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(54) **TERRACE CANOPY**

(57) Terrace canopy containing a roof structure (2) with a retractable and extendable screen (5) guided in sloping side guide rails (7) for the screen (5), said side guide rail (7) being supported on or at a distance from their lower extremity (8) by a hollow support post (9) by means of a hinge (13) with a horizontal shaft (13c) which

is transversely oriented to the longitudinal direction (Q-Q') of the side guide rail (7), **characterised in that** for setting the slope (A) of the side guide rail (7) the hinge (13) is mounted on a coupling piece (12) that is concealedly mounted in the hollow support post (9) and is height adjustably mounted in the support post (9).

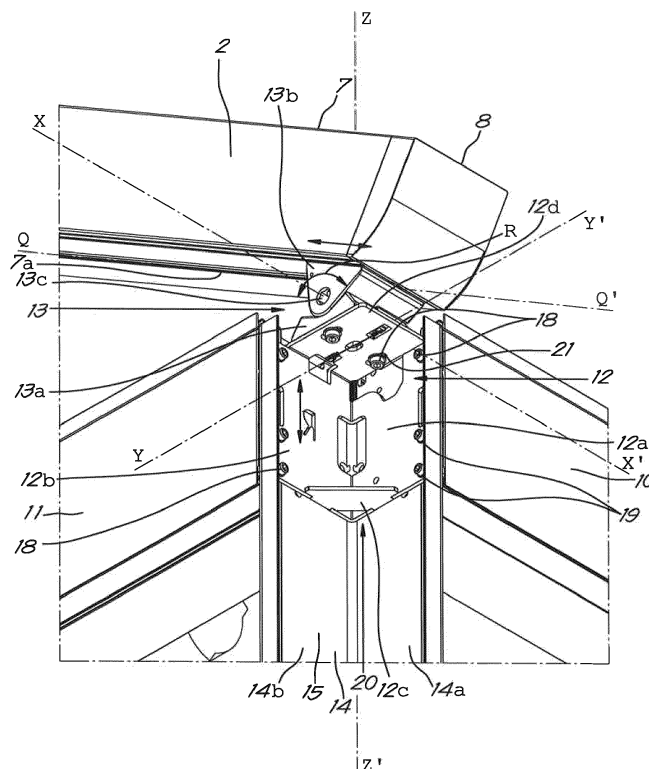


Fig. 4

Description

[0001] The present invention relates to a terrace canopy.

[0002] In particular, the invention is intended for a screen awning which is used as terrace canopy or pergola.

[0003] The screen awning contains a screen, for example in the form of a tarpaulin, which is retractable and extendable on a shaft from a roller casing which is mounted on a façade or the like at a certain height.

[0004] On its side edges, the screen is guided in two parallel side guide rails which depart from the roller casing and run diagonally downward to give the screen a certain slope when retracting and extending.

[0005] At or near the front lower extremities furthest removed from the façade each side guide rail is supported by a support post.

[0006] The screen awning is mounted to the façade and needs a minimum screen slope.

[0007] The drop and screen slope depends on the mounting height to the façade and the available distance to the façade for mounting the support posts. The mounting height of the roller casing is also determined by the straightness of the wall, distribution of the bores for mounting and where drilling is possible, etc.

[0008] Due to said variation/distribution during mounting, the roller casing needs to be able to tilt more or less around its longitudinal axis and the coupling of the side guide rails with the front support post must at least be rotatable around a horizontal shaft which extends perpendicularly to the longitudinal direction of the side guide rails and/or the height of the coupling must be adjustable.

[0009] Existing terrace canopies on the market allow an adjustment along and on the outside of the support post to, for example, after a heavy rain shower whereby water has accumulated in a dip of the tarpaulin, lower the tarpaulin sufficiently at the front to be able to evacuate the water.

[0010] This is known from the patent EP 3.054.063 for example, whereby the support posts protrude more or less above the canopy, which is not aesthetic. Further, said known embodiment requires a complicated coupling piece for the connection with the support post and a channel in a sidewall of the support post which weakens the support post and consequently requires a certain thickness of the walls of the support post and thus more material with a related higher cost.

[0011] Another embodiment is known from EP 2.333.188 whereby the guide rails are supported at their lower end with a coupling piece in a gutter composed of a gutter profiled section with a channel for the lateral guidance and a tilting movement of the coupling piece, whereby the coupling piece is also provided with limited guidance in the longitudinal direction of the tarpaulin guide rails.

[0012] This embodiment is relatively complex and difficult to mount and adjust and does not allow the guide

rails and the tarpaulin to protrude forward beyond the gutter.

[0013] The purpose of the present invention is to provide a solution for one or more of the aforementioned and other disadvantages with an all-in-one solution with a coupling piece that ensures attachment and strengthening, allowing finetuning of at least the height and translation of the lower end of the side guide rails relative to the support post, whereby all controls are easily accessible and are all grouped close together in one location and ultimately are practically invisible from the outside.

[0014] To this end, the invention relates to a terrace canopy containing a roof structure with a retractable and extendable screen guided in sloping side guide rails for the screen, said side guide rails being supported on or at a distance from their lower extremity by a hollow support post by means of a hinge with a horizontal shaft which is transversely oriented to the longitudinal direction of the side guide rail, whereby for setting the slope of the side guide rail, the hinge is mounted on a coupling piece that is concealedly mounted in the hollow support post and is height adjustably mounted in the support post.

[0015] In this way, the coupling piece is hidden from view for bystanders or people under the terrace canopy.

[0016] Preferably, the hinge mounted on the side guide rail is movable in the longitudinal direction of the side guide rail and preferably translational on the coupling piece in a direction parallel with a plane perpendicular to the shaft of the hinge.

[0017] Preferably, the hollow support posts are composed of an open basic profile with two or three legs perpendicular to each other which define an open space and of a removable cover profile which covers the aforementioned space in the longitudinal direction of the basic profile.

[0018] Thus, the coupling piece is easily accessible after disassembly of the cover profile for an easy adjustment of the position of the coupling piece and thus of the slope of the relevant side guide rail.

[0019] Preferably, the coupling piece is executed as a strengthening bracket which connects at least two legs of the basic profile with each other and is height adjustably mounted on the inside of the basic profile.

[0020] Thus, the coupling piece also has the role of strengthening the base piece of the support post such that such support post can be used as single support post without the profile of the support post, typically from aluminium, having to be executed extra heavy.

[0021] According to a practical embodiment the coupling piece contains a substantially L-shaped or U-shaped section with which the coupling piece is mounted against the inside of the basic profile of the support post.

[0022] Such L-shaped or U-shaped section can easily be realised in steel plate.

[0023] For an extra strengthening in terms of torque the coupling piece can be provided with a transverse strengthening which connects at least two legs of the L-shaped or U-shaped section with each other.

[0024] Preferably, the basic profile is provided with one or more undercut mounting grooves lengthways and the coupling piece is translationally mounted on the basic profile by means of nuts which are translationally mounted in the grooves and screwed tight in the nuts by means of bolts through bores in the coupling piece for clamping the coupling piece.

[0025] Consequently, mounting and clamping the coupling piece at the desired height on the basic profile of the support post is simple, particularly after removing the cover profile.

[0026] Preferably, the basic profile is provided with a stop to limit the upward translation of the coupling piece, said stop being mounted such that the coupling piece cannot protrude above the upper end of the support post.

[0027] Thus it can be avoided that the coupling piece would indeed become visible due to an unintended mounting.

[0028] Preferably, there is also a stop for the downward translation of the coupling piece such that the coupling piece upon mounting cannot accidentally slide down.

[0029] For the support of the aforementioned hinge the coupling piece contains a support, for example in the form of a transverse support plate which is provided with at least one slotted hole that extends parallel to a plane perpendicular to the shaft of the hinge and the hinge foot is translationally mounted on the support by means of one or more bolts screwed through the at least one slotted hole in the hinge nut for clamping the hinge foot to the support.

[0030] Thus, a simple control of the position of the side guide rail in the longitudinal direction of the side guide rail is provided.

[0031] Preferably, the hinge parts of the aforementioned hinge, seen in a cross-section perpendicular to the shaft of the hinge, are shaped substantially triangularly and the tips overlap each other at a certain height.

[0032] In this way the hinge parts have a sufficient range of movement to not collide with the walls of the support post when setting the slope of the side guide rail.

[0033] Optionally, the terrace canopy can be provided with a front bar with which the support posts are mutually connected and/or with one or more substantially horizontal side bars for the connection between a support post and a wall or other support posts to which the roller casing is mounted.

[0034] Such bars give extra strength to the terrace canopy.

[0035] If hollow profiles are used for said front and side bars, said bars can also serve as roller casing for the integration of a roller and a retractable and extendable screen thereon, for example to be able to shield the terrace at the front and/or sides from wind and sun.

