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(54) **Guide assembly, for curtains, awnings and similar devices**

(57) A guide assembly, for curtains, awnings and similar devices, comprising at least one contoured profile (2), which can be positioned substantially proximate to an area to be covered; the profile (2) longitudinally defines a guide channel (3) for a slider (4) which is integral with a transverse bar (5), which in turn is fixed to at least one slideable sheet of the curtain, of the awning or similar device, for the guided movement of the sheet and the covering of the area; the bar (5) further comprises a shaft (6) that is rigidly fixed to the sheet and at least one end cap (7), which is associated slideably with the shaft (6); the slider (4) is fixed to the cap (7), for the forced translational motion of the slider (4), with respect to the shaft (6), in the event of maladjustments of the profile (2) with respect to the ideal direction of sliding of the sheet.

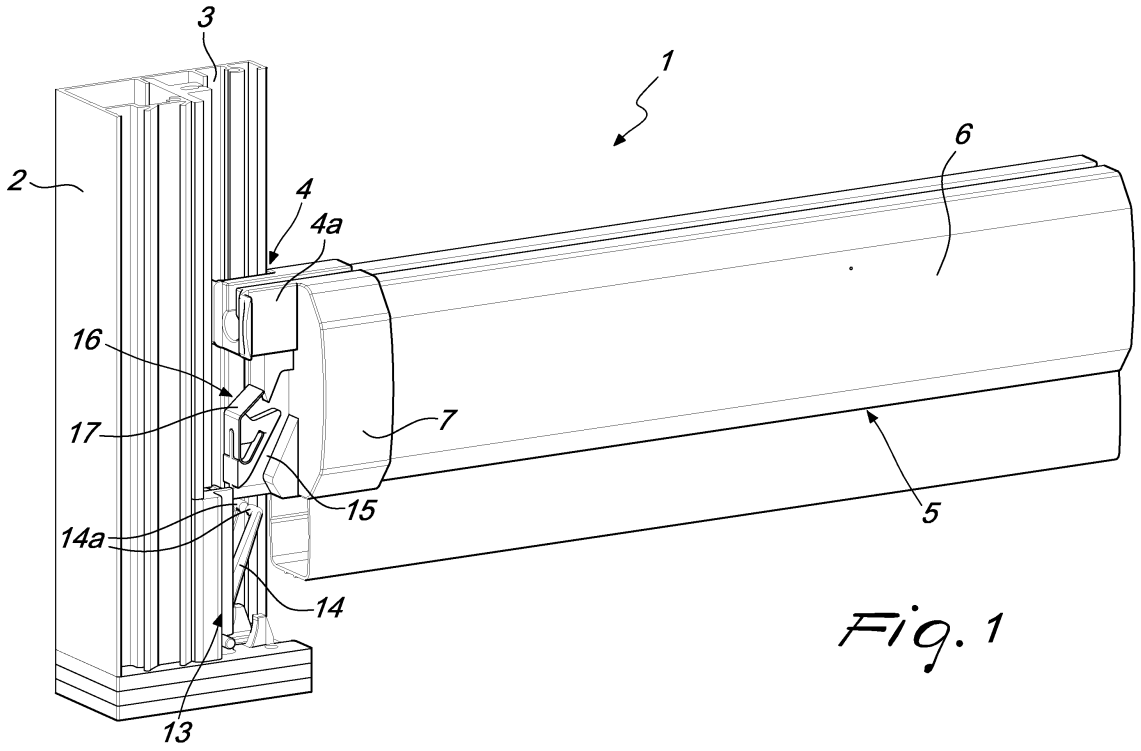

Fig. 1

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Description

[0001] The present invention relates to a guide assembly, for curtains, awnings and similar devices.

[0002] As is known, nowadays numerous types of curtains, awnings and other furnishing and covering elements are widespread on the market, and are specifically designed for installation outside dwellings and buildings, or in order to constitute shelter and protection from outside environments, according to a plurality of implementation solutions and constructional variants.

[0003] Of these, an important role is certainly played by curtains and awnings that can slide, i.e. in which the covering element (a sheet, typically made of polymeric material and weather resistant) can move from the configuration of complete coverage of the window or of the area desired, to a configuration in which the sheet is rewound around a roller, or is in any case disengaged from the window.

[0004] In order to allow the aforementioned movement of the curtain, the frame that surrounds the window is usually provided with a pair of contoured profiles, which on opposite sides constitute a sliding guide for respective sliders, which protrude laterally from the ends of a bar which is fixed to an end flap of the curtain.

[0005] Such implementation solution is not however devoid of drawbacks.

[0006] In fact it clearly appears that a possible error in the mounting step, such as to cause a mutual maladjustment, even slight, between the profiles, can prejudice the optimal operation of the curtain, thus making the correct sliding of the two sliders impossible, with risk of jamming and unwanted stoppages.

[0007] Moreover, such drawback is even more accentuated if, as frequently happens, along the profiles, and in particular proximate to the stroke limit corresponding to the covering configuration being reached, adapted arrest elements are arranged, such as hooks, pawls, etc, which are adapted to ensure the stable locking of the curtain in the aforementioned covering configuration.

[0008] In fact, during the sliding of the sliders in the profiles, the former can automatically engage, typically by way of an interlocking elastic coupling, with the respective arrest elements, and ensure the desired locking.

[0009] As a consequence, any possible mounting errors, and consequent maladjustments between the profiles, can result in the poor operation of the arrest elements, thus making the failure of the curtain to lock in the covering configuration problematic, or impossible.

[0010] The aim of the present invention is to solve the above mentioned problems, by providing an assembly that is capable of effectively guiding the sliding of curtains, awnings and similar devices.

