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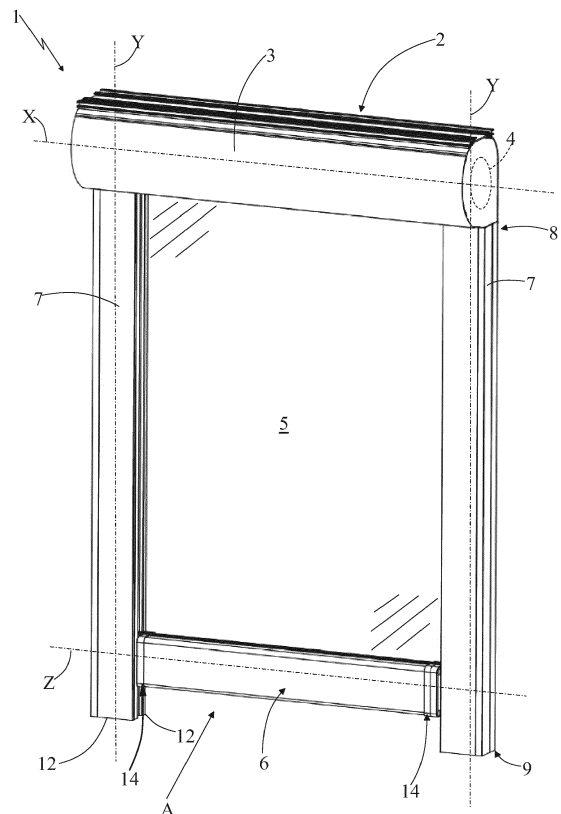
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(54) **FABRIC ROLLER BLIND**

(57) Fabric roller blind, which comprises: a take-up roller (4), around which a fabric (5) is windable; two lateral guideways (7) which are parallel and side-by-side; a bottom bar (6) fixed to the lower edge of the fabric (5) and provided with two lateral ends (14) slidably engaged with the respective lateral guideways (7). The blind (1) also comprises two guide bodies (13), each mechanically associated with a lateral end (14) of the bottom bar (6) and provided with a shaped track (15), intercepted by at least one locking element (16) and in turn provided with an inlet opening (15A) and with an outlet opening (15B). The blind (1) also comprises an oscillating rotor (17), placed at the lower end of the lateral guideway (7), which is provided with a slider element (17A) susceptible of sliding in a guided manner within the shaped track (15) of the guide body (13) of the lateral end (14) of the bottom bar (6) in order to be engaged with and disengaged from the locking element (16) and consequently retaining and releasing said bottom bar (6). The shaped track (15) is provided with one or more steps (19) descending in the travel direction (V) of the slider element (17A) from the inlet opening (15A) to the outlet opening (15B), such that the slider element (17A) is susceptible of sliding on the bottom of the shaped track (15) in the aforesaid travel direction (V), overcoming the steps (19) during descent.



**Fig. 1**

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## Description

### Field of application

**[0001]** The present invention regards a fabric roller blind according to the preamble of the independent claim number 1.

**[0002]** The present fabric roller blind is intended to be advantageously employed for adjustably closing provided building wall openings, in particular of windows, doors, French windows, skylights and similar doors/windows/shutters.

**[0003]** The blind, object of the present invention, is therefore inserted in the industrial field of production of doors/windows/shutters, or also in the field of production of sun protection fabrics, in the field of mosquito netting or for similar applications.

### State of the art

**[0004]** Known on the market are blinds for closing the openings of doors/windows/shutters (such as windows, doors or French windows) provided with a rolling-shutter box which is fixed to a building wall or to a ceiling above the opening to be closed and houses a roller at its interior on which a flexible fabric is susceptible of being wound and unwound.

**[0005]** The fabric usually has rectangular form and is provided with an upper edge fixed to the roller and with a lower edge fixed to a bottom bar aimed to pull the fabric itself.

**[0006]** In addition, the blind comprises two lateral guideways arranged vertically along the corresponding sides of the opening, to which the bottom bar is slidably constrained.

**[0007]** In particular, the bottom bar comprises an aluminum section closed at the lateral ends by two lateral ends slidably coupled to the respective lateral guideways.