[0036] With the intention of better showing the characteristics of the invention, a preferred embodiment of a terrace canopy according to the invention is described hereinafter, by way of an example without any limiting nature, with reference to the accompanying drawings

wherein:

figure 1 schematically shows a perspective view of a terrace canopy according to the invention;

figure 2 shows a side view of the terrace canopy of figure 1 mounted against a wall according to arrow F2;

figure 3 shows a perspective view on a larger scale of the section of figure 1 indicated by the frame F3; figure 4 shows the section of figure 3 but with a disassembled section of the support post;

figure 5 shows the section of figure 4 but seen from above and with the side guide rail disassembled;

figure 6 shows a view according to arrow F6 in figure 4;

figure 7 shows an analogue view as that of figure 6, but in another position;

figures 8 to 10 show variants of a terrace canopy according to the invention, with specifically in figure 10 a double canopy;

figure 11 shows the section indicated in figure 10 by frame F11 on a larger scale;

figures 12 to 14 show the section of figure 11 in different stages of disassembly and partial omissions.

[0037] The terrace canopy 1 shown in figures 1 to 7 contains a roof structure 2 containing a roller casing 3 which is mounted against a façade 4 or other bearing structure at a certain height and contains a roll with a retractable and extendable screen 5, for example a tarpaulin, which on the lower edge is provided with a bottom bar 6 which when retracting and extending is guided in two parallel sloping side guide rails 7 which are supported on their lower extremity 8 by two support posts 9 located at a distance from the façade 4.

[0038] The support posts 9 are hollow support posts which in the example are mutually connected by means of a front bar 10 and are connected to the façade 4 by means of side bars 11 which extend substantially horizontally under the side guide rails 7.

[0039] Traditionally, the roller casing 3 is mounted against the façade 4 by means of a suspension (not shown) with which the roller casing 3 is tiltable around its longitudinal axis to, upon mounting, set the slope of the side guide rails 7 and thus of the screen 5 depending on the local circumstances such as, among others, the available mounting height B against the façade 4 and the available distance C to the façade 4 for mounting the support posts 9.

[0040] On adjusting the roof slope A it must be possible to let the side guide rails 7 hinge relative to the support posts 9, for which purpose the invention provides a coupling piece 12 which is mounted in the hollow support posts 9 and is provided with a hinge 13 with a horizontal shaft 13c which is transversely oriented according to the transversal direction X-X' relative to the longitudinal direction Q-Q' of the side guide rails 7.

[0041] In the example of the figures, the hollow support

posts 9 are composed of an L-shaped open basic profile 14 with two legs 14a and 14b perpendicular to each other which define an open space 15 and of a removable L-shaped cover profile 16 that covers the aforementioned space 15 over the height of the basic profile 14 and which is snapped on the basic profile 14, for example, to form a support post together with a closed square or rectangular cross-section.

[0042] The front bar 10 and the side bars are mounted on the base piece 14 of the support posts 9.

[0043] The legs 14a and 14b of the basic profile 14 are provided on their free edges on the inside of the basic profile 14 with an undercut mounting groove 17 for mounting the coupling piece 12 or other possible accessories by means of nuts (not shown) which translationally fit in the undercut mounting groove and with which the relevant coupling piece 12 can be clamped by means of bolts 18 through bores 19 in the coupling piece 12 at a desired height against the basic profile 14.

[0044] In this case, the coupling piece 12 is executed as an L-shaped strengthening bracket 20 with two legs 12a and 12b provided with the aforementioned bores 19 for mounting the coupling piece 12 in the basic profile 14, said legs being diagonally connected with each other by a strengthening bar 12c.

[0045] Further at the top the coupling piece 12 is provided with a support 12d to support the aforementioned hinge 13, said support 12d for example being formed by a perpendicular folded over section of one of the legs 12b of the coupling piece 12.

[0046] The hinge 13 is composed of a hinge foot 13a and a hinge head 13b which are hingeably connected to each other by means of the aforementioned shaft 13c, whereby the hinge foot 13a is translationally mounted on the support 12d of the coupling piece 12 according to a direction Y-Y' in a vertical plane perpendicular to the direction X-X' of the shaft 13c

and the hinge head 13b is translationally mounted under the side guide rail 7 according to the direction Q-Q'.

[0047] For the translation of the hinge 13 on the support 12d of the coupling piece 12, said support 12d is provided with at least one slotted hole 21 which extends parallel to a plane perpendicular to the shaft 13c of the hinge 13 and the hinge 13 is mounted on the support 12d with its hinge foot 13a by means of one or more bolts 18 which are screwed through the slotted hole 21 in the hinge foot 13a and which are translationally guided in the slotted hole 21.

[0048] The hinge head 13b is translational in the longitudinal direction Q-Q' of the side guide rail 7, for which purpose the side guide rail 7 is provided with a channel 7a at the bottom.

[0049] Both the hinge foot 13a and the hinge head 13b are provided with locking screws 18 for locking their position in the relevant sliding direction.

[0050] As appears from the figures 6 and 7 the hinge foot 13a and the hinge head 13b have a substantially triangular form, seen in a cross-section perpendicular to

the shaft 13c of the hinge 13, and the tips of said hinge parts 13a and 13b are mounted such that their tips are facing each other and overlap over a certain height.

[0051] Thanks to the coupling piece 12 according to the invention, as shown in figure 4, a rotation R of the side guide rail 7 around the shaft 13c of the hinge 13 is possible and the position of the hinge 13 can be adjusted in the following directions:

- 10 - in the longitudinal direction Q-Q' of the side guide rail;
- in a direction Y-Y' in a vertical plane perpendicular to the shaft 13c of the hinge 13;
- in the height direction Z-Z'.

15 **[0052]** The basic profile 14 can be provided with a stop 22 for limiting the stroke of the movement of the coupling piece 12 in the height, for example in the form of a peg which is mounted in an aforementioned mounting groove 17 and on the level of a vertical recess 23 in one of the legs 12a or 12b of the coupling piece 12 and which forms a stop 22 for the coupling piece 12 in its highest position as shown in figure 6, on the one hand, and for the coupling piece 12 at its lowest position as shown in figure 7, on the other hand.

25 **[0053]** The length of the recess determines the stroke over which the coupling piece is movable and is such that the coupling piece 12 does not protrude in its highest position of figure 6 above the support post 9 and in its lowest position of figure 7 still allows a minimum slope of the side guide rail 7 without interference between the side guide rail 7 and the support post 9.

30 **[0054]** Alternatively, the stop 22 can be formed by a screw which is used for example to fix the cover profile 16 on the front bar 10 through the recess 23 in the coupling piece 12 and through a bore in the basic profile 14.

35 **[0055]** In the embodiment of figure 8 the front bar 10 and the side bars 11 are executed as hollow profiles which serve as roller casing for a roller with a retractable and extendable screen 24 thereon with which the front and the sides can be shielded.

40 **[0056]** The invention is also applicable to a terrace canopy 1 without side bars as shown in figure 9 or to a free standing pergola with four support legs.

45 **[0057]** It is understood that the side guide rails 7 can also be supported in a location at a distance from their lower end 8, whereby in other words the side guide rails 7 protrude forward beyond the support posts 9 over a certain length.

50 **[0058]** Figure 10 shows an embodiment whereby two terrace canopies 1 are arranged next to each other as a contiguously continuous double terrace canopy with two roller casings 3 located in each other's extension and two adjacent side guide rails 7.

55 **[0059]** According to a specific aspect the adjacent side guide rails 7 are supported at their lower end 8 by one communal support post 9 with one communal coupling piece 12 therein and a communal hinge 13 thereon for both adjacent side guide rails 7.

[0060] The communal support post 9 is in this case composed of a U-shaped base piece 14 with a substantially U-shaped cross-section, the opening of which is oriented to the front and a substantially flat cover profile 16 to cover the opening.

[0061] The communal coupling piece 12 is U-shaped with a U-shaped section which fits in the U-shaped basic profile 14 and is height adjustably mounted therein.

[0062] Between the adjacent guide rails 7 a seal may be mounted (not shown in the figures).

[0063] The present invention is by no means limited to the embodiments described as an example and shown in the figures, but a terrace canopy according to the invention can be realised in all kinds of forms and dimensions without departing from the scope of the invention.

