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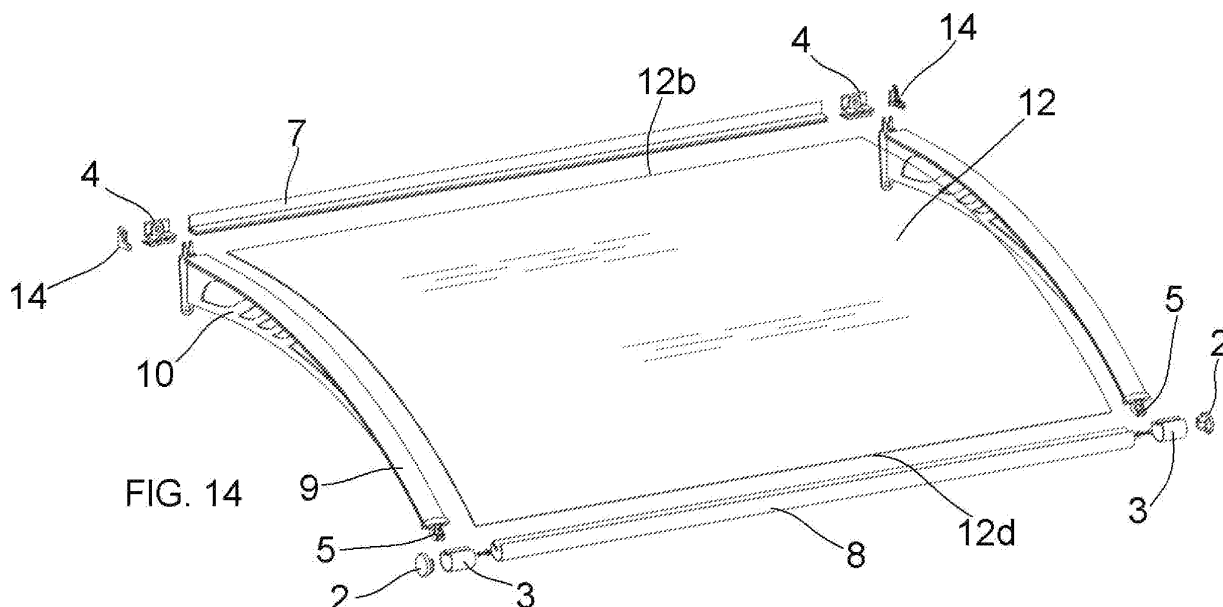
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(54) **Modular canopy**

(57) The present invention relates to a modular canopy that comprises at least one cover sheet (12), at least a pair of bearing brackets (10) for said cover sheet (12), at least one eaves (8), one connection coupling (5) between said eaves (8) and bearing brackets (10), means

(3) for stable connection of the eaves (8) to said coupling (5); said constructive parts being all provided with means for mutual male-female or snap-in coupling in such a way that they can be firmly assembled without using ordinary fixing screws.



Description

[0001] The present patent application for industrial invention relates to a modular canopy.

[0002] The canopy of the invention, which is mainly used to protect doors and windows from the rain, comprises a cover sheet supported by at least a pair of bearing brackets, practically consisting in two flag-shaped shelves fixed to the wall.

[0003] Said shelves are normally provided with T-shaped cross-section, with horizontal wing acting as support surface for the cover sheet, which is firmly fixed by means of a series of self-threaded screws that pass through the cover sheet and engage in holes suitably obtained on the horizontal wing.

[0004] The main purpose of the invention is to devise and realize a canopy of the aforesaid type, which is provided with new means to fix the cover sheet to the bearing brackets, able to simplify the assembly and installation of the canopy and fix the cover sheet without drilling any holes.

[0005] Obviously, this ensures the perfect screening of the canopy against water, whereas one of the most frequent drawbacks of the known models of canopy consists in possible water leakage and dripping through the holes obtained on the cover sheet to receive the screws used to fix it above the bearing brackets.

[0006] Another purpose of the present invention is to realize a modular canopy that can be joined and connected to another identical specimen to originate a canopy with double or triple length, while guaranteeing maximum water tightness in the connection line of two consecutive modules.

[0007] Finally, another purpose of the invention is to realize a modular canopy made of prefabricated parts that can be firmly assembled without using fixing screws and without providing said prefabricated parts with holes for said screws, as it currently occurs in known models of canopies.

[0008] The above purposes have been achieved by the canopy of the invention, which only comprises prefabricated parts that can be coupled with means for mutual snap-in coupling.

[0009] The provision of snap-in connection means, as alternative solution to ordinary fixing screws, allows the operator to choose the correct length of the canopy in the building site and upon installation, by cutting to size the cover sheet and all the longitudinal cross-pieces that must be coupled with the front or back border of the sheet.

[0010] These and other advantages of the canopy of the invention will become evident during the description below, with reference to the enclosed drawings, which are intended for purposes of illustration only and not in a limiting sense, wherein:

- figures 1 to 12 are views of the single constructive parts of the modular canopy of the invention, respectively;

- figure 13 is an axonometric view of the modular canopy of the invention in its basic version, that is to say formed of only one module;
- figure 14 is an exploded view of the canopy of fig. 1, showing all parts that form the canopy of the invention;
- figure 15 is an axonometric exploded view of the modular canopy of the invention in its basic version equipped with two final extensions;
- figure 16 is an axonometric view of the modular canopy of the invention in its basic version coupled with a second additional module;
- figure 17 is an axonometric view of a double canopy formed of two basic modules that are placed in side-by-side position and coupled together, equipped with two final extensions;
- fig. 18 shows the assembly modes of each bearing bracket of the cover sheet;
- fig. 19 shows the wall-fixing modes of a pair of bearing brackets of the cover sheet;
- fig. 20 shows the assembly modes of the cover sheet on the relevant pair of bearing brackets;
- figures 21A, 21B, 21C and 21D show the assembly and fixing modes of the eaves of the canopy to the bearing brackets of the cover sheet;
- fig. 22 shows a first constructive embodiment of the connection means between said eaves and bearing brackets of the cover sheet;
- fig. 23 shows a second alternative constructive embodiment of the connection means between said eaves and bearing brackets of the cover sheet.

[0011] Referring to Figs. 13 and 14, the basic constructive version of the canopy (P) of the invention comprises:

- a rectangular cover sheet (12) with two longitudinal sides (12b and 12d) and two transversal sides (12a and 12c);
- a pair of bearing brackets (10) for said cover sheet (12),
- an eaves (8);
- a coupling (5) used to connect said eaves (8) and said bearing brackets (10);
- a finish section (7) coupled with the back longitudinal border (12b) of the cover sheet (12), that is to say in correspondence with the border of the sheet (12) adapted to be positioned against the fixing wall of the canopy (P);
- a connection support (4) positioned between said extruded section (7) and each bearing bracket (10);
- a sleeve joint (3) for stable connection of said eaves (8) to coupling (5) and bearing bracket (10).

[0012] Referring to Figs. 10 and 18, each bracket (10) is composed of a wall-anchoring plate (1) from which a flag-shaped shelf protrudes, with upper side (11) having a slightly curved profile.

[0013] The cover sheet (12) is rolled in such a manner

to have the same profile as the upper side (11) or is made of flexible material so that it can be curved to have the same curved profile as the upper side (11).

[0014] The bearing bracket (10) is provided with a head wing, in such a way to have a T-shaped cross-section.

[0015] According to the preferred embodiment of the invention, the horizontal wing of said T-shaped cross-section is not monolithic with the bracket (10), but is applied over it and obtained by means of an extruded section (9), the shape of which is shown in Fig. 9.

[0016] In particular, said extruded section (9) is laterally provided with a specular pair of longitudinal grooves (9a), each of them being bordered by an upper border (9a') and a lower border (9a'').

[0017] Said extruded section (9) is also provided in lower position with a central groove (9b) with T-shaped cross-section along the longitudinal axis of the section (9); the vertical wing of said T-shaped cross-section ends in the centre of the lower side of said section (9).

[0018] Said section (9) is fixed to the bracket (10) by means of splines (13) transversally inserted in corresponding slots (10b) obtained along and near the upper side (11) of the bracket (10).

[0019] On said upper side (11) a first notch (10a) is obtained near said plate (1) which is provided with holes (1a) for screws (V) used to fix said plate (1) to the wall.

[0020] On said upper side (11) a second notch (10d) is obtained, near the front point (10f) of the bracket (10), whereas on the lower side (11a) of said bracket (10) a third hook-like notch (10c) is obtained at the back of a tooth (10e) situated under said point (10f).

[0021] As mentioned above, the canopy (P) of the invention comprises a finish section (7) coupled with the back longitudinal border (12b) of the cover sheet (12).

[0022] As better shown in Fig. 7, said finish section (7) is provided with L-shaped cross-section and a groove (7a) on the horizontal wing (7b) for male-female coupling with the back border (12b) of the cover sheet (12).

[0023] Said canopy (P) also comprises a connection support (4) positioned between said finish section (7) and each bearing bracket (10).

