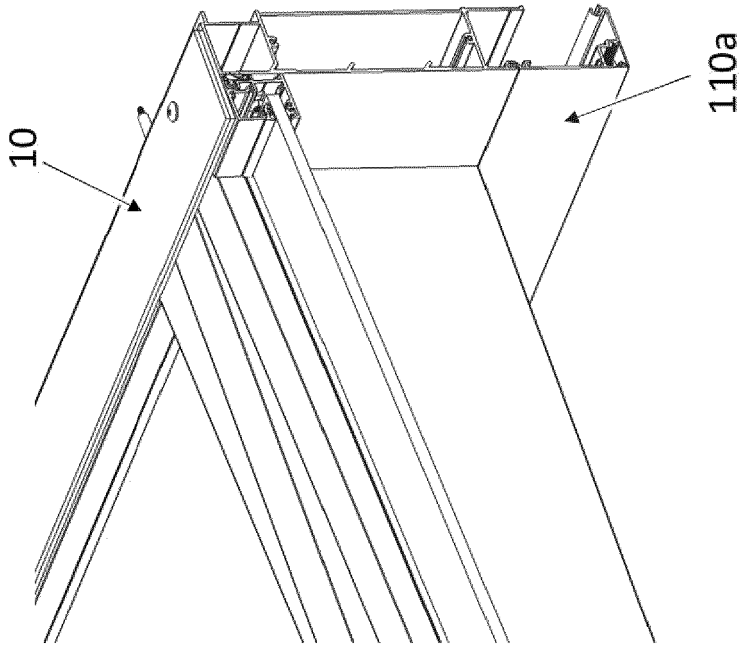

FIG. 12A

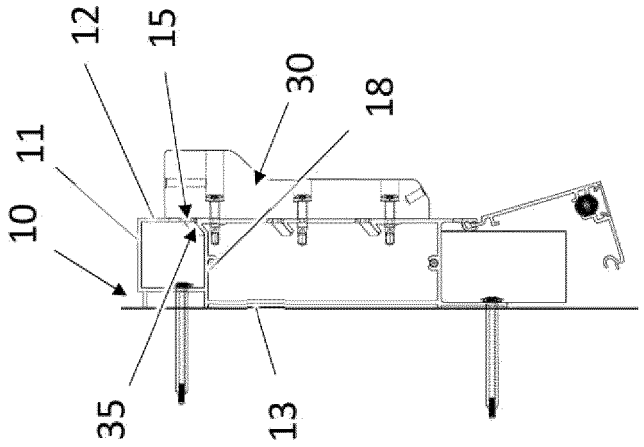

FIG. 12D

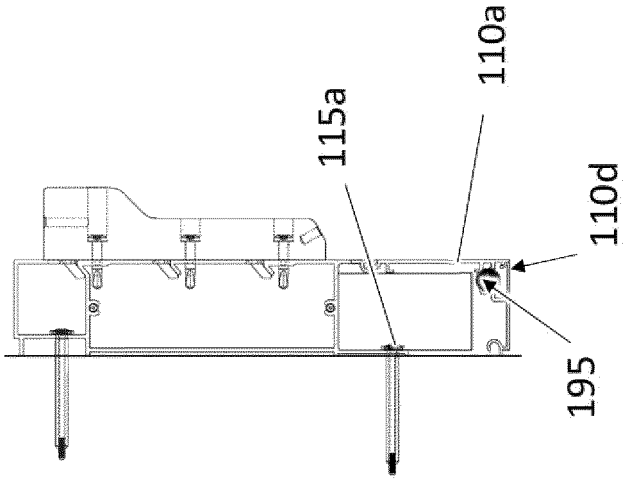

FIG. 12C

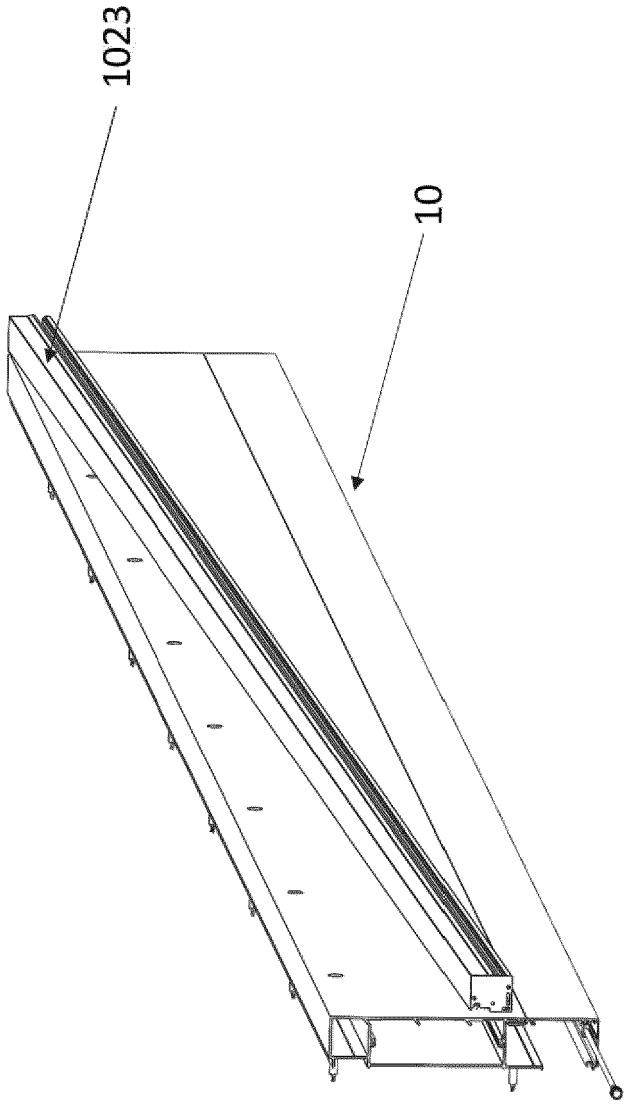

FIG. 12E