Claims

1. Terrace canopy containing a roof structure (2) with a retractable and extendable screen (5) guided in sloping side guide rails (7) for the screen (5), said side guide rails (7) being supported on or at a distance from their lower extremity (8) by a hollow support post (9) by means of a hinge (13) with a horizontal shaft (13c) which is transversely oriented to the longitudinal direction (Q-Q') of the side guide rail (7), **characterised in that** for setting the slope (A) of the side guide rail (7), the hinge (13) is mounted on a coupling piece (12) that is concealedly mounted in the hollow support post (9) and is height adjustably mounted in the support post (9).
2. Terrace canopy according to claim 1, **characterised in that** the hinge (13) on the side guide rail (7) is movably mounted in the longitudinal direction (Q-Q') of the side guide rail (7)
3. Terrace canopy according to claim 1 or 2, **characterised in that** the hinge (13) is translationally mounted on the coupling piece (12) in a direction (Y-Y') parallel with a plane perpendicular to the shaft (13c) of the hinge (13).
4. Terrace canopy according to any one of the previous claims, **characterised in that** the hollow support post (9) is composed of an open basic profile (14) with two or three legs (14a, 14b) perpendicular to each other which define an open space (15) and of a removable cover profile (16) which covers the aforementioned space (15) in the longitudinal direction of the basic profile (14).
5. Terrace canopy according to claim 4, **characterised in that** the coupling piece (12) is executed as a strengthening bracket (20) which connects at least two legs (14a, 14b) of the basic profile (14) with each other and is mounted height adjustably on the inside

of the basic profile (14).

6. Terrace canopy according to claim 4 or 5, **characterised in that** the coupling piece (12) contains a substantially L-shaped or U-shaped section with which the coupling piece (12) is mounted against the inside of the basic profile (14) of the support post (9).
7. Terrace canopy according to claim 4 or 5, **characterised in that** the coupling piece (12) is provided with a transverse strengthening (12c) which connects at least two legs of the L-shaped or U-shaped section with each other.
8. Terrace canopy according to any one of the claims 4 to 7, **characterised in that** the basic profile (14) is provided with undercut mounting grooves (17) in the longitudinal direction and that the coupling piece (12) is translationally mounted on the basic profile (14) by means of nuts which are translationally mounted in the grooves (17) and are screwed tight in the nuts by means of bolts (18) through bores in the coupling piece (12) for clamping the coupling piece (12).
9. Terrace canopy according to any one of the claims 4 to 8, **characterised in that** the basic profile (14) is provided with a stop (22) to limit the upward translation of the coupling piece (12), said stop (22) being mounted such that the coupling piece (12) cannot protrude above the upper end of the support post (9).
10. Terrace canopy according to any one of the claims 4 to 9, **characterised in that** the basic profile (14) is provided with a stop (22) to limit the upward and downward translation of the coupling piece (12), whereby the stop (22) is mounted in a vertical recess (23) of the coupling piece (12) and the length of the recess determines the stroke of the movement of the coupling piece (12) in the height.
11. Terrace canopy according to any one of the previous claims, **characterised in that** the coupling piece (12) contains a support (12d) for the support of the aforementioned hinge (13).
12. Terrace canopy according to claim 11, **characterised in that** the hinge (13) is composed of a hinge foot (13a) and a hinge head (13b) which are hingeably connected to each other by means of the aforementioned shaft (13c), whereby the hinge foot (13a) is translationally mounted on the support (12d) of the coupling piece (12) and the hinge head (13b) is translationally mounted under the side guide rail (7).
13. Terrace canopy according to claim 12, **characterised in that** the support (12d) is executed as a transverse support plate which is provided with at least

one slotted hole (21) which extends parallel to a plane perpendicular to the shaft (13c) of the hinge (13) and that the hinge foot (13b) is translationally mounted on the support (12d) by means of one or more bolts (18) which are screwed through the at least one slotted hole (21) in the hinge foot (13a) for clamping the hinge foot on the support.

pling piece therein and a communal hinge thereon for both adjacent side guide rails.

14. Terrace canopy according to claim 12 or 13, **characterised in that** the hinge foot (13a) and the hinge head (13b), seen in a cross-section perpendicular to the shaft (13c) of the hinge, are shaped substantially triangularly and their tips overlap over a certain height.

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15. Terrace canopy according to any one of the previous claims, **characterised in that** the screen (5) is mounted retractably and extendably on a roller which is mounted in a roller casing (3) which connects the upper ends of the side guide rails (7) to each other, whereby the roller casing (3) is provided with a suspension for mounting the roller casing (3) to a façade (4) or other bearing construction and whereby the roller casing (3) is provided tiltable around its longitudinal axis in the suspension to, upon mounting, set the slope (A) of the side guide rails (7) and thus of the screen.

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16. Terrace canopy according to any one of the previous claims, **characterised in that** the side guide rails (7) are provided with a channel for guiding the side edges of the screen (5) and/or a bottom bar (6) at the lower edge of the screen (5).

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17. Terrace canopy according to any one of the previous claims, **characterised in that** the terrace canopy (1) is provided with a front bar (10) with which the support posts (9) are mutually connected to each other.

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18. Terrace canopy according to any one of the claims 15 to 17, **characterised in that** the terrace canopy (1) is provided with at least one substantially horizontal side bar (11) for the connection between a support post and the façade (4) or another bearing construction to which the roller casing (3) is mounted.

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19. Terrace canopy according to any one of the claims 17 and/or 18, **characterised in that** the front bar (10) and/or one or more side bars (11) are formed as hollow profiles with a roller therein and a retractable and extendable screen (24) thereon.

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20. Terrace canopy according to any one of the previous claims, **characterised in that** it contains two adjacent roller casings next to each other, each with two side guide rails, whereby the adjacent side guide rails are supported on or near their lower ends by one communal support post with one communal cou-

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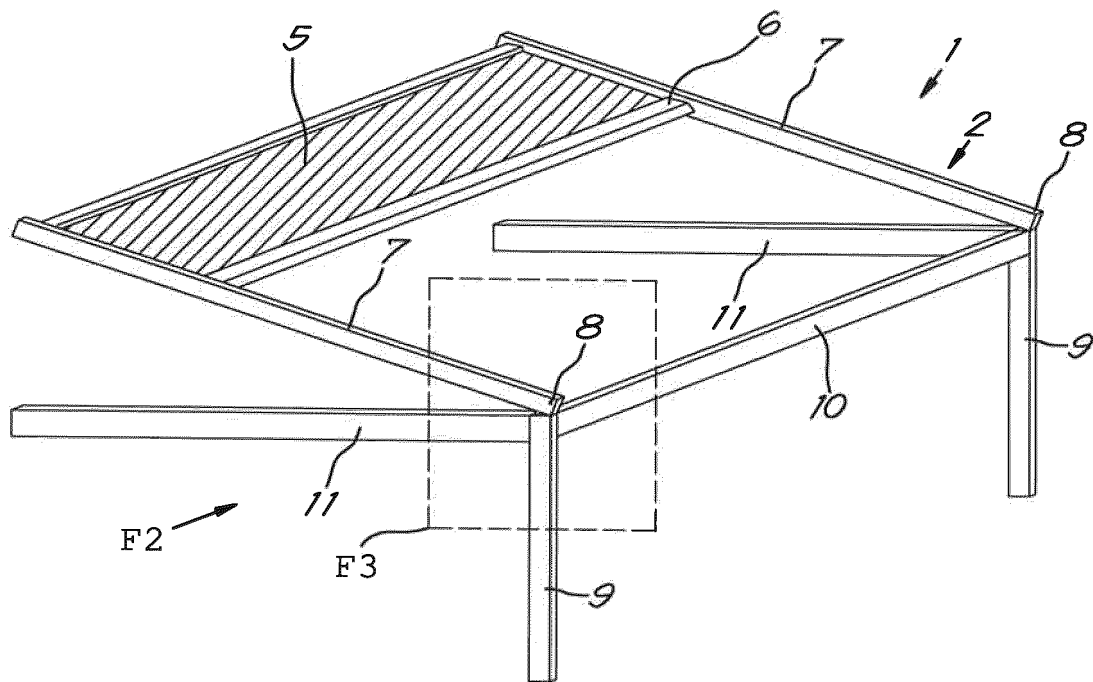