[0024] Referring to Fig. 4, said connection support (4) consists in an L-square with vertical wing (4c) provided with a central hole (4d), whereas the horizontal wing (4e) is provided with multiple grooves, and precisely with a groove (4a) on the front border and with a specular pair of grooves (4b) on the opposite lateral borders of said horizontal wing (4e).

[0025] The canopy (P) also comprises a coupling (5) used to connect said eaves (8) and said bearing brackets (10).

[0026] Referring to Fig. 5, said coupling (5) has a body with complex geometrical profile, provided with a back flap (5d) from which a central fork (5e) protrudes frontally, with identical parallel branches (5f) connected by a stiffening pin (5g).

[0027] Said back flap (5d) is provided with a groove (5a) that runs along its back border and is dimensioned

in such a way to contain the end of said section (9).

[0028] The front border of said flap (5d) is provided with a pair of teeth (5c) situated in correspondence with the opposite ends of said front border.

5 **[0029]** The two branches (5f) of the fork (5e) are provided with two identical semicircular grooves (5b) obtained in correspondence with the opposite ends of said stiffening pin (5g).

10 **[0030]** The border of said semicircular grooves (5b) is rounded off in order to give a tapering shape to the cross-section of each groove, as shown in the enlarged view associated with Fig. 5.

[0031] The canopy (P) also comprises one eaves (8), the geometrical configuration of which is shown in fig. 8.

15 **[0032]** Referring to Fig. 8, said eaves (8) is composed of a tubular section, with open G-shaped cross-section.

[0033] The wing (8c) of said G-shaped cross-section is provided with a groove (8a) dimensioned in such a way to contain the front border (12d) of said cover sheet (12).

20 **[0034]** In correspondence with the end of said wing (8c) a longitudinal conduit (8b) is obtained, which passes through the eaves (8) for its entire length.

[0035] The canopy (P) also comprises a sleeve joint (3) for stable connection of the eaves (8) to the coupling (5) and bearing bracket (10).

25 **[0036]** Referring to Fig. 3 it must be noted that said sleeve joint (3) is formed of an open pipe section with suitable diameter to be inserted exactly and slide outside the tubular section used to make the eaves (8).

30 **[0037]** The opening of said sleeve joint (3) subtends a central angle of about 90° and basically corresponds to the opening of the G-shaped cross-section of the tubular profile used to make the eaves (8).

35 **[0038]** The cross-section of said sleeve joint (3) has a rather complex profile, as shown in Figs. 21C and 21D.

[0039] Starting from one (3d) of the two longitudinal borders (3d and 3e) of said opening of about 90° a shaped tongue (3f) branches off inwards, supporting a tile (3g) that surmounts said pin (5g) and provided with a tooth (3c) on one of the longitudinal sides, whereas the opposite side is provided with a longitudinal rib (3h) with longitudinal groove (3a).

40 **[0040]** On the border (3e) of the two longitudinal borders (3d and 3e) of said opening of about 90° an external tooth (3b) is provided, with shape that corresponds to the hook-like notch (10c) obtained along the lower side (11a) of each bearing bracket (10).

45 **[0041]** The canopy (P) also comprises collars (6) to couple and hold the two ends of the eaves (8) to corresponding couplings (5) and more precisely to the semicircular grooves (5b) of said couplings (5).

[0042] Following is a description of the assembly modes of the canopy (P) with reference to figures 18 to 21A and 21B.

50 **[0043]** The assembly of each bearing bracket (10) - which is diagrammatically shown in Fig. 18 - provides for the following sequence of operations:

- laying of connection support (4) on the bearing bracket (10) by positioning it astride said notch (10a);
- insertion of splines (13) in the slots (10b);
- assembly of profile (9) to the bearing brackets (10) inserting the splines (13) along said central groove (9b) until encountering the front groove (4a) of the connection support (4);
- insertion of coupling (5) in the tooth (10e) of the support bracket (10) until it comes in contact with the section (9).

[0044] Wall-fixing of the bearing bracket (10) and finish section (7) - see Fig. 19 - provides for the following sequence of operations:

- fixing of bearing bracket (10) in assembled condition to the wall by means of screws (V) inserted in the holes (1a) of the plate (1);
- fitting of one end of the section (7) in the groove (4b) of a first connection support (4) and
- fixing of another bearing bracket (10) to the wall, surmounting the other end of the section (7) with the groove (4b) of a second connection support (4);
- forced application of plugs (14) on the external side of each connection support (4).

[0045] The assembly of the cover sheet (12) - which is diagrammatically shown in Fig. 20 - provides for the following sequence of operations:

- fixing of a collar (6) at the two ends of the eaves (8) by means of a screw that is engaged in the channel (8b) of the eaves (8);
- insertion of the sleeve joints (3) at the two ends of the eaves (8);
- fitting of front longitudinal side (12d) of the cover sheet (12) in the groove (8a) of the eaves (8);
- insertion and sliding of transversal sides (12a and 12 c) of the plate (12) in the grooves (9a) of the section (9) and sliding of plate (10) until inserting the back longitudinal side (12b) in the groove (7a) of the finish section (7) .

[0046] The assembly and fixing of the eaves (8) to the bearing brackets (10) - which is diagrammatically shown in Figs. 21A and 21B - provides for the following sequence of operations:

- fitting of collars (6) in the semicircular grooves (5b) of the couplings (5);
- sliding of each sleeve joint (3) towards the opposite coupling (5) in such a way to obtain the following snap-in couplings: coupling of groove (3a) with tooth (5c), coupling of tooth (3b) with notch (10c), coupling of tooth (3c) with notch (10d);
- forced application of a corresponding plug (2) into each sleeve joint (3).

[0047] Referring to Fig. 15, the canopy (P) shown in Fig. 1 can be extended with two extensions (P1), each of them being formed of a section of plate (100), the back side (12b) of which is inserted into the groove (7a) of a part of the finish section (70), whereas the other front side (12d) is inserted into the groove (8a) of a part of the eaves (80).

[0048] Each extension (P1) is connected to the canopy (P) by means of the following male-female or snap-in couplings without any fixing screws:

- coupling of the internal side of the section of plate (100), with the external groove (9a) of the adjacent extruded section (9);
- coupling of the end of the part of section (70) with the external groove (4a) of the adjacent connection support (4);
- coupling of the internal end of the part of eaves (80) with the adjacent sleeve joint (3).

[0049] According to the same logics and with the same coupling modes, it is possible to connect the first canopy (P) with a second canopy (P) - instead of an extension (P1) - in aligned position with respect to the first one, as shown in Figs. 16 and 17.

[0050] Fig. 22 shows a constructive variant of the means (6) used to couple and hold each end of the eaves (8) to corresponding couplings (5) and more precisely to the semicircular grooves (5b) of said couplings (5).

[0051] According to this constructive variant each of said collars (6) is replaced with a mushroom button (60) that protrudes from a tubular plug (61) adapted to be inserted with interference and completely inside the end opening of the open tubular section used to make the eaves (8).

[0052] Said plug (61) does not obstruct the axial sliding of the sleeve joint (3) outside the eaves (8), in such a way that said sleeve joints (3) can slide until they completely conceal said pair of plugs (61) and actuate the following three couplings: coupling of groove (3a) with tooth (5c), coupling of tooth (3b) with notch (10c), coupling of tooth (3c) with notch (10d).

[0053] Fig. 23 shows a constructive variant of the coupling (5) without said fork, which is replaced in said alternative joint (50) with an opposite coaxial pair of tubular plugs (50a) adapted to be inserted with interference and completely into the end opening of the open tubular section used to make the eaves (8). Said plugs (50a) do not obstruct the axial sliding of the sleeve joint (3) outside the eaves (8).

Claims

1. Modular canopy of the type comprising:

- at least one rectangular cover sheet (12) with two longitudinal sides (12b and 12d) two transversal sides (12a and 12c);