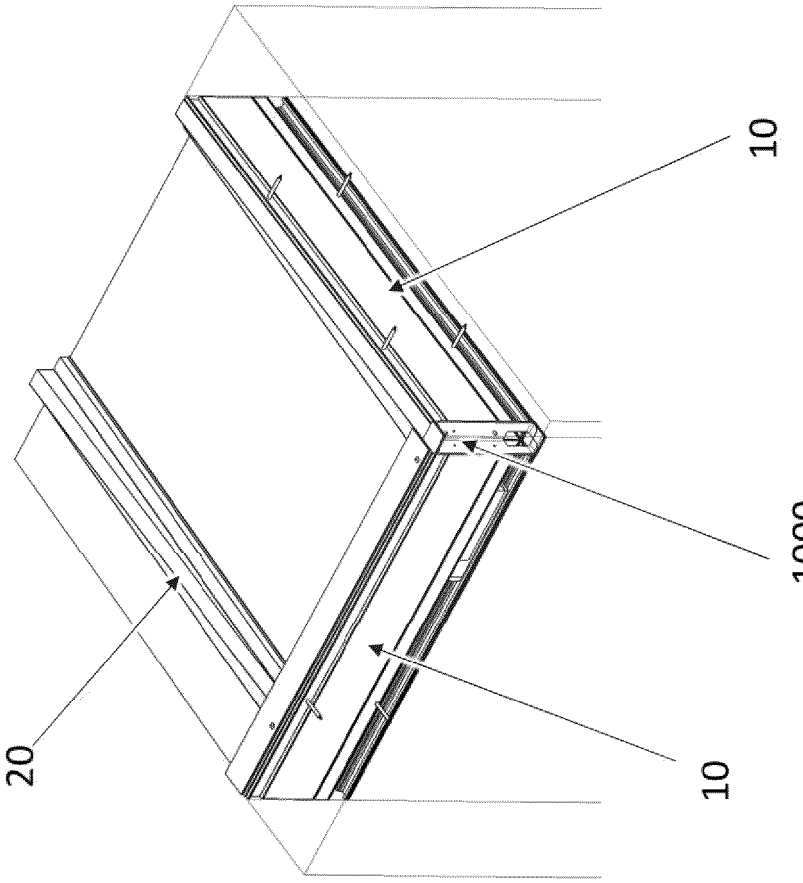

FIG. 12G

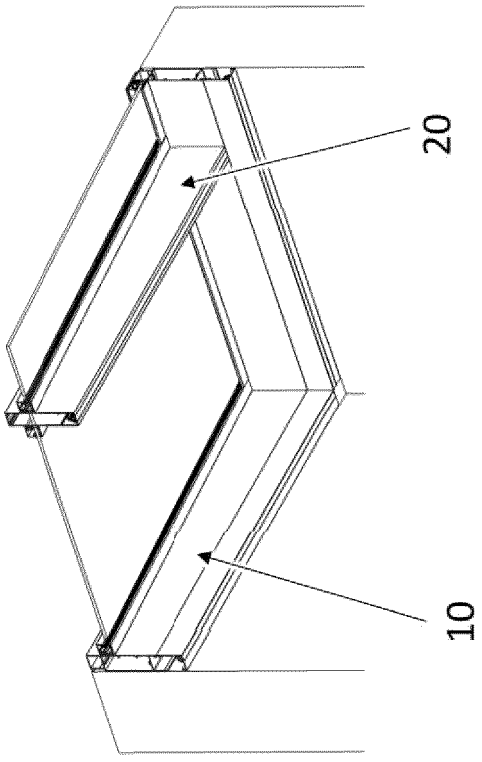

FIG. 12F

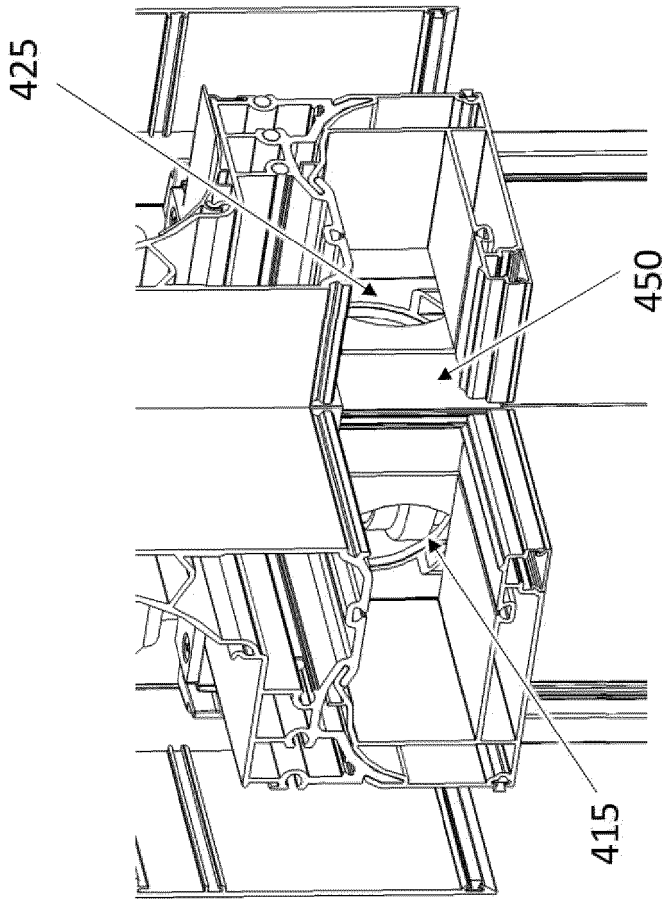

FIG. 13B

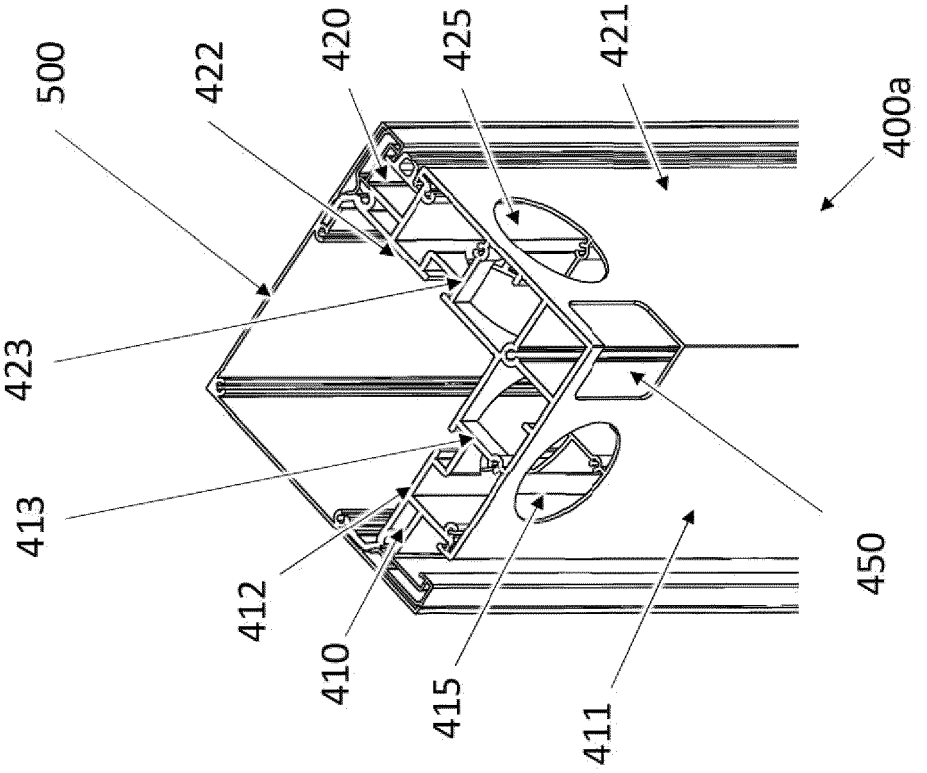

FIG. 13A

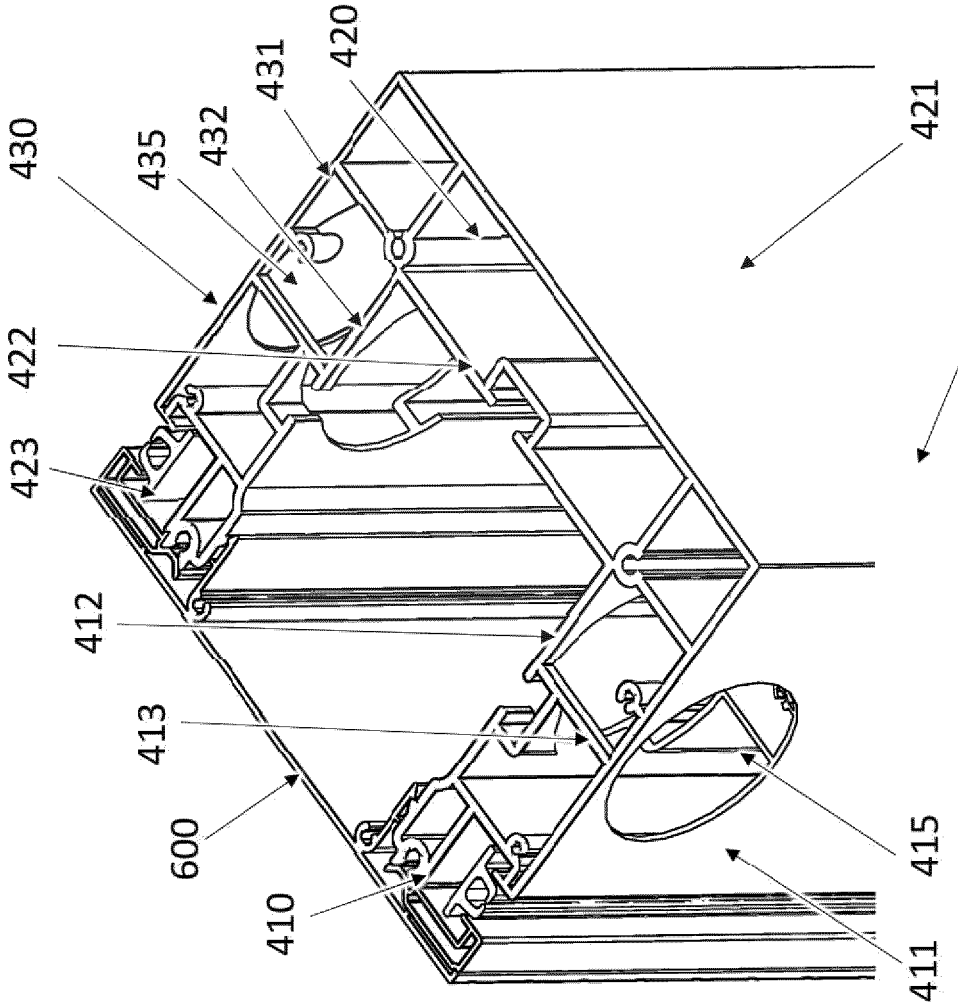