[0011] Within this aim, an object of the invention is to provide an assembly that ensures optimal guiding, even in the event of imperfect alignments between the elements adapted to guiding.

[0012] A further object of the invention is to provide a guide that ensures optimal locking, even in the event of maladjustments of the elements adapted to guiding.

[0013] A further object of the invention is to provide a guide assembly that ensures a high reliability of operation, even in the event of mounting/installation errors.

[0014] Another object of the invention is to provide a guide assembly that can be easily implemented using elements and materials that are readily available on the market.

[0015] Another object of the invention is to provide a guide assembly that is low cost and safely applied.

[0016] This aim and these objects are achieved by a guide assembly, for curtains, awnings and similar devices, comprising at least one contoured profile, which can be positioned substantially proximate to an area to be covered, said profile longitudinally forming a guide channel for a slider which is integral with a transverse bar that is fixed to at least one slideable sheet of the curtain, of the awning or similar device, for the guided movement of said sheet and the covering of the area, **characterized in that** said bar comprises a shaft which is rigidly fixed to the sheet and at least one end cap, which is associated slideably with said shaft, said slider being fixed to said cap, for the forced translational motion of said slider, with respect to said shaft, in the event of maladjustments of said profile with respect to the ideal direction of sliding of the sheet.

[0017] Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of the guide assembly according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of the guide assembly according to the invention, with the profile partially sectional along a longitudinal plane;
Figure 2 is a front elevation view of the guide assembly of Figure 1;
Figure 3 is a highly enlarged detail of Figure 2;
Figure 4 is an exploded perspective view of the guide assembly of Figure 1;
Figure 5 is an exploded front elevation view of the guide assembly of Figure 1;
Figure 6 is a view from above of the guide assembly according to the invention.

[0018] With reference to the figures, the guide assembly according to the invention, generally designated by the reference numeral 1, can be used for curtains, awnings and similar devices, and comprises at least one contoured profile 2, which can be positioned proximate to an area to be covered.

[0019] The profile 2 longitudinally defines a guide channel 3 for a slider 4 which in turn is integral with a transverse bar 5: the transverse bar 5 is fixed to at least one slideable sheet (for example to an end flap thereof) of the curtain, of the awning or other similar device, and

this makes it possible, by way of the sliding of the slider 4 in the channel 3, to guide the movement of the sheet in order to cover the area, while at the same time conveniently keeping it in tension.

[0020] More specifically, the area to be covered can be that occupied by a window or other opening of any building, and in such case the contoured profile 2 can be part of a vertically sliding perimetric frame, which is designed to support the curtain, which is adapted to cover the window.

[0021] Moreover, the guide assembly 1 can be associated with a horizontally-sliding awning (or oblique or mixed) overhanging outside environments such as gardens, verandahs, courtyards etc.

[0022] More generally, the possibility is not excluded of using the assembly 1, according to the invention, for the guiding of any device similar to curtains, awnings etc, according to specific application requirements, without for this reason departing from the scope of protection claimed herein.

[0023] In a possible embodiment, cited by way of non-limiting example, the movement of the sheet (made for example of polymeric material) can enable its unwinding from a motorized roller (surmounting the window for example) around which it is rolled up when its use is not required.

[0024] According to the invention, the bar 5 comprises a shaft 6 which is rigidly fixed to the sheet and at least one end cap 7, which is associated slideably with the shaft 6. The slider 4 is fixed to the cap 7, in such a way that if there are maladjustments of the profile 2 (for example owing to mounting errors) with respect to the ideal direction of sliding of the sheet, the slider 4, inside the channel 3, is progressively forced to perform a translational motion with respect to the shaft 6, and to the sheet, while the latter is moved. Any possible maladjustments are thus compensated by movements of the slider 4 with respect to the shaft 6, and the slider 4 can thus continue to slide inside the channel 3 while the sheet ascends or descends, thus effectively guiding its movement, without jamming or unwanted stoppages occurring, thus achieving the set aim.

[0025] More specifically, the guide assembly 1 can comprise two contoured profiles 2, arranged on opposite sides of the area to be covered: each profile 2 thus defines a respective guide channel 3, for a slider 4 which is fixed to a corresponding end cap 7.

[0026] Thus, again, the choice to provide sliders 4 that can move slideably with respect to the shaft 6 that is fixed to the sheet enables an optimal guiding of the movement of the sheet by the two profiles 2 that are arranged at the sides of the window, or in any case proximate to the area to be covered. Even if the two profiles 2 are not mutually aligned, owing to problems in the installation step, during the movement of the sheet the sliders 4 can perform a translational motion with respect to the shaft 6 and thus compensate the mutual maladjustments between the two profiles 2, and be effectively guided by the channels 3, while the sheet remains correctly in tension.

[0027] According to the embodiment proposed in the accompanying figures for the purposes of non-limiting example, the slider 4 is constituted substantially by a T-shaped projection 4a, which is designed to be inserted in a channel 3 which is provided with transverse cross-section that is substantially rectangular; however, the possibility is not ruled out of adopting sliders 4 and channels 3 of different shape.

[0028] In an embodiment of significant practical interest, the guide assembly 1 comprises a runner 8, which extends from the cap 7, on the opposite side with respect to the slider 4: the runner 8 can be inserted inside the shaft 6 and is provided with means of guided sliding inside the latter.