- at least one pair of bearing brackets (10) for said cover sheet (12),
 - at least one eaves (8);
 - a coupling (5) used to connect said eaves (8) and said bearing brackets (10);
 - means (3) for stable fixing of the eaves (8) to said coupling (5); canopy (P) **characterized in that**:
 - each bearing bracket (10) is provided on the upper side (11) with a second notch (10d) near the front point (10f) of the bracket (10), whereas on the lower side (11a) of said bracket (10) a third hook-like notch (10c) is provided at the back of a tooth (10e) obtained under said point (10f);
 - said means (3) consist in a sleeve joint (3) formed of an open pipe section with suitable diameter to be inserted exactly and slide axially outside the eaves (8); a shaped tongue (3f) branches off inwards, starting from one (3d) of the two longitudinal borders (3d and 3e) of the open section of the sleeve joint (3), supporting a tile (3g) provided on one of the longitudinal sides with a tooth (3c) designed to be coupled with said second notch (10d), while the opposite side is provided with a longitudinal groove (3a); the border (3e) of the two longitudinal borders (3d and 3e) of said open section of the sleeve joint (3) is provided with an external tooth (3b) with suitable shape to be coupled with said hook-like notch (10c);
 - the coupling (5) is provided with fixing means for the tooth (10e), fixing means (5b) for the eaves (8) and teeth (5c) for coupling with said groove (3a).
2. Canopy as claimed in the preceding claim, **characterized in that** the coupling (5) has a body provided with a back flap (5d), from which a central fork (5e) protrudes frontally, with identical parallel branches (5f) provided with corresponding semicircular grooves (5b); said flap (5d) being provided on the back with a groove (5a), whereas the front border of the flap (5d) is provided with a pair of said teeth (5c) situated at the opposite ends of said front border.
 3. Canopy as claimed in any one of the preceding claims, **characterized in that** the eaves (8) is provided with fixing means (6, 60) for the grooves (5b) of the coupling (5).
 4. Canopy as claimed in the preceding claim, **characterized in that** the eaves (8) is fitted to said grooves (5b) by means of a collar (6) screwed to each end of the eaves (8).
 5. Canopy as claimed in claim 3, **characterized in that** the eaves (8) is fitted to said grooves (5b) by means of a mushroom-shaped button (60) that protrudes from a tubular cap (61) applied to the two ending sections of the eaves (8).
 6. Canopy as claimed in any one of the preceding claims, **characterized in that** the eaves (8) is composed of a tubular section with G-shaped open cross-section, in which the wing (8c) of the G-shaped cross-section is provided with an external groove (8a) with suitable dimensions to house the front border (12d) of the cover sheet (12), whereas the internal end of the wing (8c) is provided with a longitudinal conduit (8b) that crosses the eaves (8) for its entire length where the fixing screws of said collars (6) are screwed.
 7. Canopy as claimed in any one of the preceding claims, **characterized in that** each bracket (10) has a T-shaped cross-section, in which the head wing is made of an extruded section (9) that is laterally provided with a specular pair of longitudinal grooves (9a), adapted to receive the transversal sides (12a and 12c) of the sheet (12), whereas the lower part of the section (9) is provided with a central groove (9b) with T-shaped cross-section along the longitudinal axis of the section (9).
 8. Canopy as claimed in the preceding claim, **characterized in that** the section (9) is fixed to the bracket (10) by means of splines (13) transversally inserted in corresponding slots (10b) obtained along and near the upper side (11) of the bracket (10) and snap-fitted into the groove (9b).
 9. Canopy as claimed in any one of the preceding claims, **characterized in that** it comprises a finish section (7) coupled with the back longitudinal border (12b) of the cover sheet (12), which is provided with L-shaped cross-section and with a groove (7a) on the horizontal wing (7b) for male-female coupling with the back border (12b) of the cover sheet (12).
 10. Canopy as claimed in the preceding claim, **characterized in that** it comprises a connection support (4) between the finish section (7) and each bracket (10), consisting in an L-square with vertical wing (4c) provided with central hole (4d), whereas the horizontal wing (4e) is provided with a groove (4a) on the front border and a specular pair of grooves (4b) on the opposite lateral borders of the horizontal wing (4e).

Amended claims in accordance with Rule 137(2) EPC.

1. Modular canopy of the type comprising:

- at least one rectangular cover sheet (12) with

two longitudinal sides (12b and 12d) two transversal sides (12a and 12c);

- at least one pair of bearing brackets (10) for said cover sheet (12);

- at least one eaves (8);

- a coupling (5) used to connect said eaves (8) and said bearing brackets (10);

- **fixing** means (3) for stable fixing of the eaves (8) to said coupling (5); canopy (P) **characterized in that:**

- each bearing bracket (10) is provided on the upper side (11) with **a first notch (10a) and a second notch (10d)** near the front point (10f) of the bracket (10), whereas on the lower side (11a) of said bracket (10) a third hook-like notch (10c) is provided at the back of a tooth (10e) obtained under said point (10f);

- said **fixing** means (3) consist in a sleeve joint (3) formed of an open pipe section with suitable diameter to be slide axially outside the eaves (8); a shaped tongue (3f) branches off inwards, starting from one (3d) of the two longitudinal borders (3d and 3e) of the open section of the sleeve joint (3), supporting a tile (3g) provided on one of the longitudinal sides with a tooth (3c) designed to be coupled with said second notch (10d), while the opposite side is provided with a longitudinal groove (3a); the border (3e) of the two longitudinal borders (3d and 3e) of said open section of the sleeve joint (3) is provided with an external tooth (3b) with suitable shape to be coupled with said **third** hook-like notch (10c);

- the coupling (5) is provided with fixing means for the tooth (10e), fixing means (5b) for the eaves (8) and teeth (5c) for coupling with said groove (3a).

2. Canopy as claimed in the preceding claim, **characterized in that** the coupling (5) has a body provided with a back flap (5d), from which a central fork (5e) protrudes frontally, with identical parallel branches (5f) provided with corresponding semicircular grooves (5b); said flap (5d) being provided on the back with a groove (5a), whereas the front border of the flap (5d) is provided with a pair of said teeth (5c) situated at the opposite ends of said front border.

3. Canopy as claimed in any one of the preceding claims, **characterized in that** the eaves (8) is provided with fixing means (6, 60) for the grooves (5b) of the coupling (5).

4. Canopy as claimed in the preceding claim, **characterized in that** the eaves (8) is fitted to said grooves (5b) by means of a collar (6) screwed to each end of the eaves (8).

5. Canopy as claimed in claim 3, **characterized in**

that the eaves (8) is fitted to said grooves (5b) by means of a mushroom-shaped button (60) that protrudes from a tubular cap (61) applied to the two ending sections of the eaves (8).

6. Canopy as claimed in **claim 4**, **characterized in that** the eaves (8) is composed of a tubular section with G-shaped open cross-section, in which the wing (8c) of the G-shaped cross-section is provided with an external groove (8a) with suitable dimensions to house the front border (12d) of the cover sheet (12), whereas the internal end of the wing (8c) is provided with a longitudinal conduit (8b) that crosses the eaves (8) for its entire length where the fixing screws of said collars (6) are screwed.

7. Canopy as claimed in any one of the preceding claims, **characterized in that** each bracket (10) has a T-shaped cross-section, in which the head wing is made of an extruded section (9) that is laterally provided with a specular pair of longitudinal grooves (9a), adapted to receive the transversal sides (12a and 12c) of the sheet (12), whereas the lower part of the section (9) is provided with a central groove (9b) with T-shaped cross-section along the longitudinal axis of the section (9).

8. Canopy as claimed in the preceding claim, **characterized in that** the section (9) is fixed to the bracket (10) by means of splines (13) transversally inserted in corresponding slots (10b) obtained along and near the upper side (11) of the bracket (10) and snap-fitted into the groove (9b).

9. Canopy as claimed in any one of the preceding claims, **characterized in that** it comprises a finish section (7) coupled with the back longitudinal border (12b) of the cover sheet (12), which is provided with L-shaped cross-section and with a groove (7a) on the horizontal wing (7b) for male-female coupling with the back border (12b) of the cover sheet (12).

10. Canopy as claimed in the preceding claim, **characterized in that** it comprises a connection support (4) between the finish section (7) and each bracket (10), consisting in an L-square with vertical wing (4c) provided with central hole (4d), whereas the horizontal wing (4e) is provided with a groove (4a) on the front border and a specular pair of grooves (4b) on the opposite lateral borders of the horizontal wing (4e).