FIG. 13D

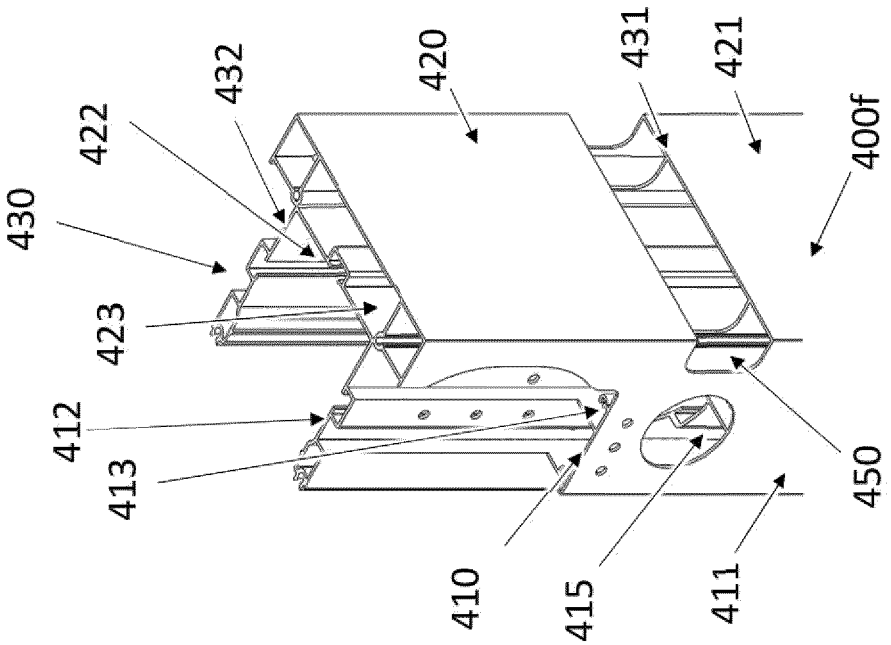

FIG. 13C

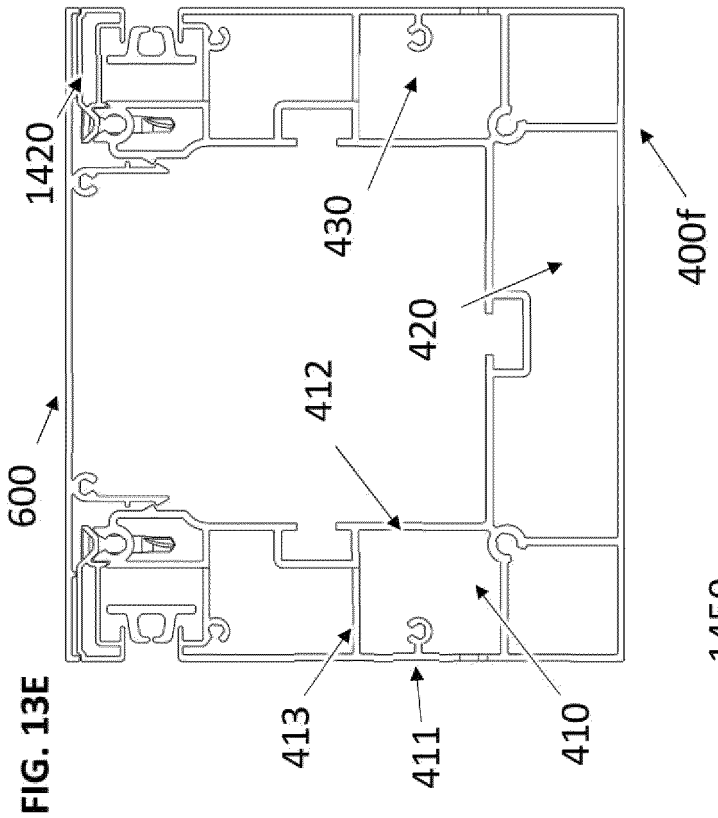

FIG. 13E

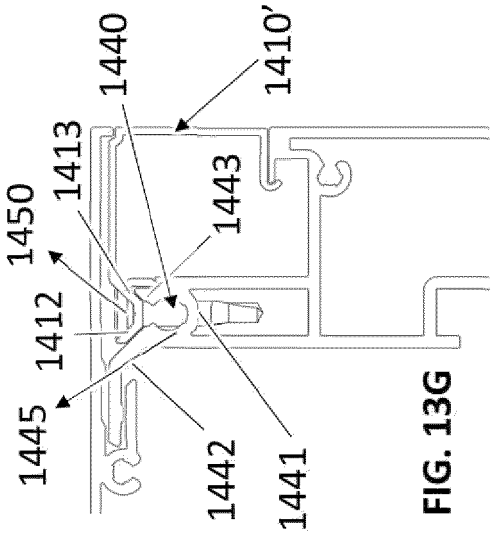

FIG. 13G

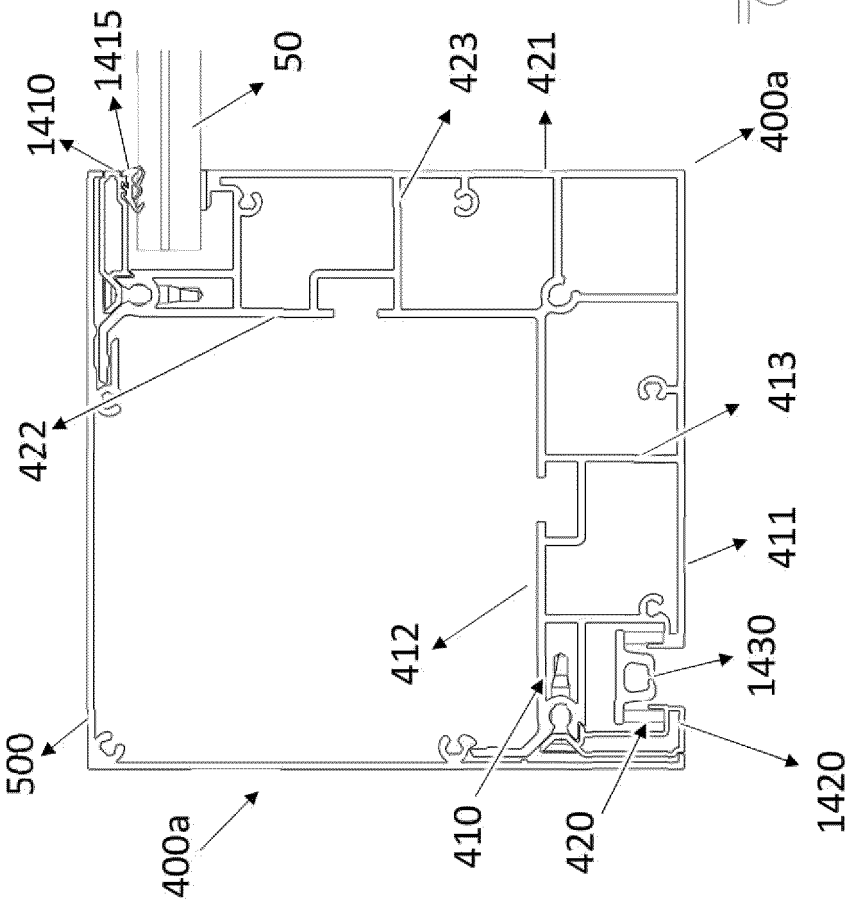

FIG. 13F