[0029] More specifically, the bar 5 comprises a hollow insert 9 that is substantially axially symmetric, and which, as can be seen in Figures 4 and 5, can be coaxially inserted inside the shaft 6 in a rigid manner. The above cited guided sliding means thus comprise a plurality of wheels 10 which are rotatably supported by the runner 8 and are arranged in contact with an inner surface 9a of the insert 9, in order to allow the guided sliding of the runner 8, of the cap 7 and of the slider 4, with respect to the insert 9 and to the shaft 6.

[0030] Conveniently, interposed between the shaft 6 and each cap 7 is a respective elastic element 11, the elastic reaction of which maintains the corresponding slider 4 in forced abutment against a bottom 3a of the channel 3, thus ensuring the optimal positioning of the slider 4 along the channel 3.

[0031] In particular, the elastic element 11 is constituted by a helical spring 12 with axial action, which is wound at least partially around a shank protruding from the runner 8, at the other end with respect to the slider 4: the spring 12 is fixed to the cap 7 and abuts, at the other end, against an inner wall of the insert 9.

[0032] To ensure an optimal operation, the guide channel 3 has, on the opposite side with respect to the bottom 3a, containment tabs 3b which are constituted by the profile 2, and which can be seen in Figure 6: in fact, the tabs 3b define a preset stroke limit for the forced translational motion of the slider 4 with respect to the shaft 6, in the opposite direction with respect to the direction forced by the spring 12: the movement permitted to the slider 4 can thus be positively set in the design phase, by way of a suitable dimensioning of the elements involved, and in particular of the center distance between the bottom 3a and the tabs 3b.

[0033] It should be noted that during the mounting of the assembly 1 and of the sliders 4 in particular, so as to cause these latter items to partially compress the spring 12 (for example for half of its useful stroke, with corresponding partial preloading), so as to ensure that the slider 4 has the same possibility to perform a stroke (inside the channel 3) in both directions of translational motion, and thus the same possibility to compensate maladjustments both in one direction and in the other.

[0034] Conveniently, the guide assembly 1 further comprises a respective locking apparatus 13, which is arranged along each contoured profile 2 in interference with respect to the trajectory of the sliders 4, upon the reaching, by the sheet associated with the sliders 4, of a preset configuration, in order to ensure the stable preservation of such preset configuration.

[0035] For example, if the assembly 1 is used for guiding the sliding of a roll-up vertical sliding sheet (an application to which reference will be made hereinafter by way of non-limiting example), the apparatus 13 can ensure the locking of the sheet once the latter has been completely unwound, and thus completely covers the window.

[0036] In other applications, the apparatus 13 can allow the locking of the sheet of the curtain, of the awning, or other similar device, in any preset configuration, according to specific requirements.

[0037] As will be seen in the following paragraphs, the possibility of the slider 4 to slide with respect to the shaft 6, and thus its optimal positioning along the channel 3, is assurance of correct operation of the locking apparatus 13.

[0038] In particular, the locking apparatus 13 comprises at least one rocker arm 14 (or for example two laterally adjacent ones, as in the accompanying figures) which can oscillate elastically with respect to the profile 2, with which it is rotatably associated with a first fixed end thereof: upon the interference between the locking apparatus 13 and the slider 4, the rocker arm 14 can stably engage a contoured run 15 which is provided along an end appendage of the cap 7, facing and proximate to the slider 4.

[0039] The certainty of correct positioning of the slider 4, with respect to the guide 3 in which it slides, thus ensures the insertion of the rocker arm 14 in the run 15, which otherwise would be prevented, in the event of maladjustments of the profile 2 with respect to the ideal trajectory of the sheet, which could otherwise cause stuttering of the rocker arm 14 against the side walls of the run 15.

[0040] As can be seen in Figure 3, the run 15 has at least one arrest slot 15a for the rocker arm 14, in order to allow the locking of the bar 5, and thus of the sheet in the preset configuration.

[0041] More specifically, the arrest slot 15a of the contoured run 15 is interposed between an entry section 15b and an exit section 15c for the rocker arm 14. When the slider 4, in its movement downward along the channel 3 (according to the application cited above) approaches the rocker arm 14, the latter is automatically inserted into the run 15, through the entry section 15b, and is guided in the run 15 up until the arrest slot 15a, on which a tooth 14a protruding from the free end of the rocker arm 14 (opposite to the fixed end) can abut.

[0042] Upon the reaching, by the tooth 14a, of the arrest slot 15a, the sheet has reached the preset configuration, and is stably kept in it, in that the arrest slot 15a prevents the movement in the other direction (upward) of the tooth 14a, and thus of the slider 4, which is integral with the run 15.

[0043] Moreover, the cap 7 comprises closing means 16 of the exit section 15c, which can move from an open position, in which they allow the exit of the rocker arm 14 from the run 15 through the exit section 15c, to a closed position, in which they prevent the reentry of the rocker arm 14 into the contoured run 15 through the exit section 15c, and vice versa.

[0044] In the solution proposed in the accompanying figures, the closure means 16 are substantially constituted by a plate 17, which is arranged to close the exit section 15c and is inclined with respect to the direction of movement of the slider 4 (and of the run 15) along the channel 3.

[0045] The plate 17 is elastically deformable in order to allow the exit of the rocker arm 14 through the exit section 15c (obviously following a downward movement imposed on the sheet, in order to allow the slider 4 to disengage from the arrest slot 15a), and thus enable the subsequent reascent of the slider 4. But if the rocker arm 14 is outside the run 15, proximate to the plate 17, the latter prevents the accidental entry of the rocker arm 14 into the run 15.

[0046] Operation of the guide assembly according to the invention is the following.

[0047] During the movement of the sheet, in order to bring it to cover a preset area (and subsequently in order to uncover that same area), the profiles 2, with their channels 3, constitute a guide for the movement of the sliders 4, which protrude from opposite sides of the bar 5, thus ensuring a correct movement of the sheet, and keeping it constantly in tension.