Fig. 1

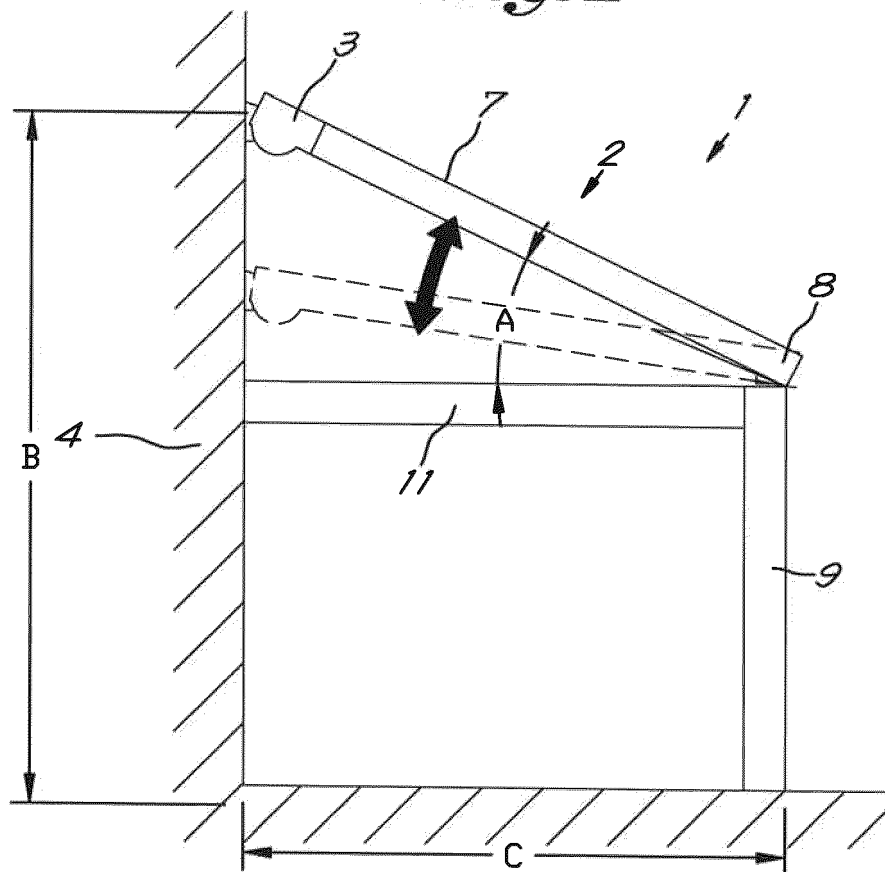


Fig. 2

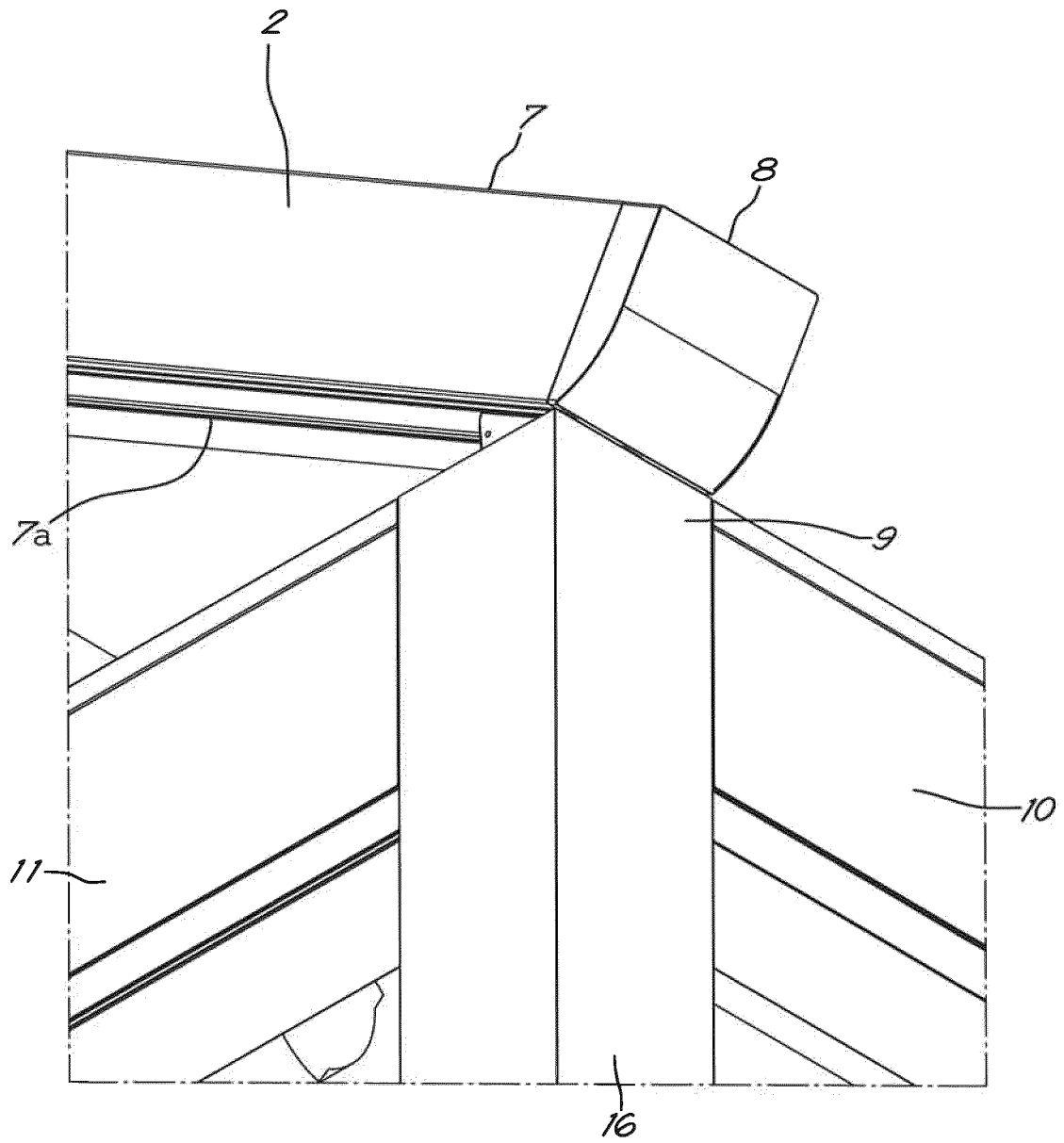


Fig. 3

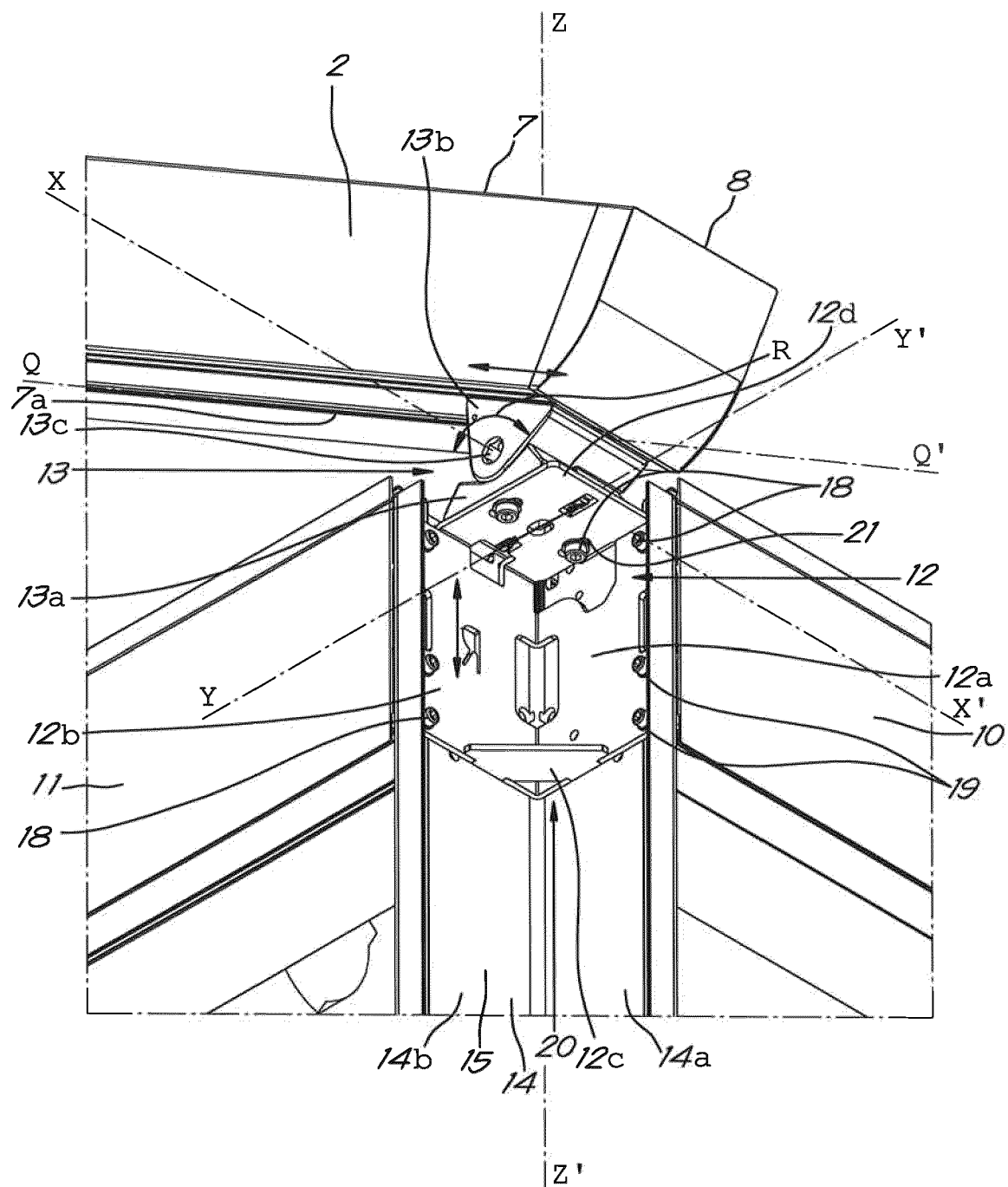


Fig. 4

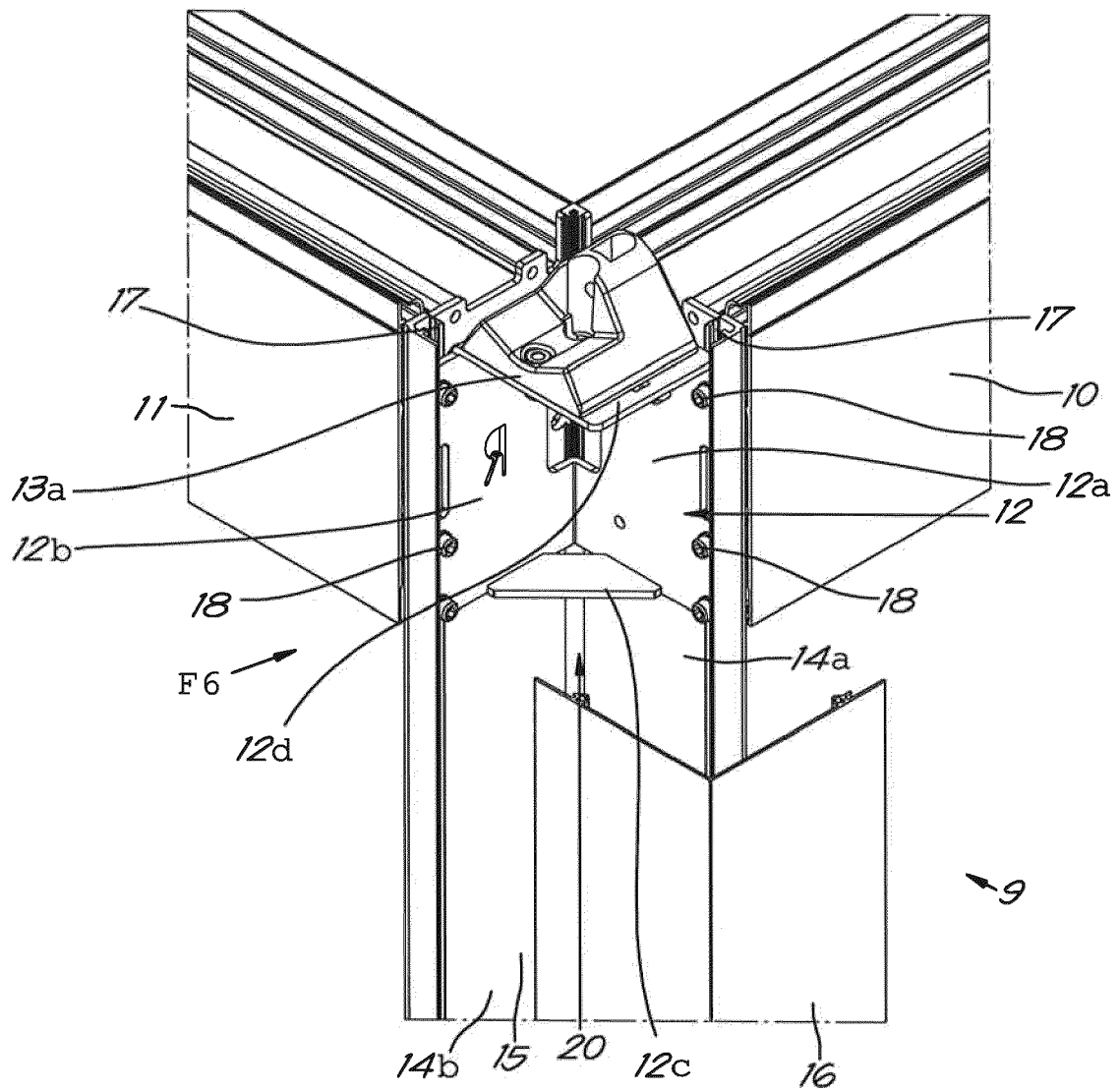


Fig.5

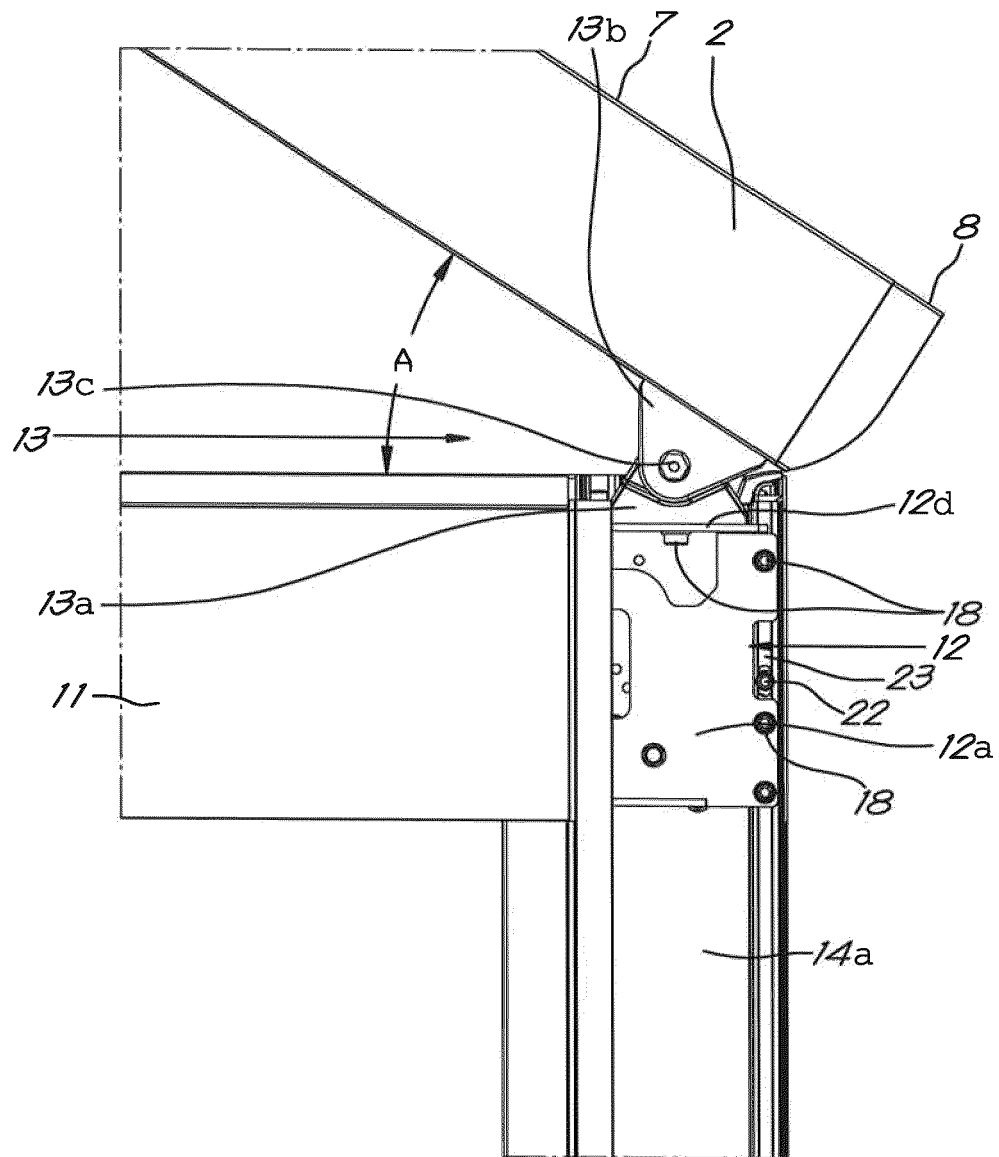


Fig. 6