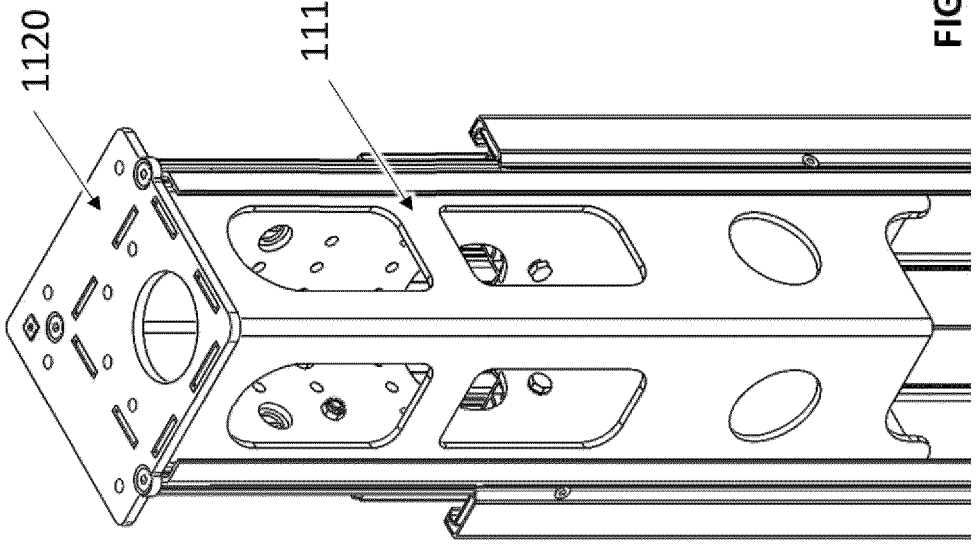

FIG. 14

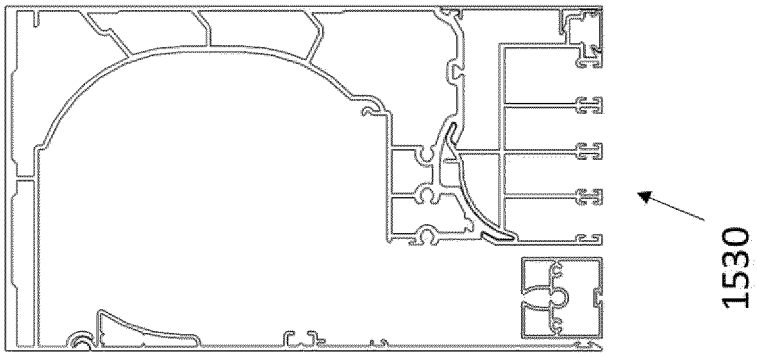

FIG. 15C

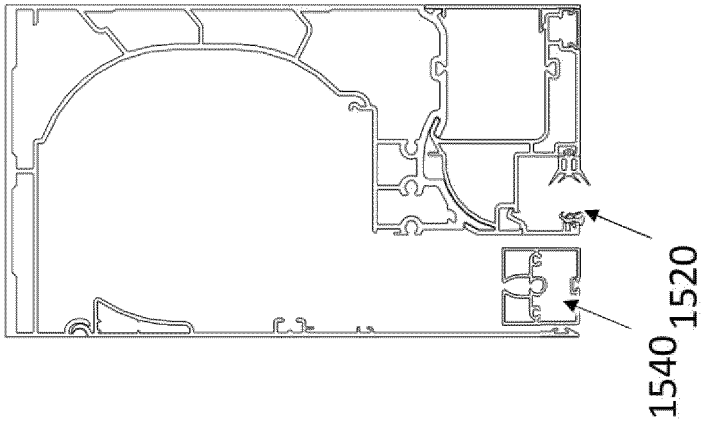

FIG. 15B

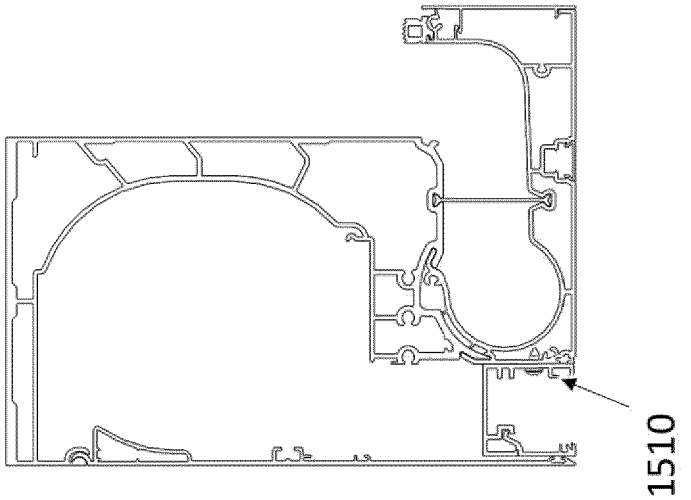

FIG. 15A

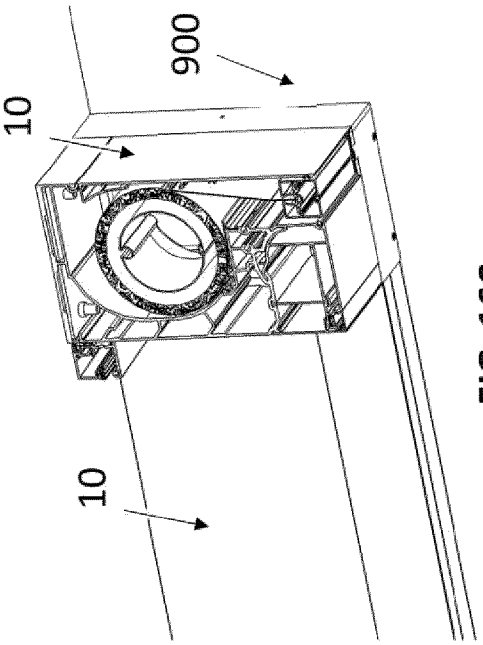