[0048] In the event of possible maladjustments between the profiles 2 (or of the single profile 2), the slider 4 can slide inside the insert 9 and inside the shaft 6, without thus running the risk of jamming or other problems during the movement of the sheet, thus ensuring an optimal operation.

[0049] Moreover, the spring 12 keeps the slider 4 constantly pressed against the bottom 3a of the guide 3, thus preventing any possible unwanted movements inside the channel 3, while the tabs 3b define a useful stroke limit, on the opposite side.

[0050] The correct positioning of the slider 4, thanks to its ability to slide with respect to the fixed elements of the bar 5, also ensures an optimal operation of the locking apparatus 13, which is arranged in interference along the trajectory of the slider 4.

[0051] In fact, the certainty of the correct arrangement of the latter enables an optimal insertion, and a subsequent optimal movement, inside the run 15, without risks of stuttering and unwanted malfunctions.

[0052] In practice it has been found that the guide assembly according to the invention fully achieves the set aim, in that the choice to provide a bar, which is fixed to at least one slideable sheet of the curtain or the like, and which comprises a shaft which is rigidly fixed to the sheet

and at least one end cap, which is slideably associated with the shaft and to which is fixed the movable slider in the guide channel, which is provided in a contoured profile, ensures the possibility of the forced translational motion of the slider with respect to the shaft, in the event of maladjustments of the profile with respect to the ideal direction of sliding of the sheet, and thus ensures an effective guiding of the curtain, of the awning or other similar device.

[0053] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0054] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0055] In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

[0056] The disclosures in Italian Utility Model Application No. BO2012U00002 from which this application claims priority are incorporated herein by reference.

[0057] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A guide assembly, for curtains, awnings and similar devices, comprising at least one contoured profile (2), which can be positioned substantially proximate to an area to be covered, said profile (2) longitudinally defining a guide channel (3) for a slider (4) which is integral with a transverse bar (5) that is fixed to at least one slideable sheet of the curtain, of the awning or similar device, for the guided movement of said sheet and the covering of the area, **characterized in that** said bar (5) comprises a shaft (6) which is rigidly fixed to the sheet and at least one end cap (7), which is slideably associated with said shaft (6), said slider (4) being fixed to said cap (7), for the forced translational motion of said slider (4), with respect to said shaft (6), in the event of maladjustments of said profile (2) with respect to the ideal direction of sliding of the sheet.

2. The guide assembly according to claim 1, **characterized in that** it comprises two contoured profiles (2), which are arranged on opposite sides of the area to be covered, each one of said profiles (2) defining a respective guide channel (3), for a slider (4) which is fixed to a corresponding end cap (7).

3. The guide assembly according to claim 1, **characterized in that** it comprises a runner (8), extending from each one of said caps (7), on the opposite side with respect to the respective slider (4), and insertable inside said shaft (6), said runner (8) being provided with means of guided sliding inside said shaft (6).

4. The guide assembly according to one or more of the preceding claims, **characterized in that** said bar (5) comprises a hollow insert (9) that is substantially axially symmetric, and is coaxially and rigidly insertable inside said shaft (6), said guided sliding means comprising a plurality of wheels (10) that are rotatably supported by said runner (8) and arranged in contact with an inner surface (9a) of said insert (9), for the guided sliding of said runner (8), said cap (7) and said slider (4), with respect to said insert (9) and to said shaft (6).

5. The guide assembly according to one or more of the preceding claims, **characterized in that** interposed between said shaft (6) and each one of said caps (7) is a respective elastic element (11), the elastic reaction of said elastic element (11) maintaining the corresponding slider (4) in forced abutment against a bottom (3a) of said channel (3), for an optimal positioning of said slider (4) along said channel (3).

6. The guide assembly according to claim 5, **characterized in that** said elastic element (11) is constituted by a helical spring (12) with axial action, which is wound at least partially around a shank that protrudes from said runner (8), on the opposite side with respect to said slider (4), said spring (12) being fixed to said cap (7) and abutting, at the other end, against an inner wall of said insert (9).

7. The guide assembly according to one or more of the preceding claims, **characterized in that** said guide channel (3) has, on the opposite side with respect to said bottom (3a), containment tabs (3b) which are constituted by said profile (2), in order to define a preset stroke limit to the forced translational motion of said slider (4) with respect to said shaft (6).

8. The guide assembly according to one or more of the preceding claims, **characterized in that** it comprises a respective locking apparatus (13), which is arranged along each one of said contoured profiles (2) in interference with respect to the trajectory of said sliders (4), upon the reaching, by the sheet associated with said sliders (4), of a preset configuration, for its stable preservation.

9. The guide assembly according to claim 8, **charac-**

terized in that said locking apparatus (13) comprises at least one rocker arm (14) that elastically oscillates with respect to said profile (2), upon the interference between said locking body and said slider (4), said rocker arm (14) being stably engageable in a contoured run (15) which is provided along an end appendage of said cap (7), which is facing and proximate to said slider (4), said run (15) having at least one arrest slot (15a) for said rocker arm (14), for the locking of said bar (5) and of the sheet, in said preset configuration.

10. The guide assembly according to claim 9, **characterized in that** said arrest slot (15a) of said contoured run (15) is interposed between an entry section (15b) and an exit section (15c) for said rocker arm (14), said cap (7) comprising means (16) for the closure of said exit section (15c), which can move from an open position to a closed position, for the exit of said rocker arm (14) from said run (15) through said exit section (15c), and are adapted to prevent the reentry of said rocker arm (14) into said contoured run (15) through said exit section (15c).