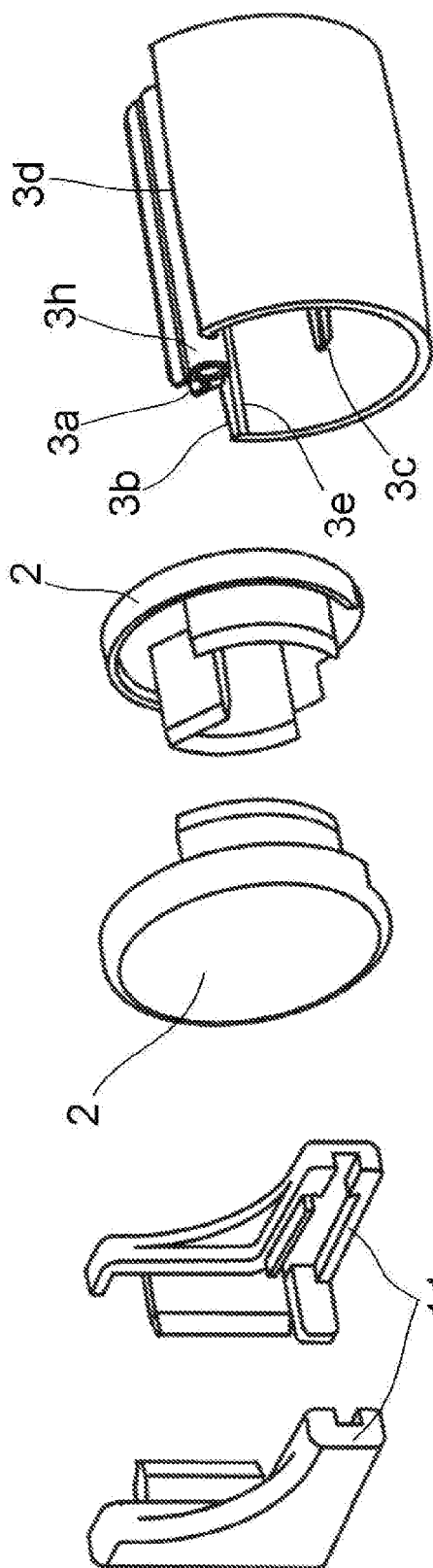


FIG. 2

FIG. 3

FIG. 1

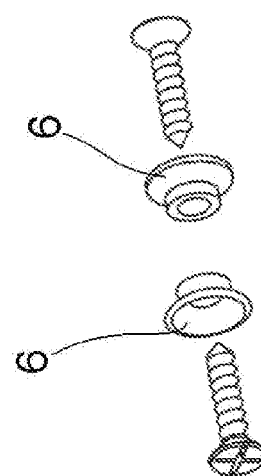


FIG. 6

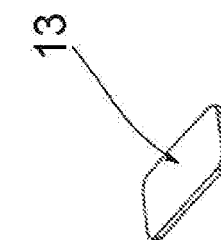


FIG. 11

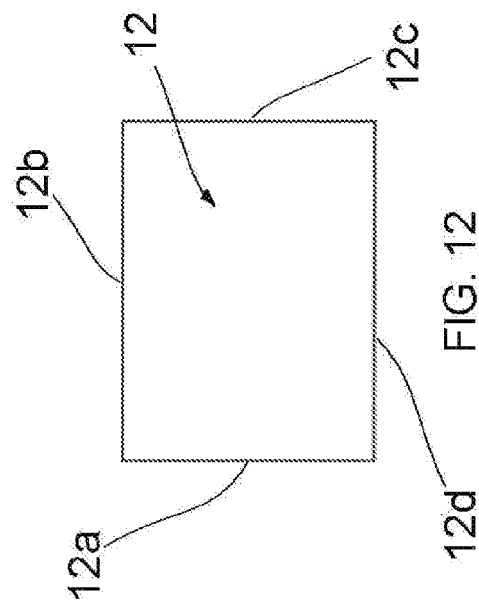
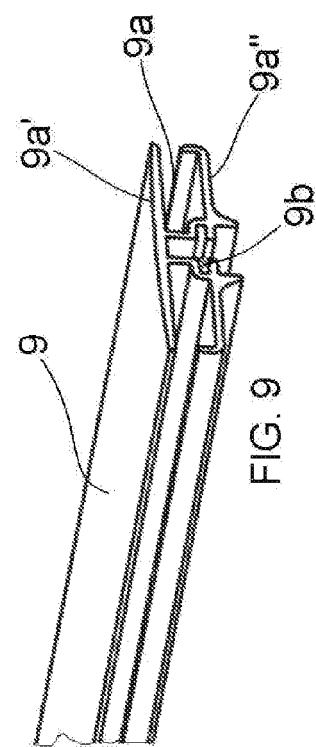
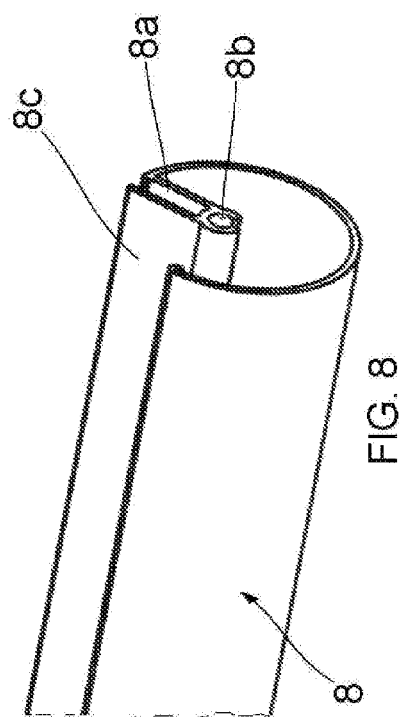
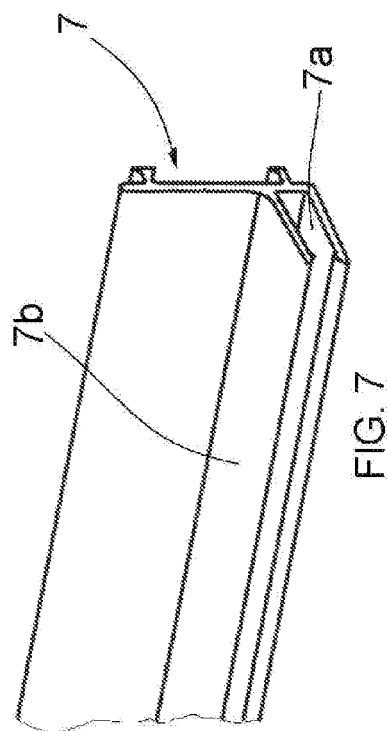
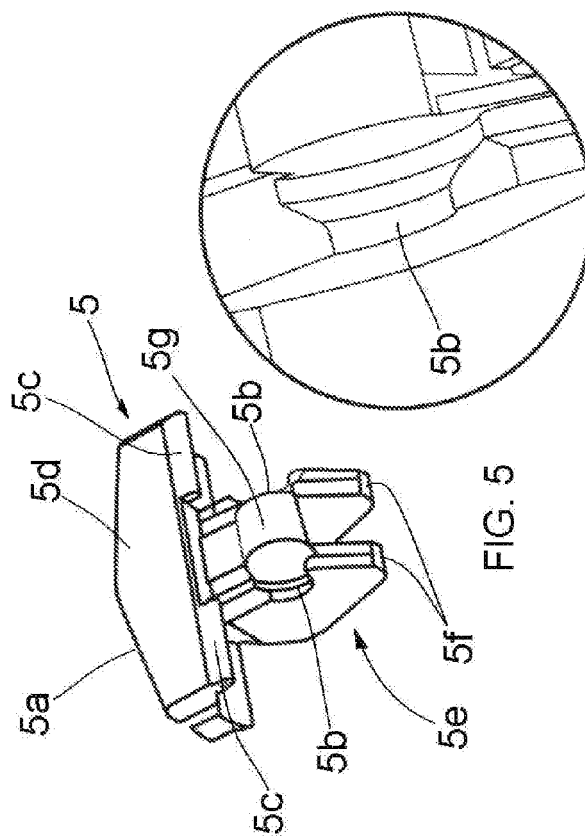
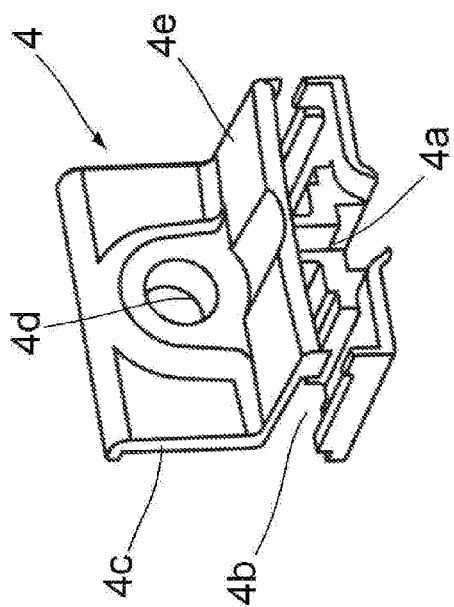