FIG. 16C

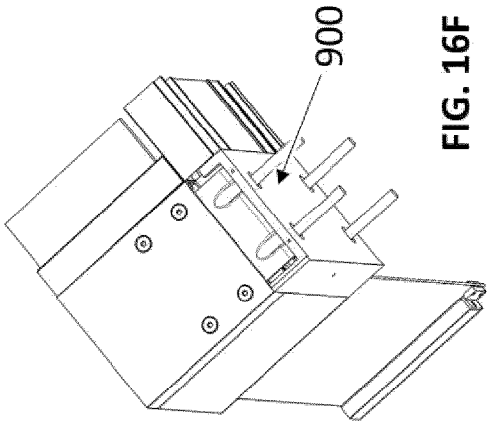

FIG. 16F

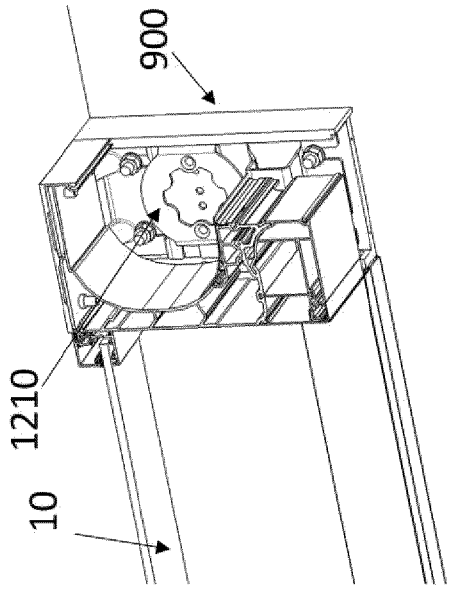

FIG. 16B

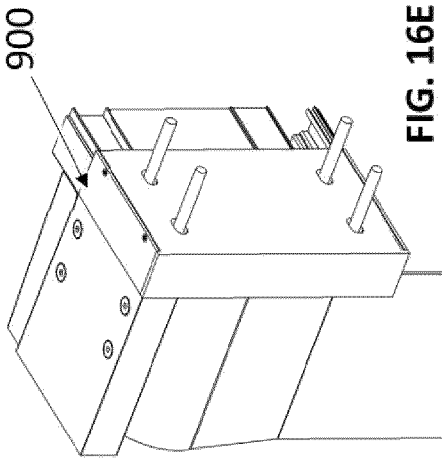

FIG. 16E

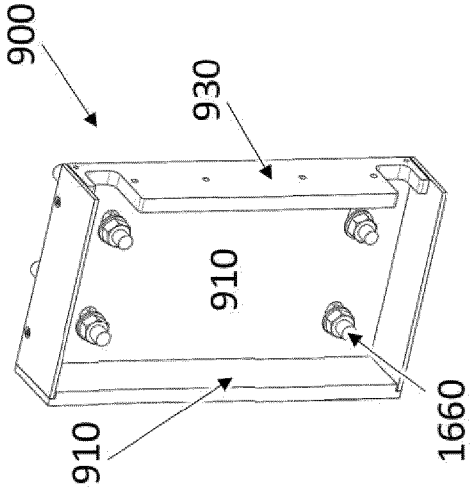

FIG. 16A