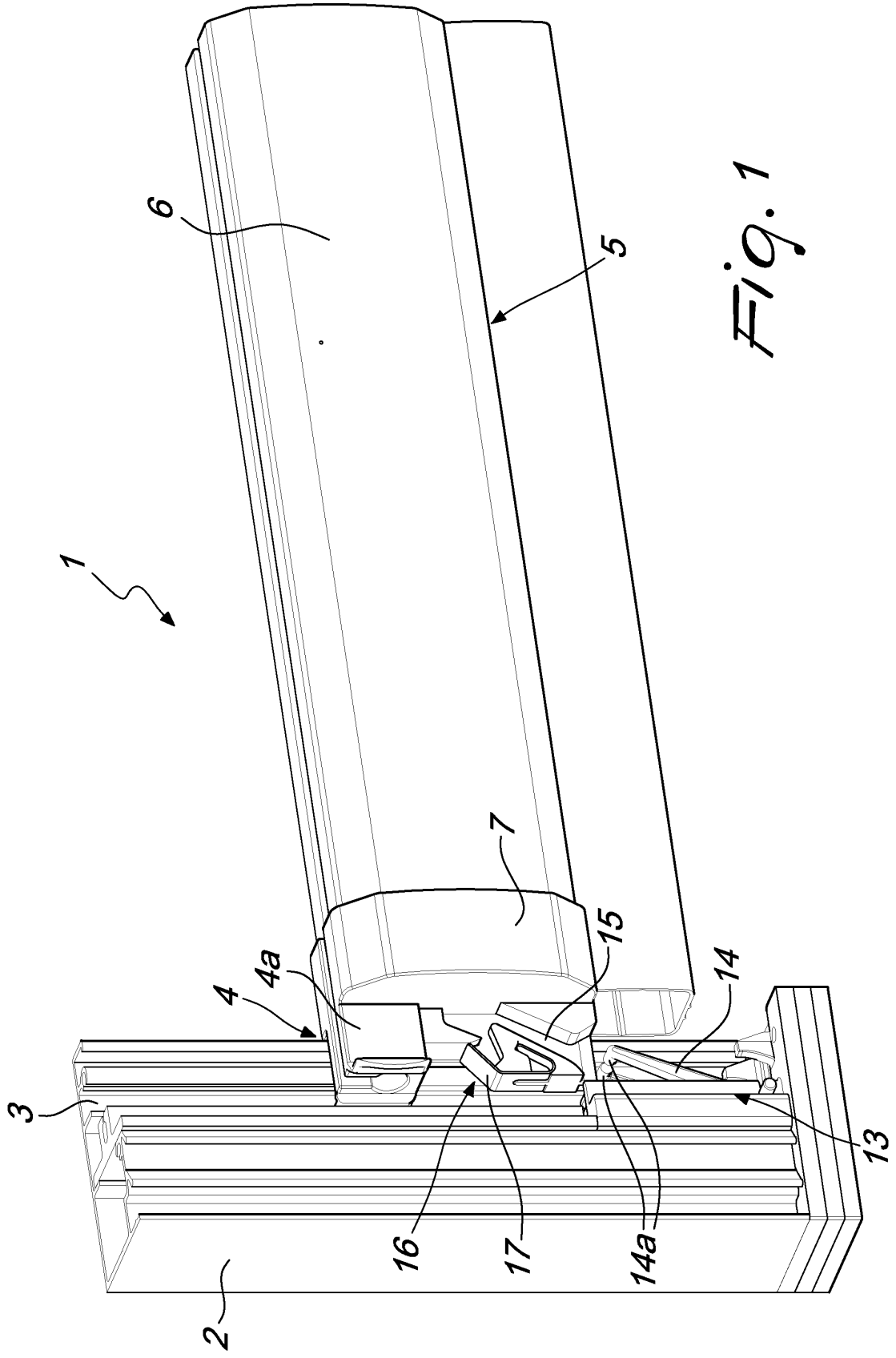

Fig. 1

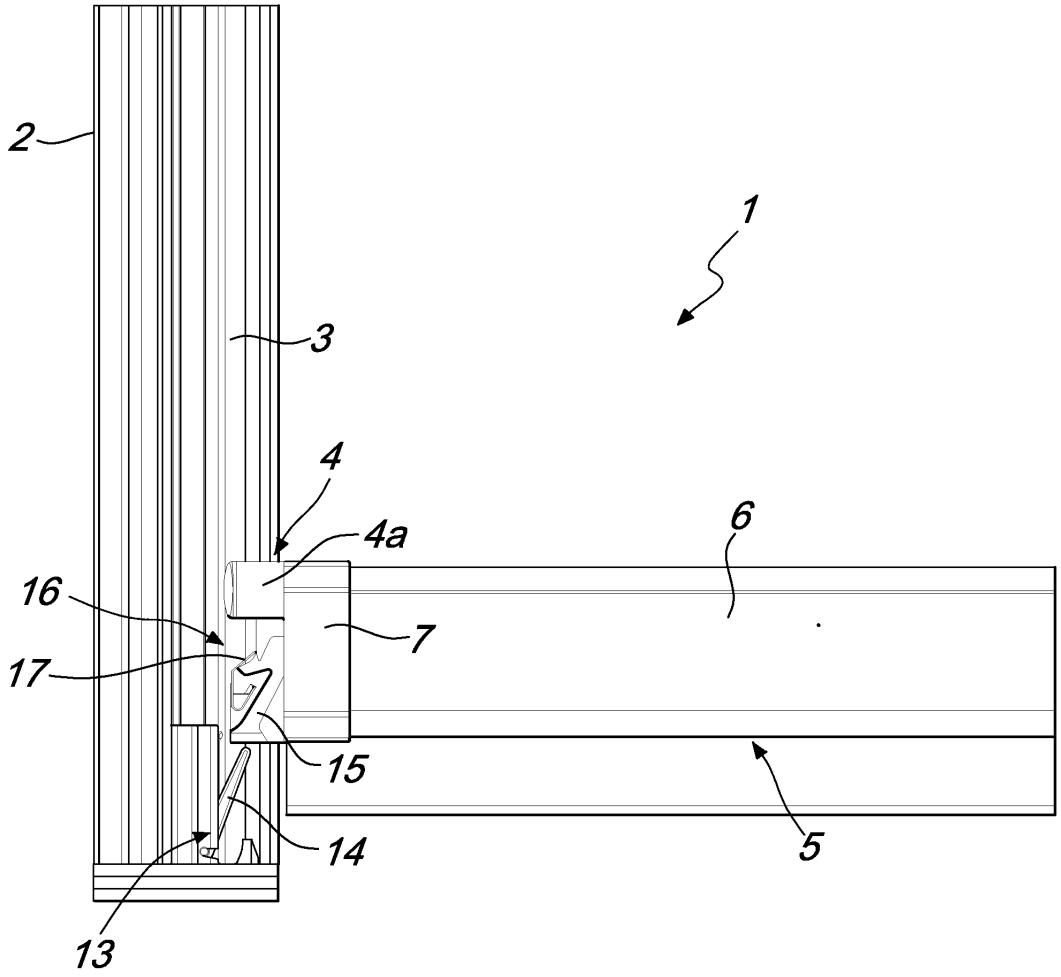

Fig. 2