FIG. 12



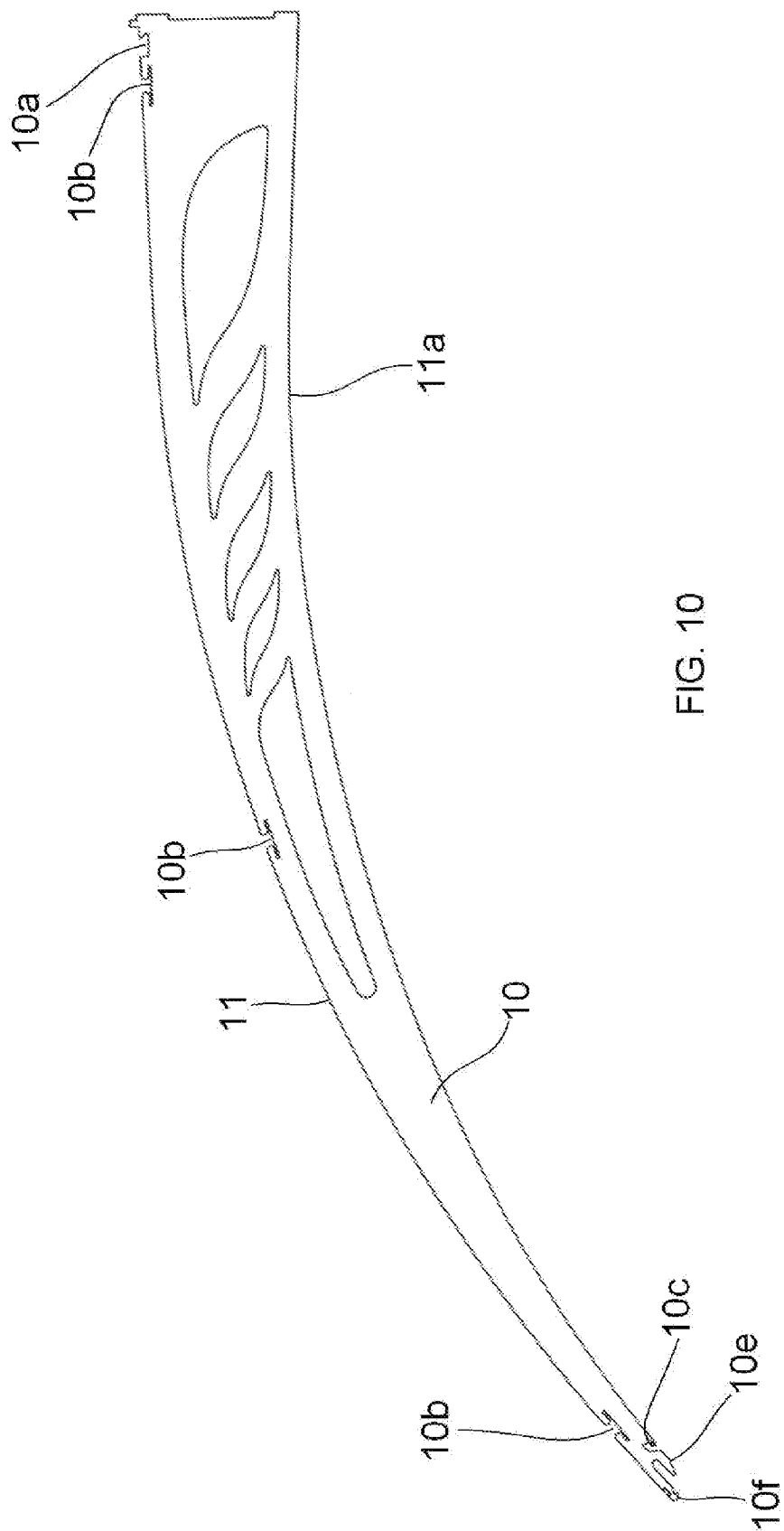
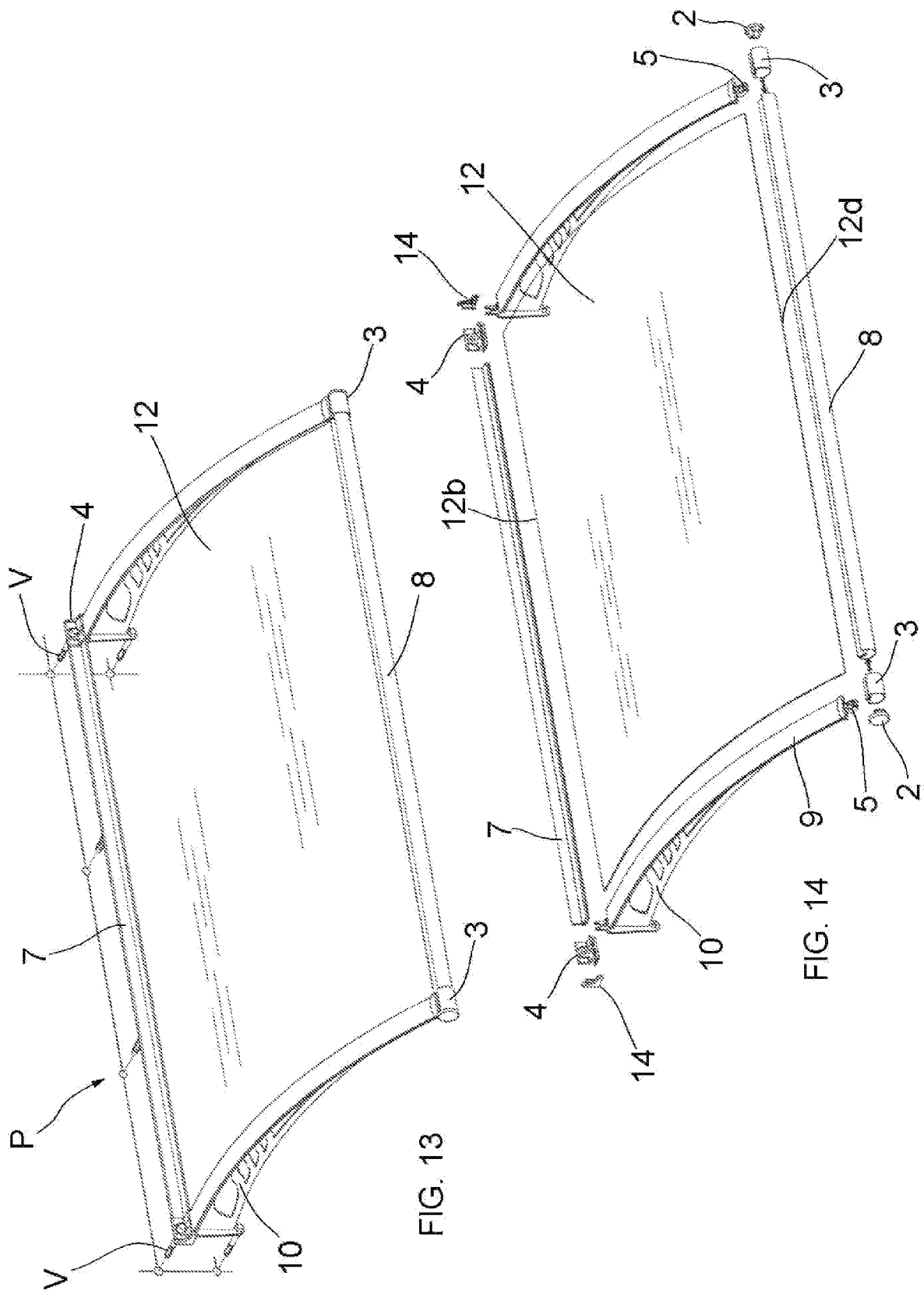