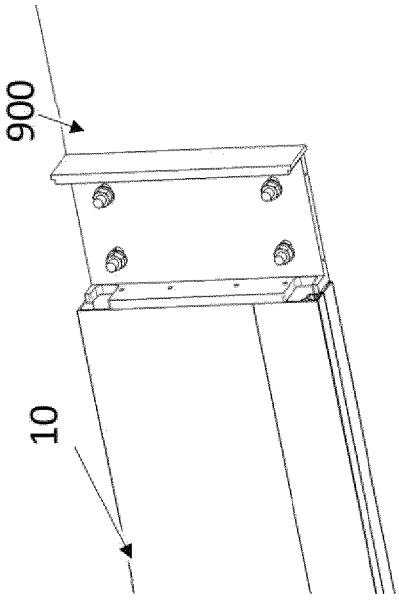

FIG. 16D

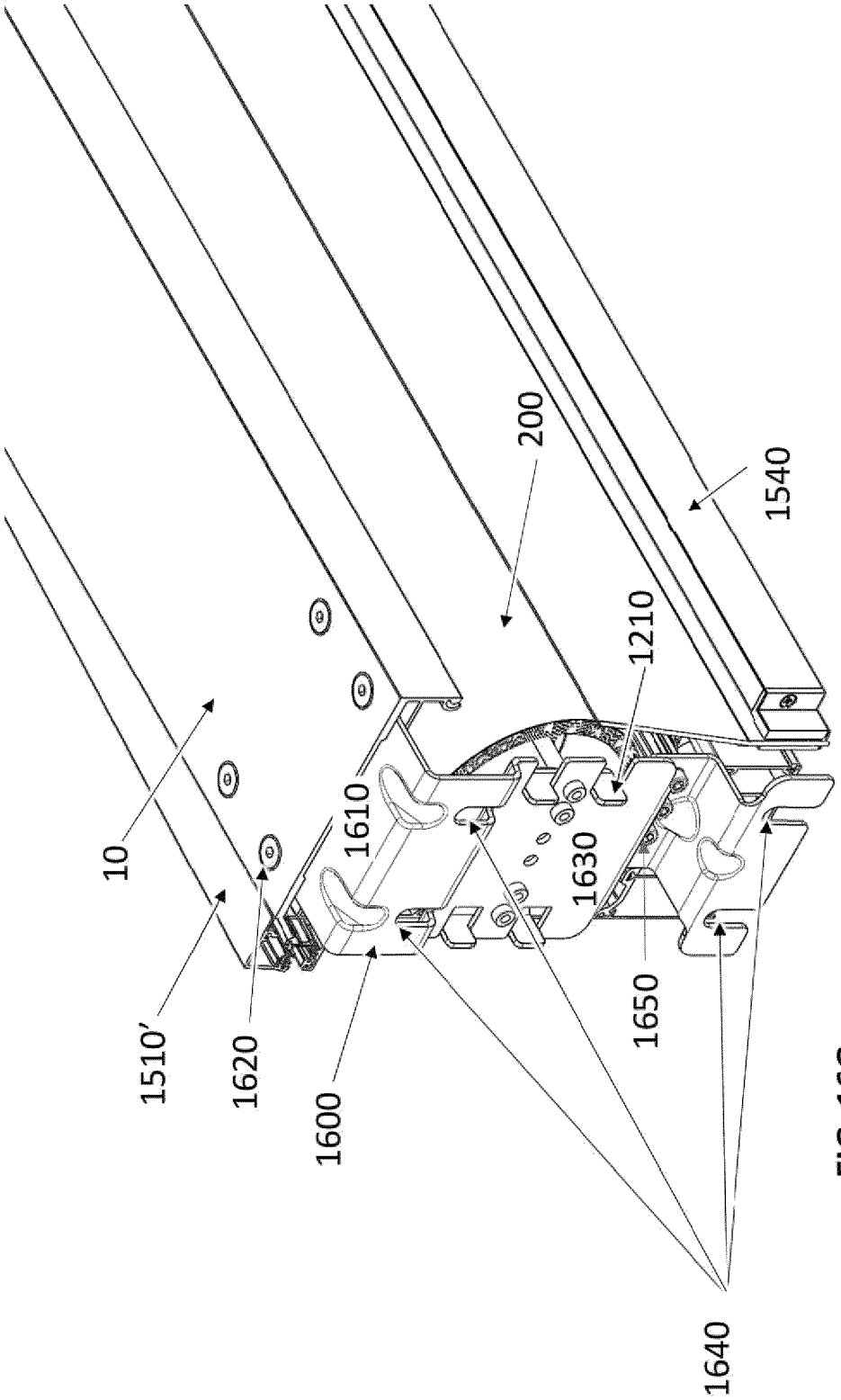

FIG. 16G

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EUROPEAN SEARCH REPORT

Application Number
EP 24 22 2548

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	IT 2018 0000 1632 A1 (BRIANZATENDE S R L [IT]) 22 July 2019 (2019-07-22)	1,3-7, 11-15	INV. E04D3/08
Y	* figures 4-6 *	1,7	E04B1/00 E04F10/02
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Y	* figure 1 *	1,7	
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E04D
E04B
E04F
E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 February 2025	Tran, Kim Lien

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