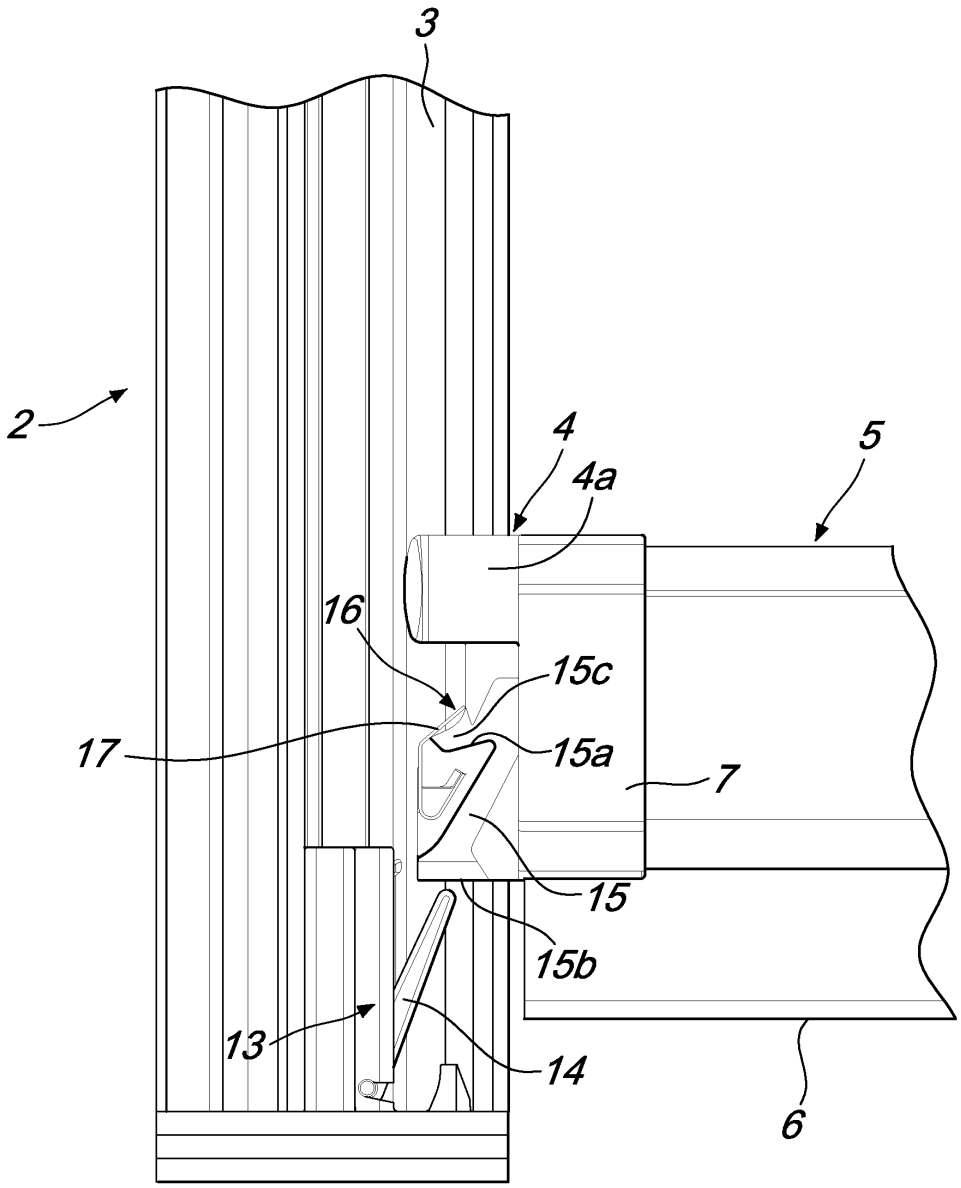

Fig. 3

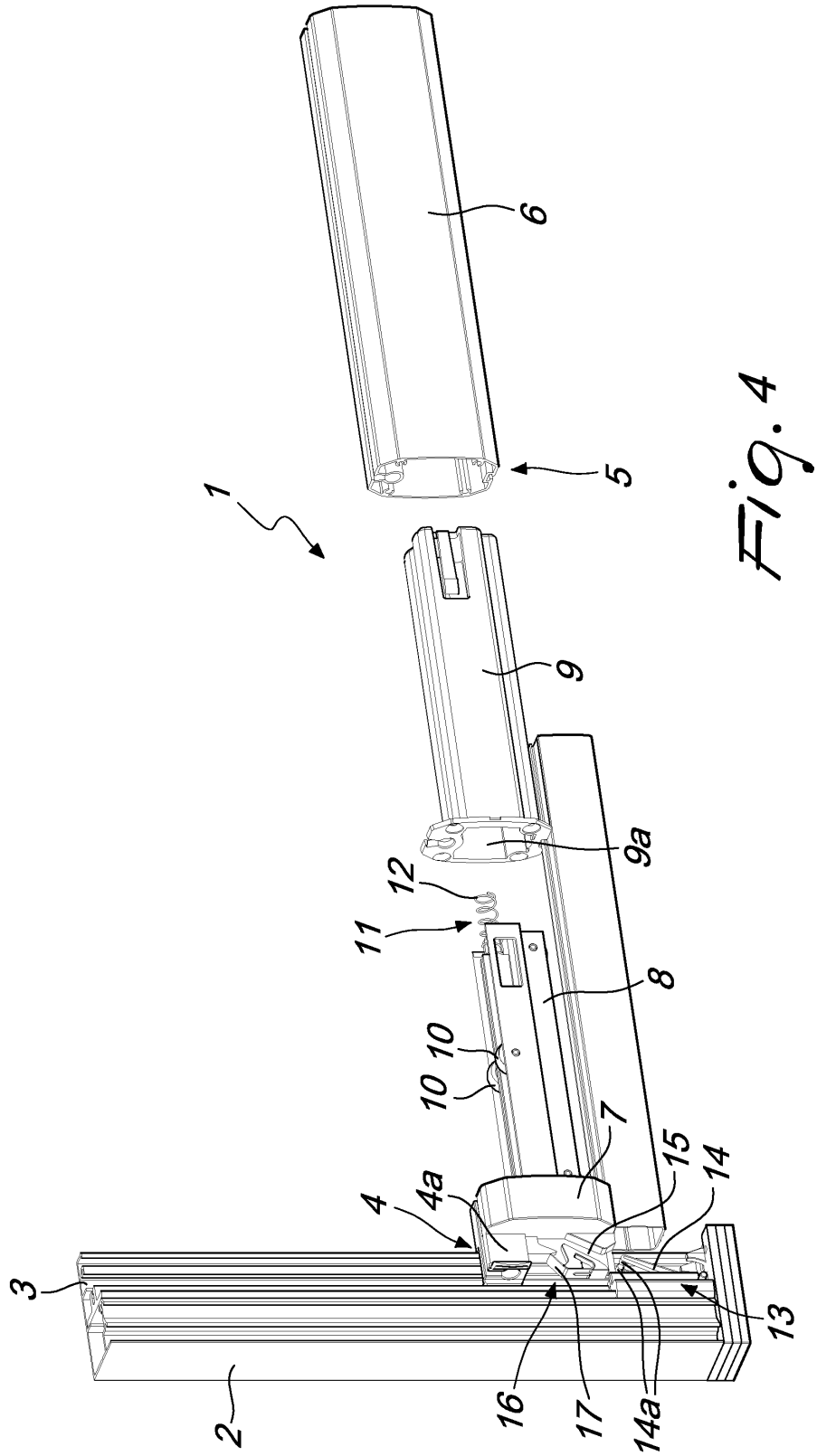

Fig. 4