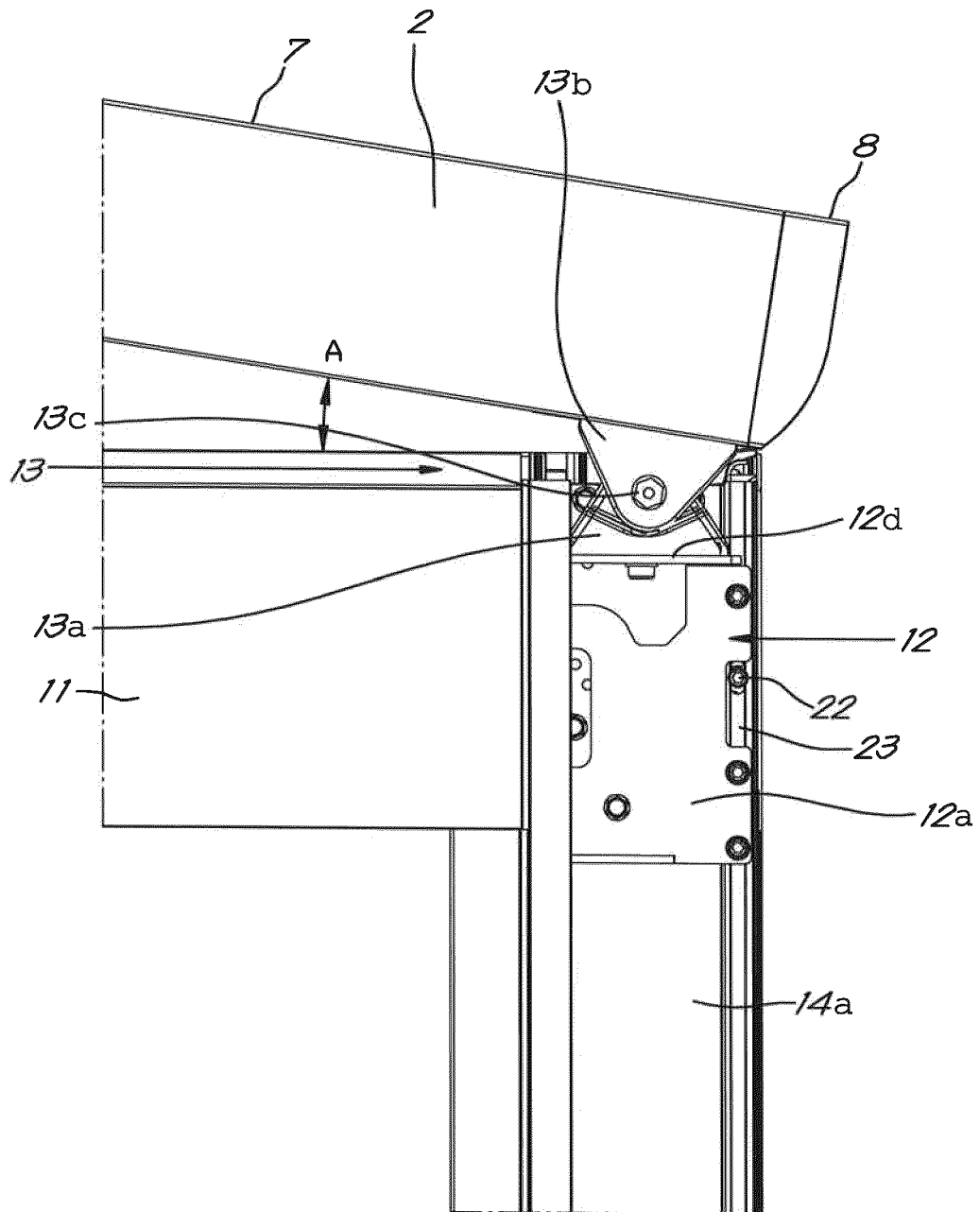


Fig.7

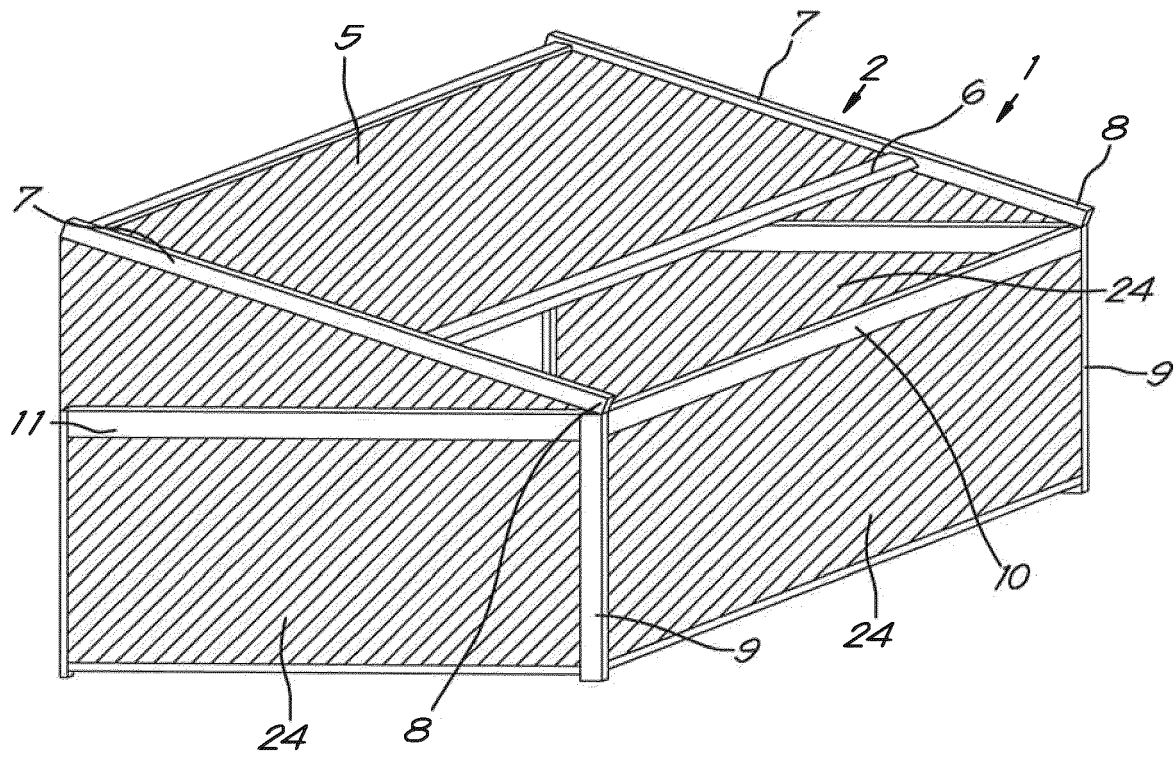


Fig. 8

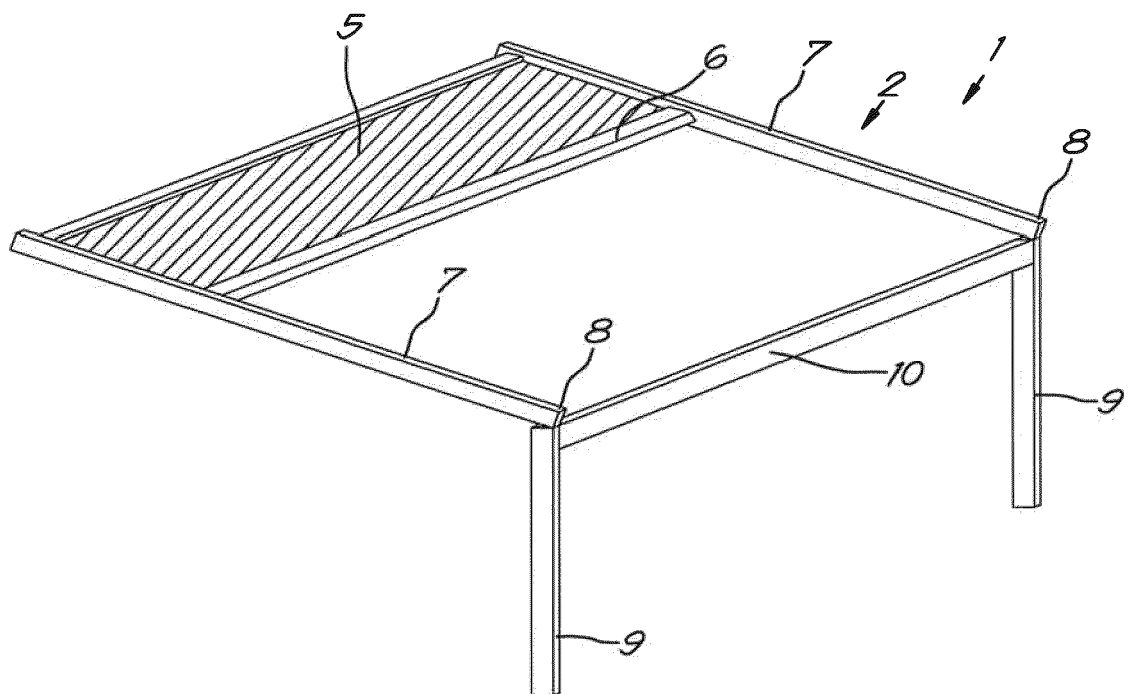


Fig. 9

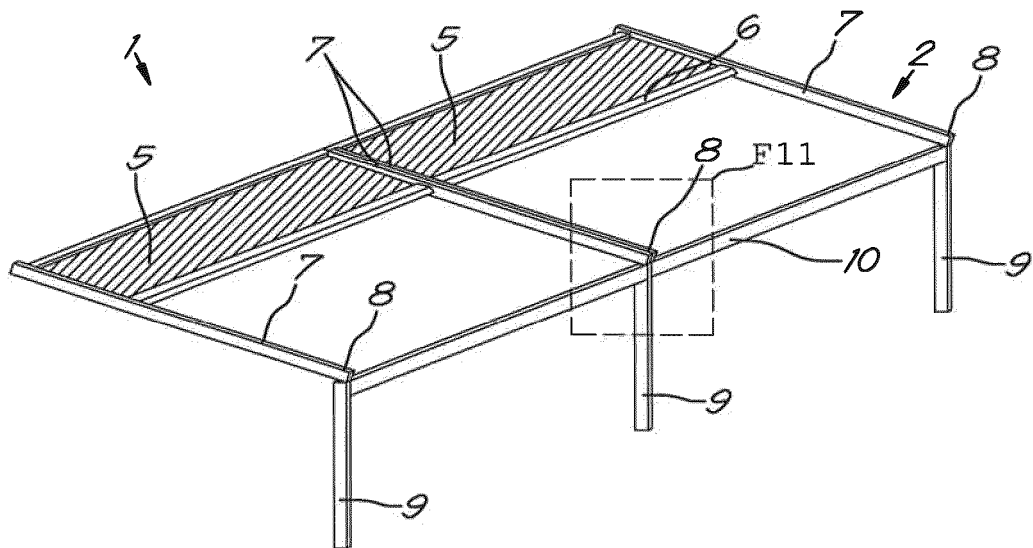


Fig. 10

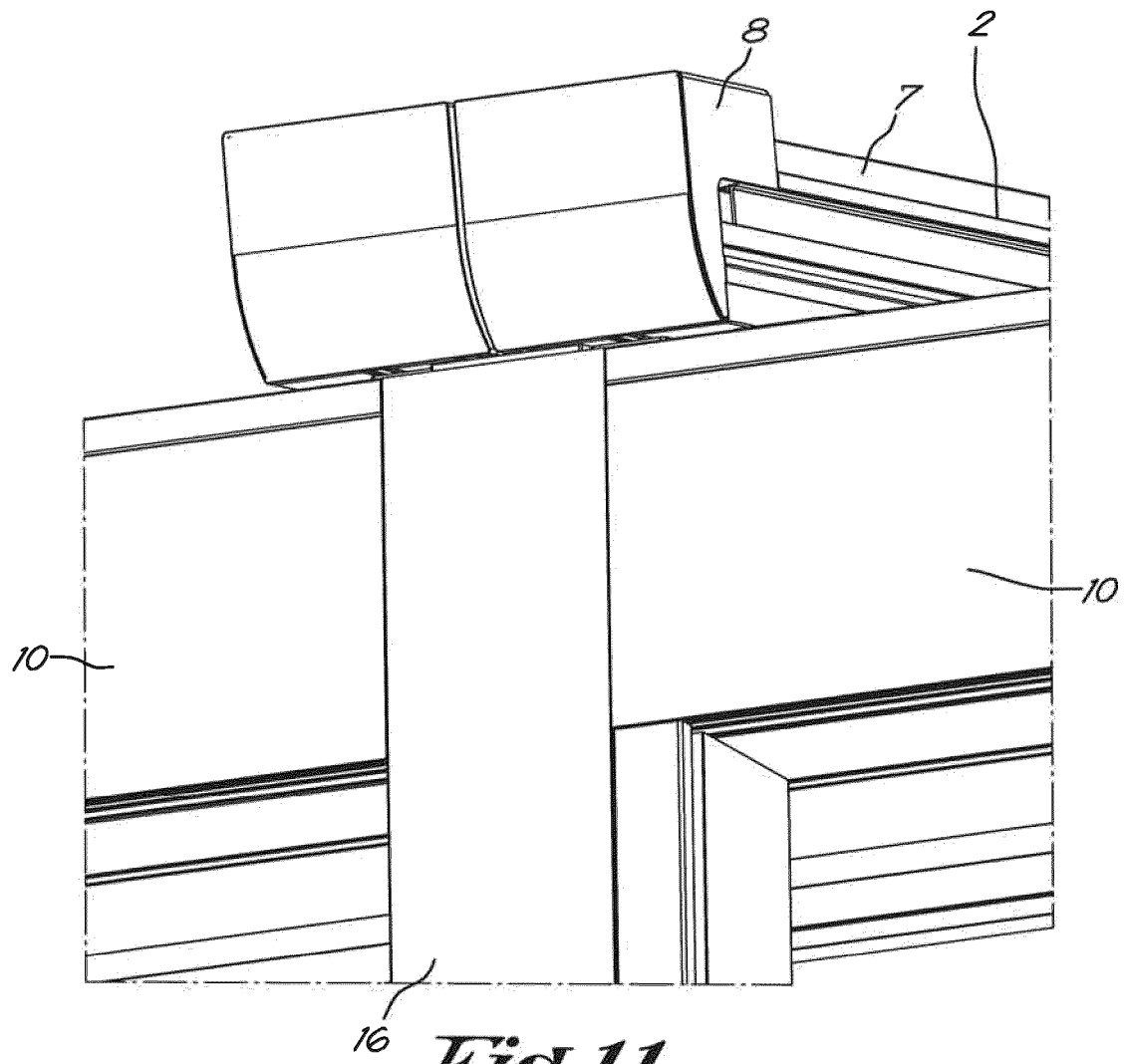


Fig. 11