FIG. 10



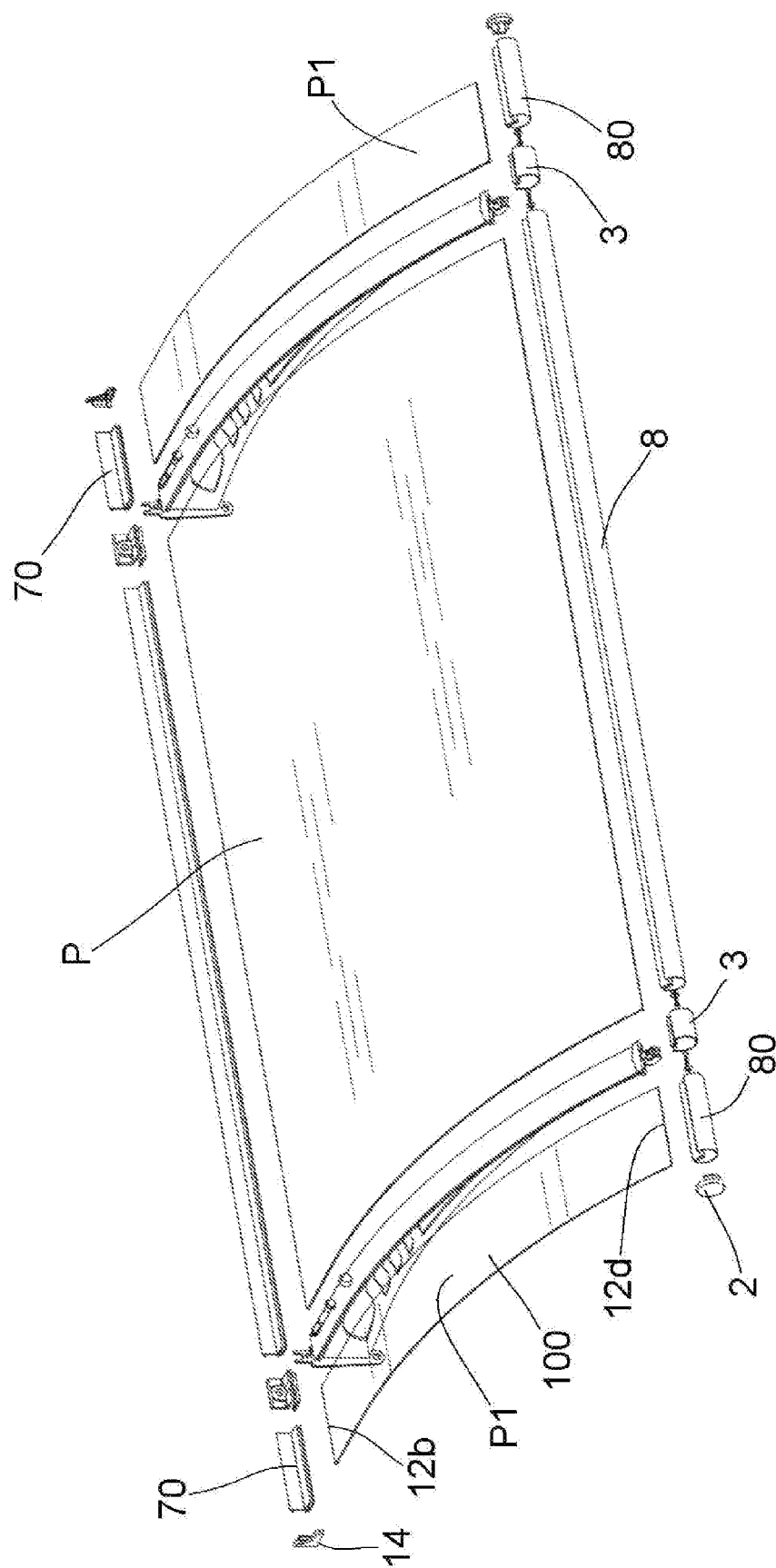
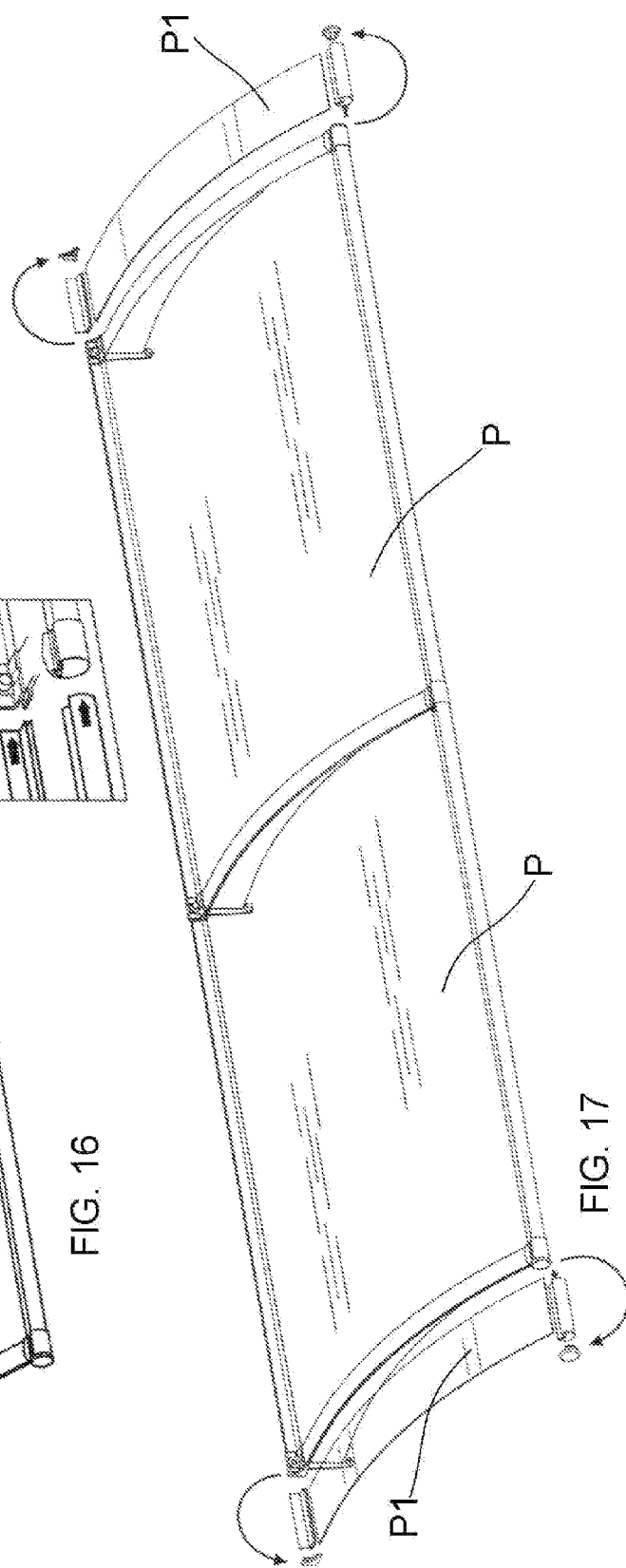
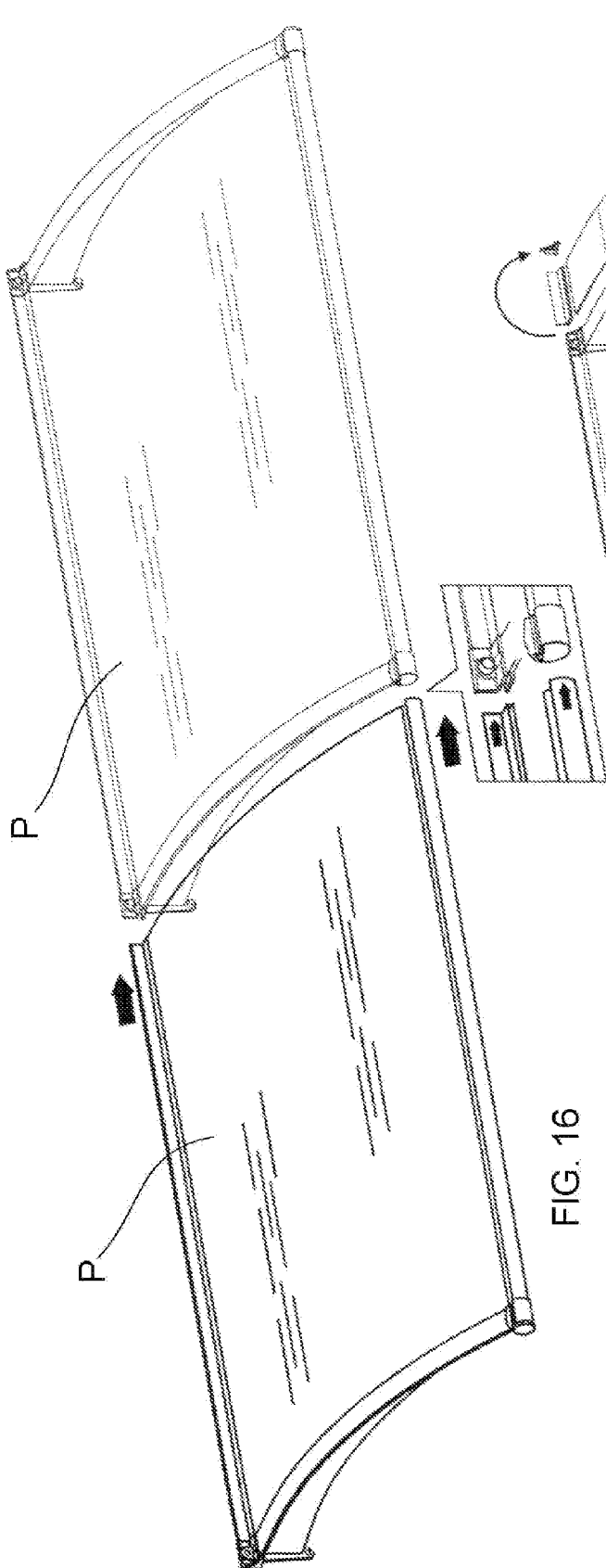