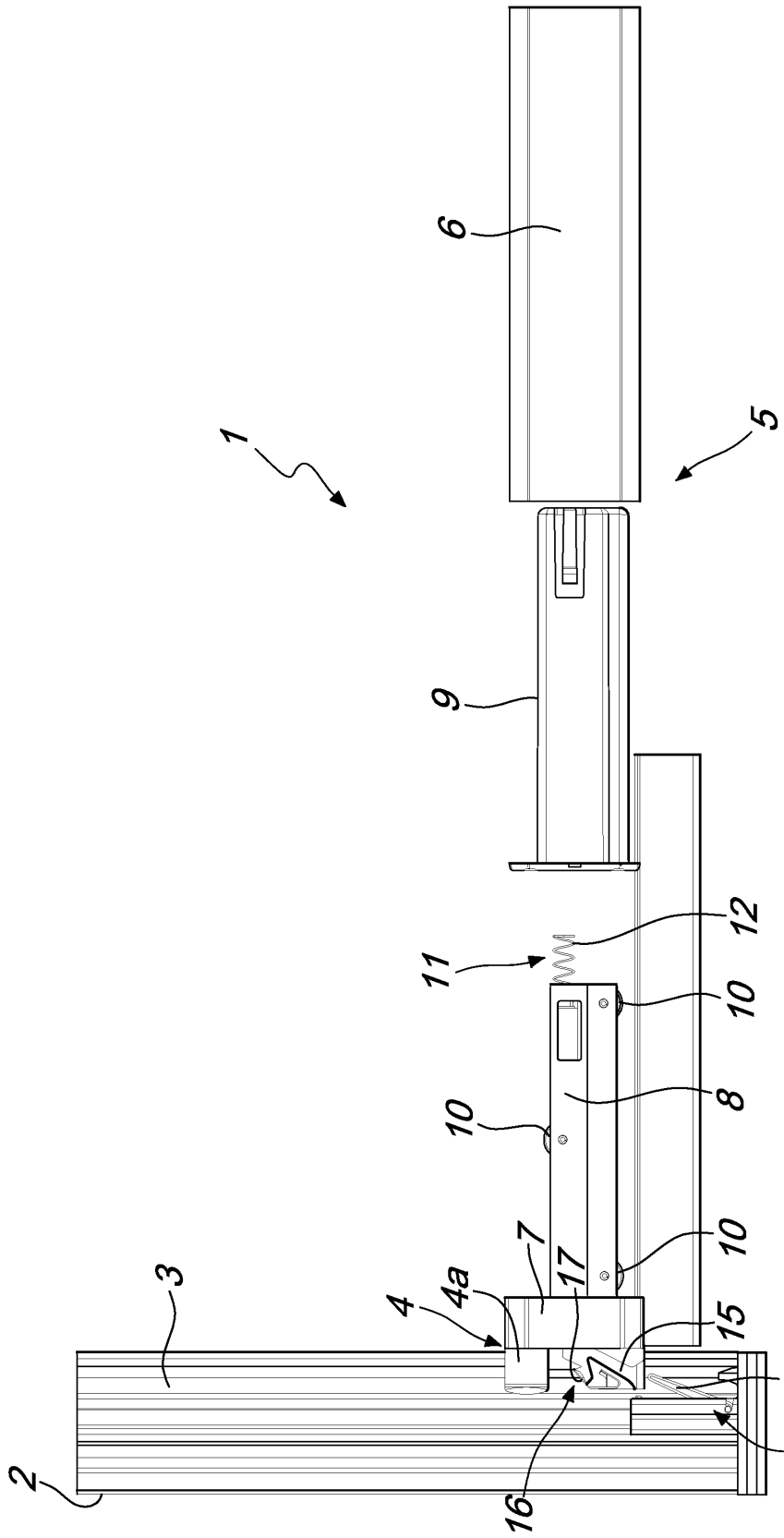

Fig. 5

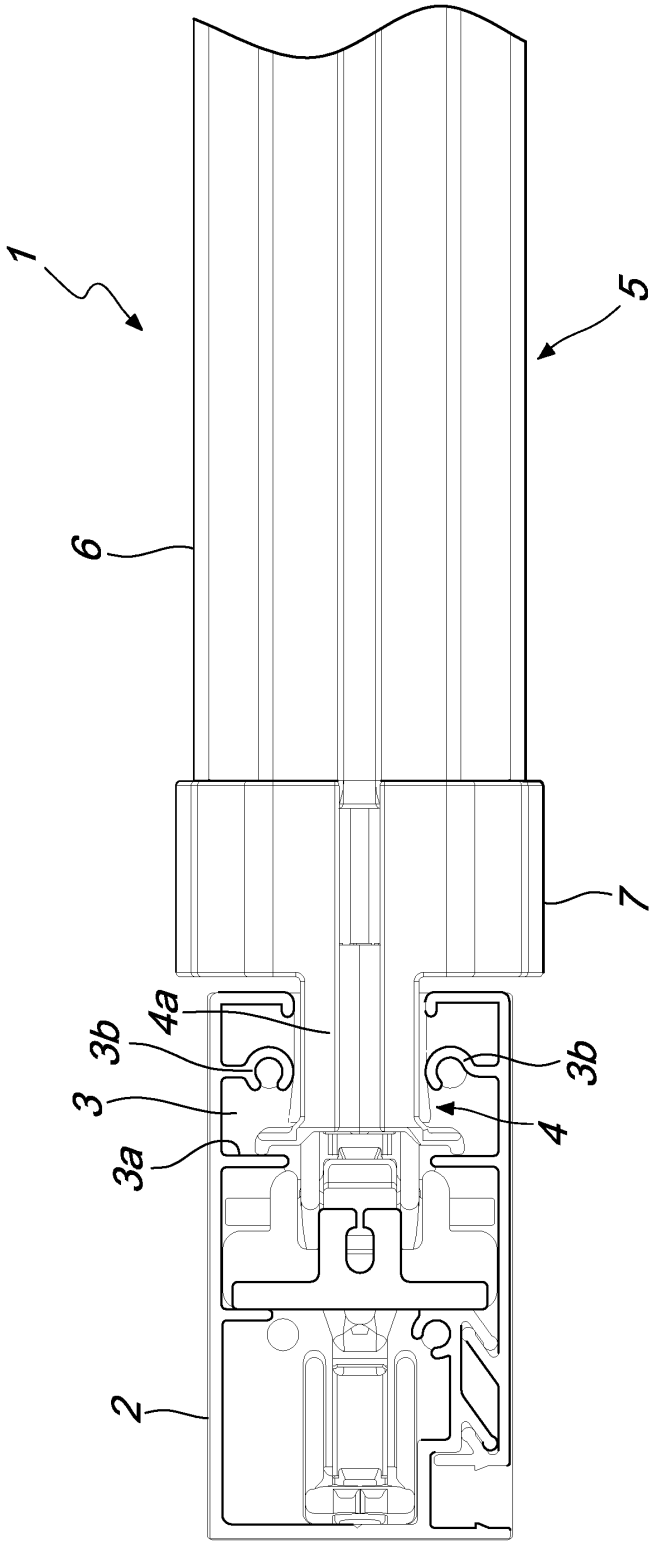

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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