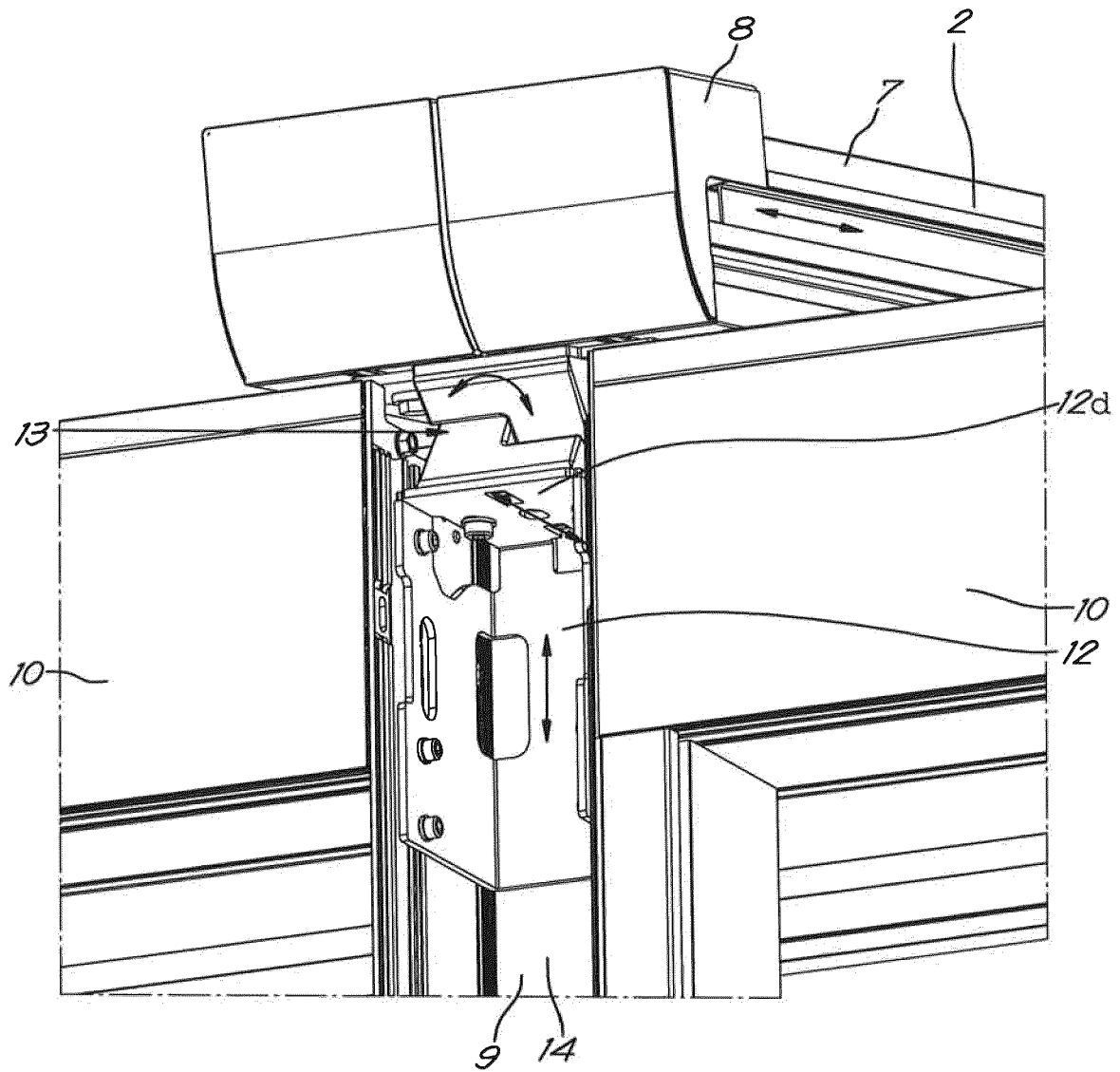


Fig. 12

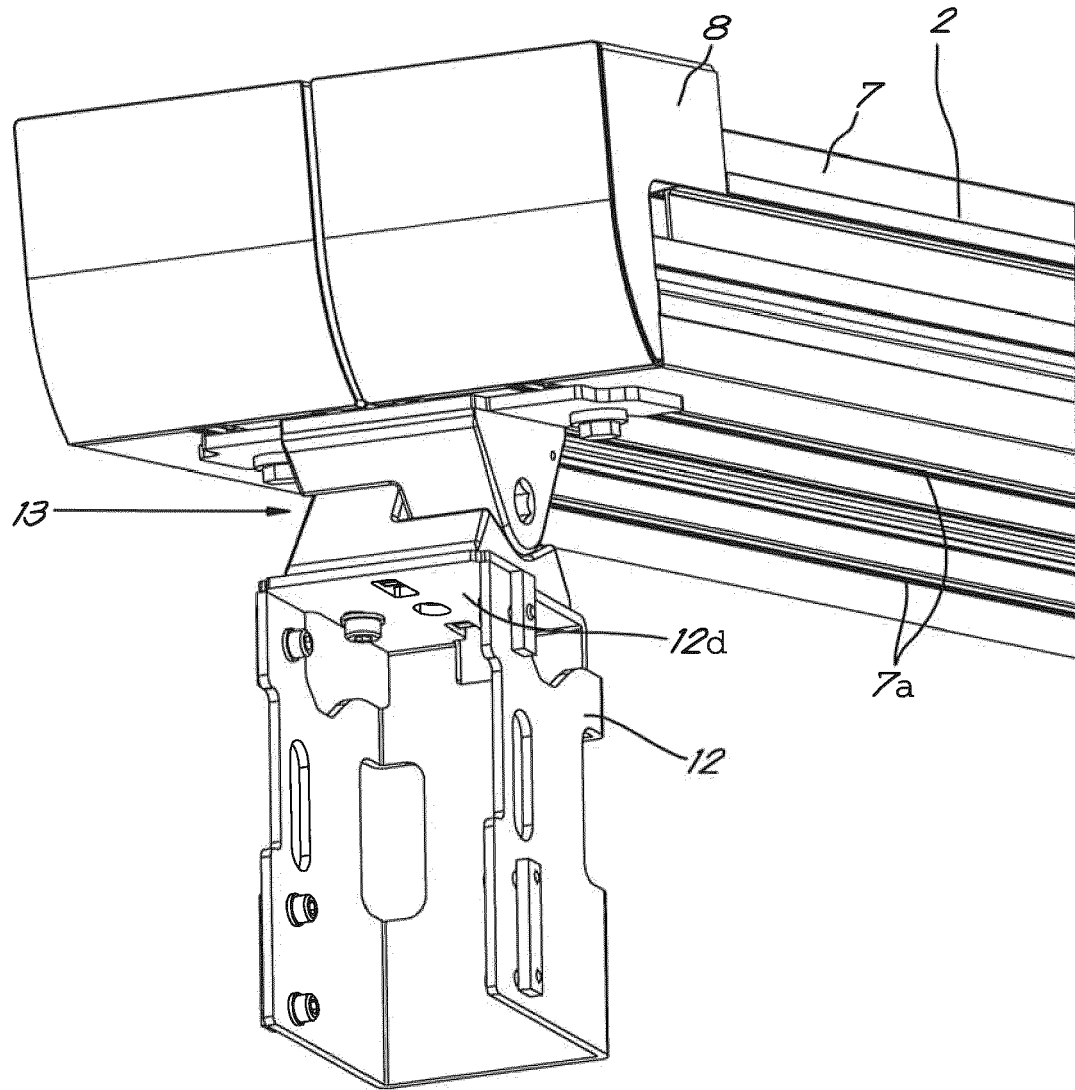


Fig. 13

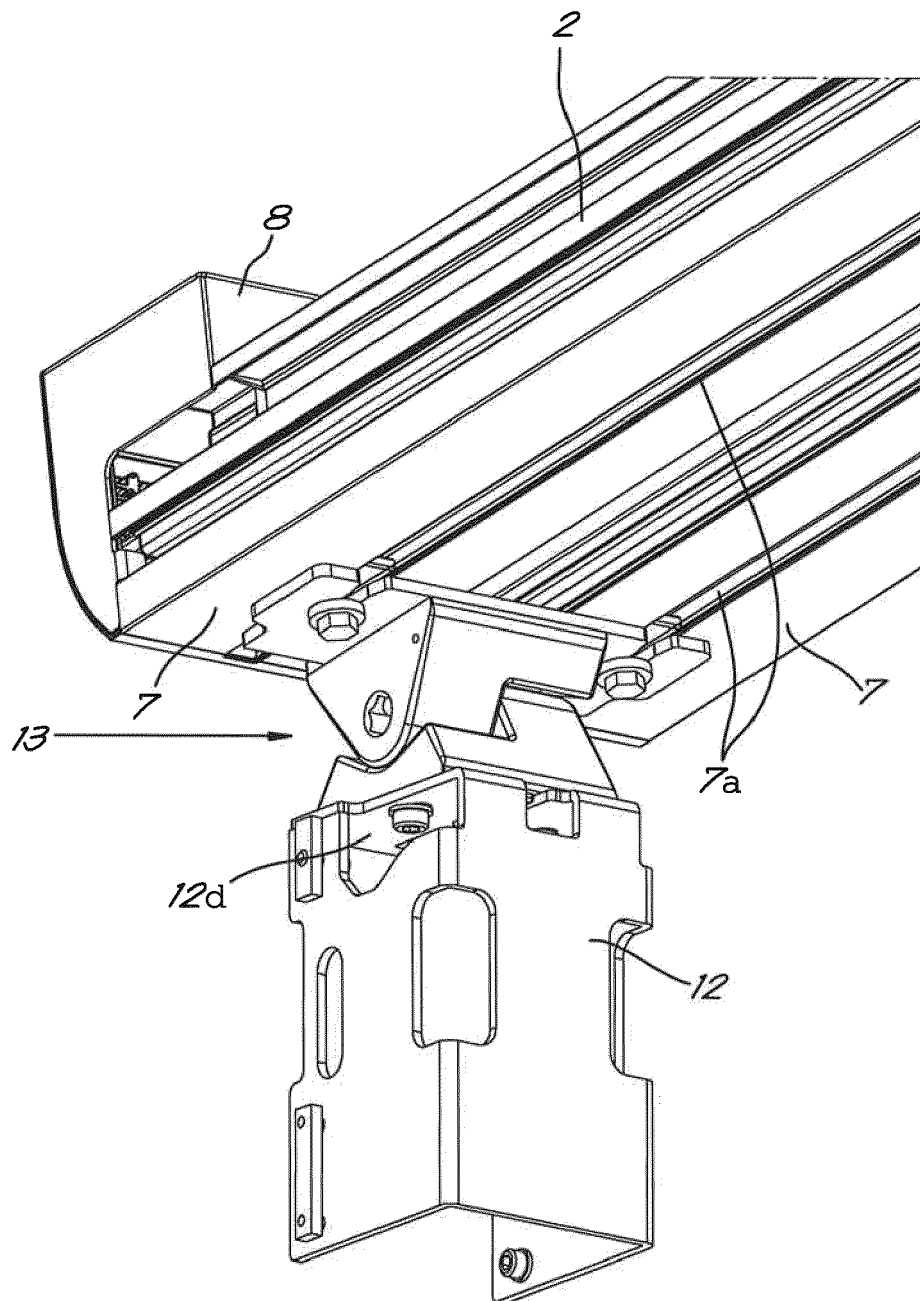


Fig. 14



EUROPEAN SEARCH REPORT

Application Number

EP 22 18 7627

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
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Y	----- KR 101 609 977 B1 (PARK BEOM SUK [KR]) 8 April 2016 (2016-04-08) * paragraph [0026]; figures 1-2 *	20	TECHNICAL FIELDS SEARCHED (IPC) E04F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 November 2022	Examiner Kofoed, Peter
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	

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

EP 22 18 7627

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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