FIG. 15



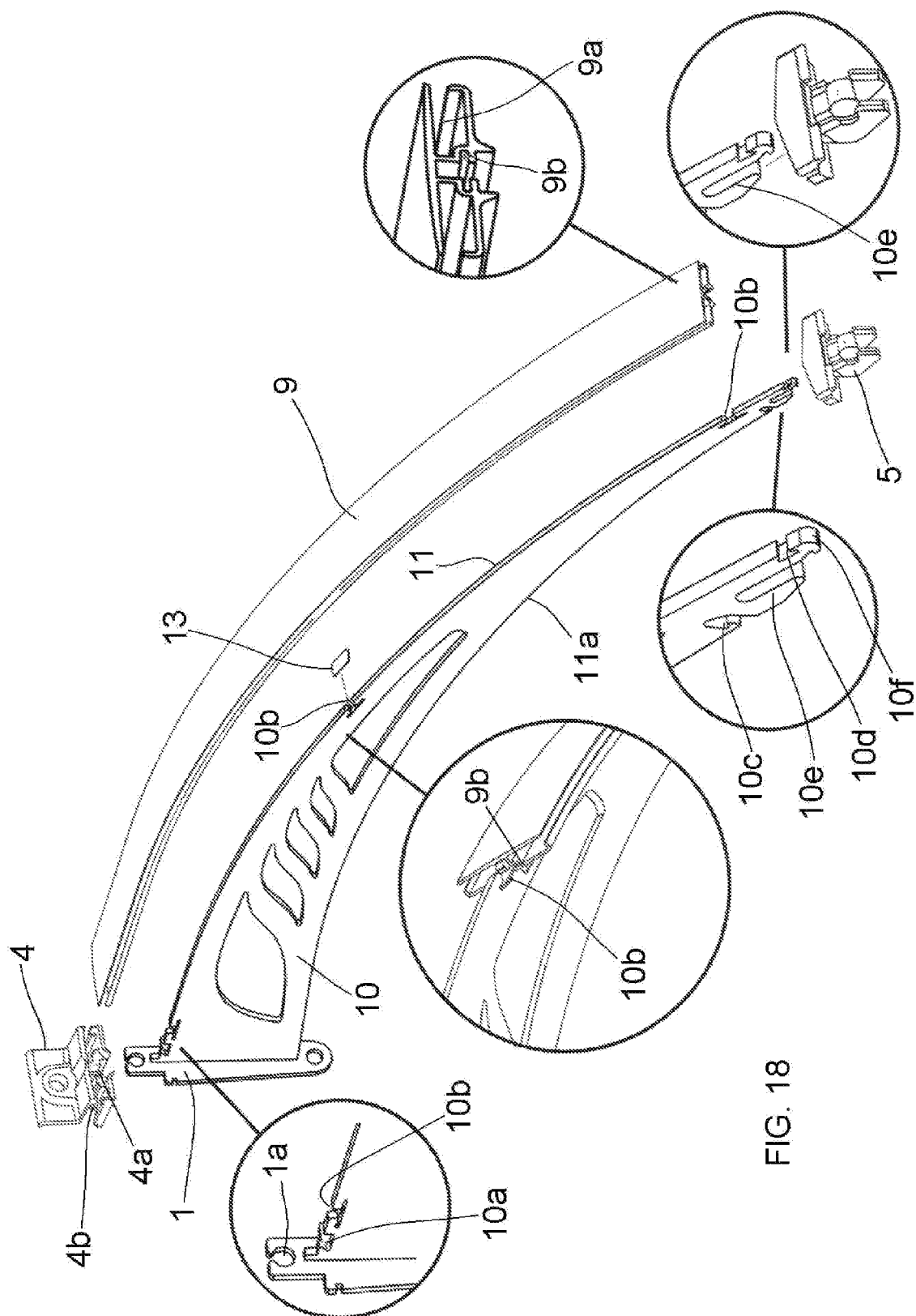


FIG. 18

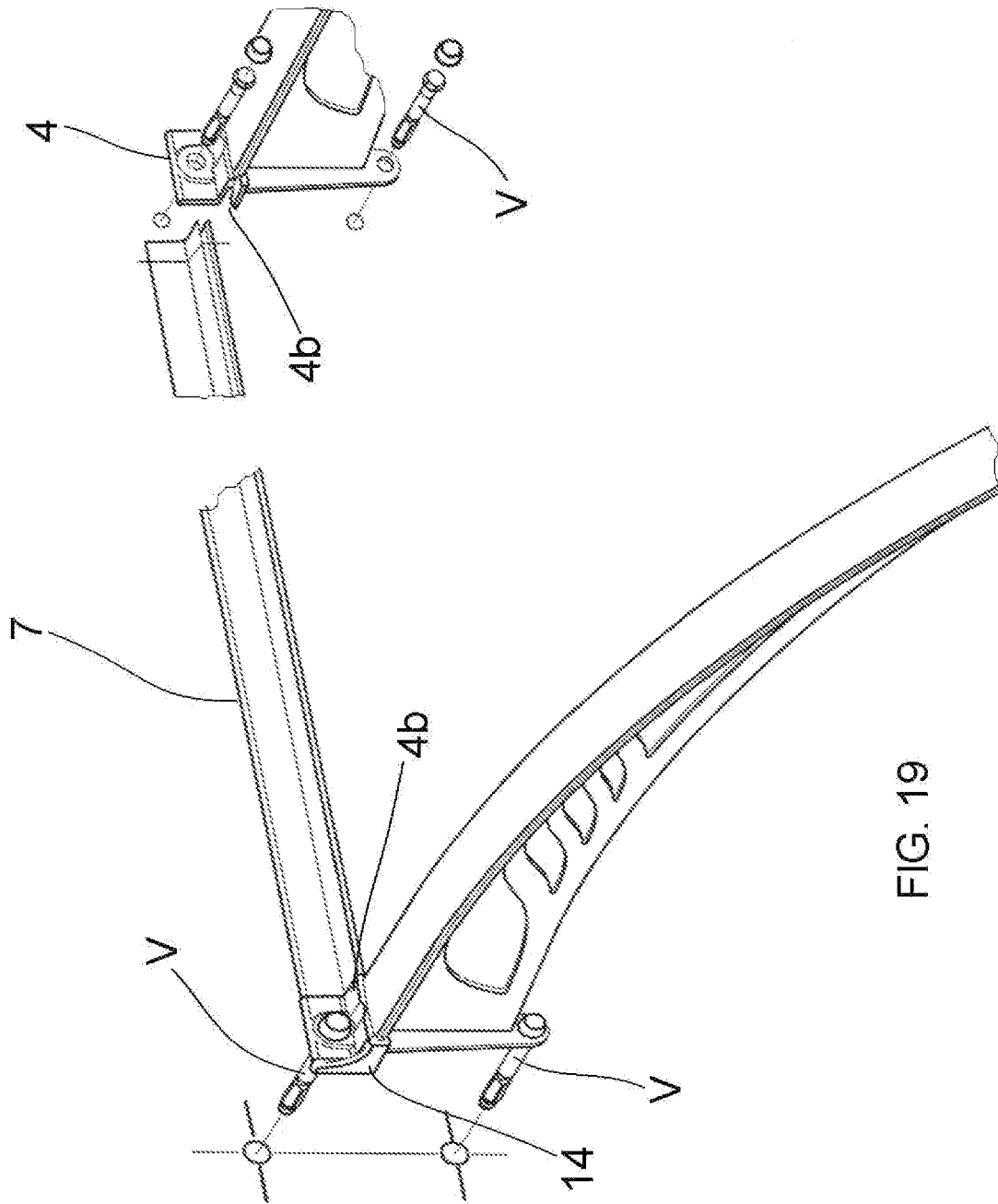


FIG. 19

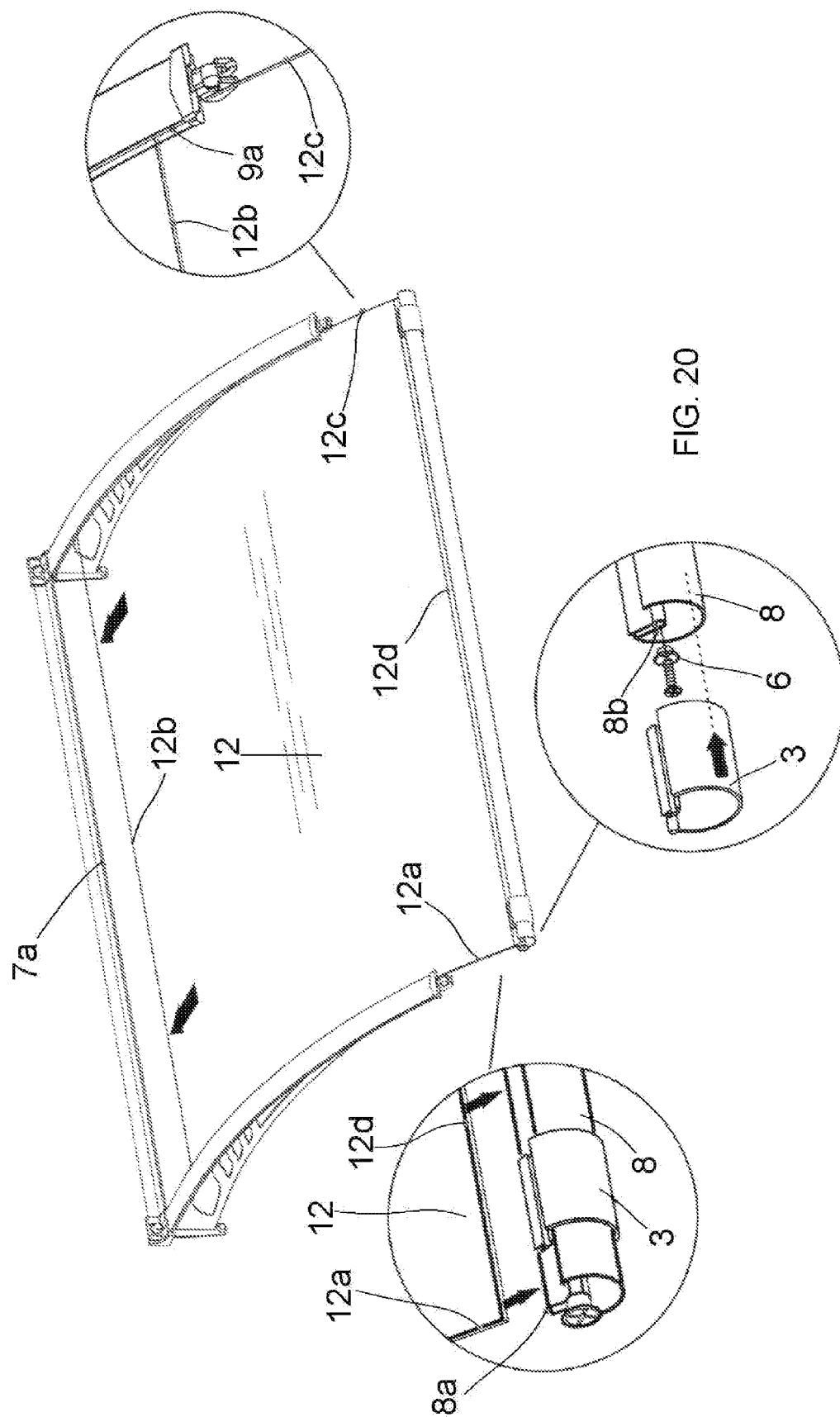
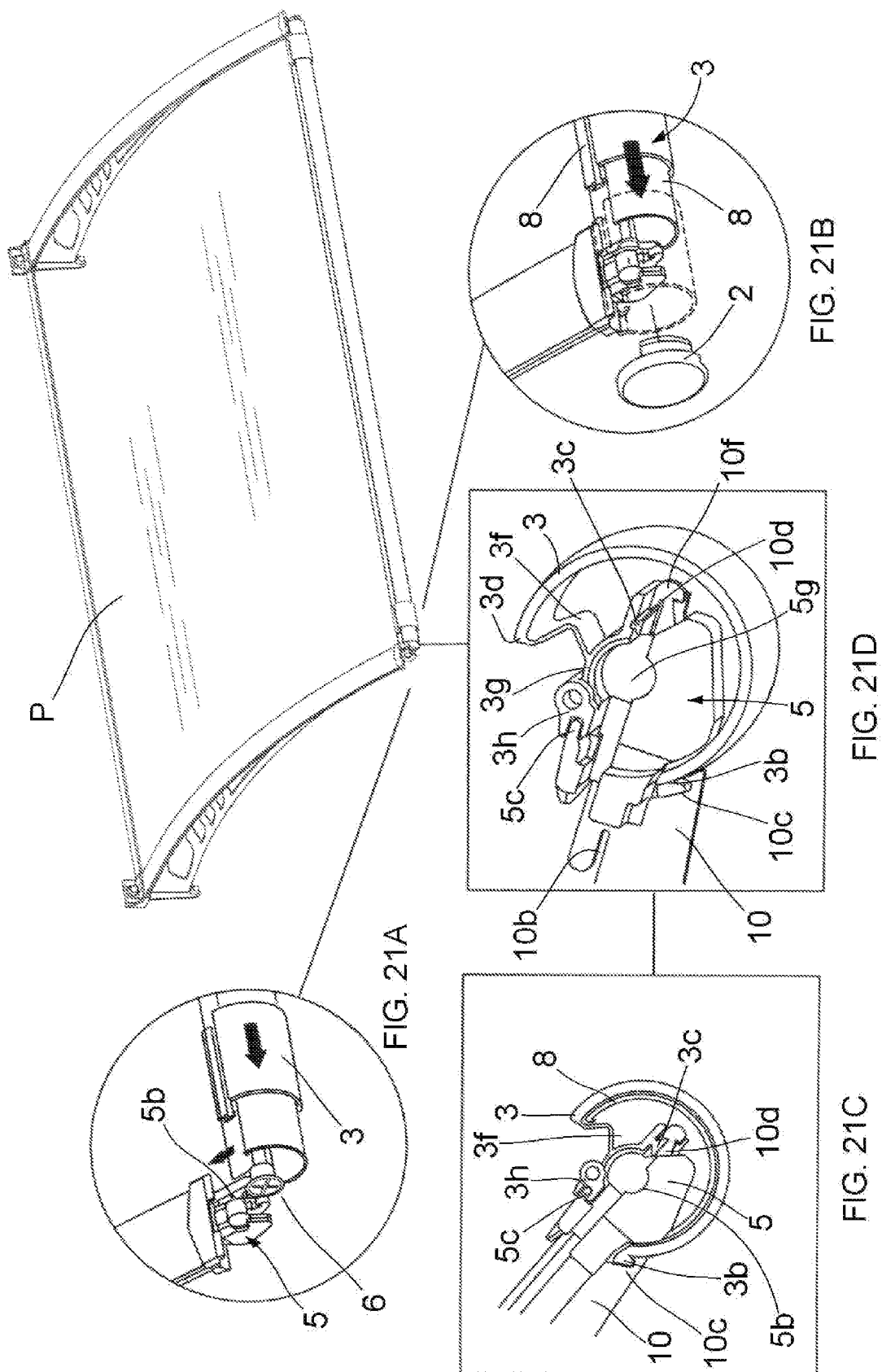


FIG. 20



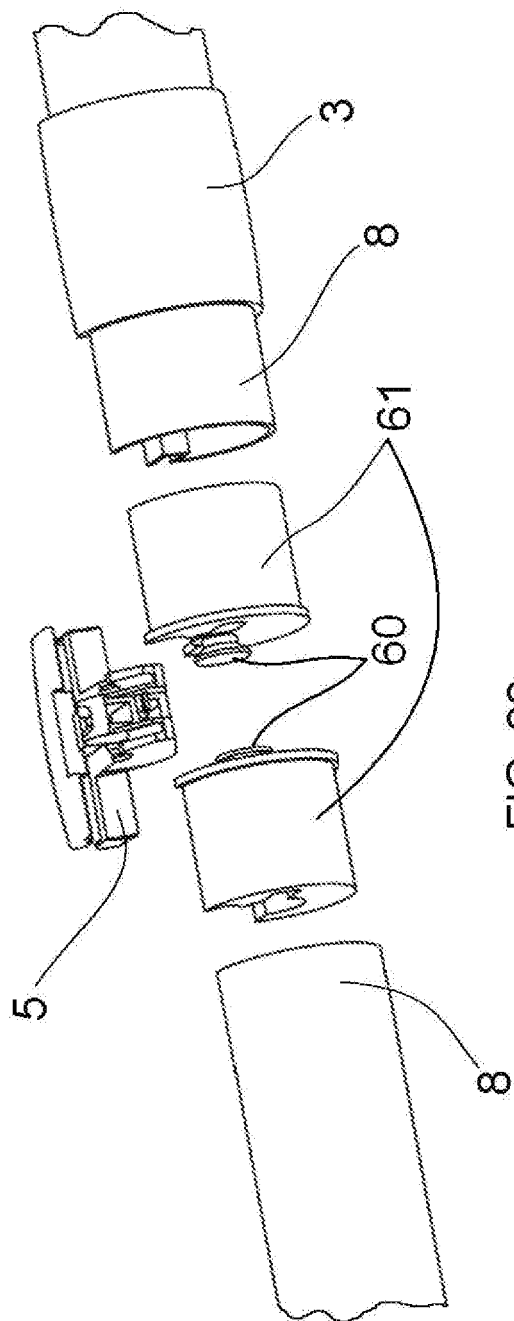


FIG. 22

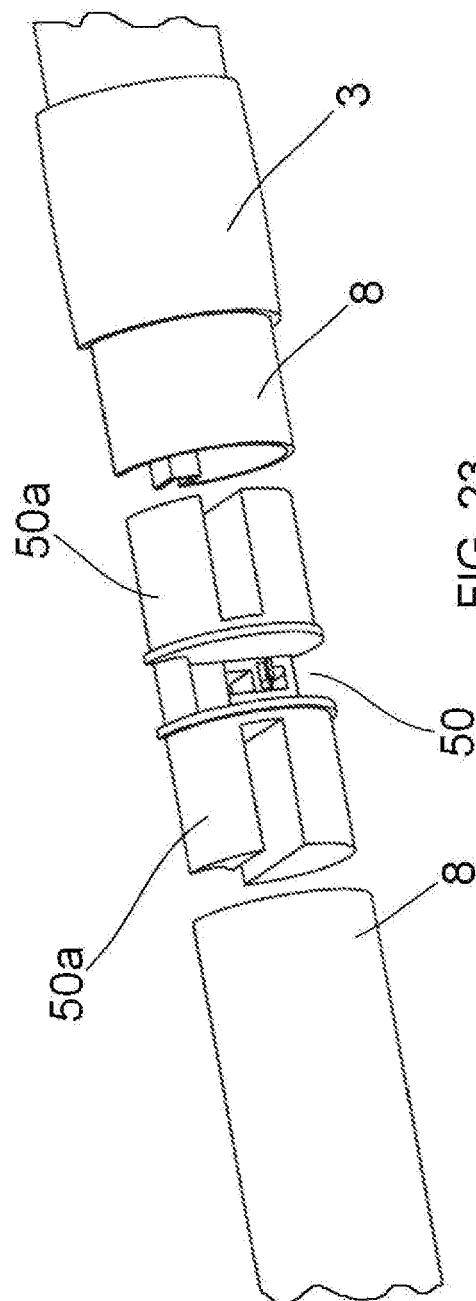


FIG. 23



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 4748

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 10 2004 063060 A1 (GLOCKNER DIETER [DE]) 13 July 2006 (2006-07-13) * figures 1,4,5 *	1-10	INV. E04F10/00
A	DE 20 2007 004760 U1 (PUSCH GMBH & CO KG [DE]) 14 June 2007 (2007-06-14) * figures 1,7,8 *	1-10	
A	EP 1 544 373 A2 (PUSCH GMBH & CO KG [DE]) 22 June 2005 (2005-06-22) * figures 1-5 *	1-10	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) E04F E04H
Place of search Munich		Date of completion of the search 4 January 2011	Examiner Brucksch, Carola
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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04-01-2011

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