**[0008]** Each lateral guideway is obtained with a corresponding aluminum profile of rectangular section, internally hollow and provided with an inner side (facing the inner side of the other lateral guideway) on which a longitudinal slit is obtained into which the corresponding lateral end of the bottom bar is slidably inserted.

**[0009]** In addition, each lateral guideway is longitudinally extended between an upper end, fixed to the rolling-shutter box, and a lower end closed by a base end fixed to the floor at the lower edge of the opening.

**[0010]** In operation, the roller of the blind can be actuated, typically by a motor, to rotate so as to move the fabric between a collected position, in which the fabric is wound around the roller with the bottom bar arranged in abutment against the rolling-shutter box, and an extended position, in which the fabric is unwound from the roller to close the opening and the bottom bar is arranged at the base ends placed at the lower ends of the lateral guideways.

**[0011]** In particular, blinds are known on the market that are provided with a locking mechanism adapted to automatically lock the bottom bar to the base ends when the fabric is brought into the extended position, and to release the bottom bar from the base ends when it is necessary to again wind the fabric around the roller in order to bring the fabric into the collected position.

**[0012]** An example of a blind of known type, provided with a locking mechanism of the bottom bar, is described in the patent application EP 2631388.

**[0013]** In accordance with such patent, the bottom bar is fixed to the lower edge of the fabric and is extended between two lateral ends thereof slidably engaged with the corresponding lateral guideways. The lateral ends are slidably constrained to the corresponding lateral guideway and in turn provided with a shaped guideway. An elastically oscillating rotor is mounted on each of the base terminals of the corresponding lateral guideways and is provided with a slider element which, when the fabric is situated in the extended position, is inserted in the shaped guideway of the slider element of the bottom bar in order to retain the fabric in the extended position. The shaped guideway has a track which allows the oscillating rotor to block the ascent of the bar following a first descent of the latter, and to consequently free it at a second descent.

**[0014]** More in detail, in operation, when the fabric is brought from the collected position to the extended position, the bottom bar descends to the base terminals of the lateral guideways and each oscillating rotor is brought to be inserted with its slider element in the track of the shaped guideway up to an end stop.

**[0015]** Upon release of the bar, the slider element remains coupled to a locking wing of the shaped guideway, blocking the ascent of the bottom bar.

**[0016]** In order to release the bottom bar from the base terminals, the same bar is driven to ascend, overcoming the resistance of the locking wing that is suitably mounted in an elastically pliable manner.

**[0017]** The fabric roller blind of the above-described known type has in practice shown that it does not lack drawbacks. One drawback lies in the presence of an elastically pliable element which over time can be broken or which can otherwise be bent, decreasing its retention and hence in the end it can allow the bottom bar to be accidentally uncoupled, for example following a burst of wind.

**[0018]** Fabric roller blinds of a mosquito net are also known for example from patent US 6591889, such blinds provided with the above-described general characteristics, which provide for associating the shaped guideway with the relative track no longer with the terminals of the bottom bar but rather with the base terminal and instead associating a horizontally slidable rod with the lateral terminal of the bottom bar, along which it can slide for several millimeters.

**[0019]** Also in this case, in operation, when the fabric is brought from the collected position to the extended

position, the bottom bar descends to the base terminals of the lateral guideways and each slidable rod is brought to be inserted with a slider element thereof in the track of the shaped guideway up to an end stop.

**[0020]** Upon release of the bar, the slider element of the rod remains coupled to a locking element of the shaped guideway placed to intercept the track in order to block the ascent of the bottom bar.

**[0021]** In order to release the bottom bar from the base terminals, the same bar is driven to descend several centimeters, allowing the track to move the slider element of the rod outside the bulk of the locking element, such that during the subsequent ascent the slider element is free to exit from an outlet opening of the track so as to release the bottom bar in order to allow the winding of the fabric.

**[0022]** Also this known type of fabric roller blind has various drawbacks.

**[0023]** A first drawback arises from the fact that the slidable rod that translates horizontally travels several millimeters during the steps of coupling and uncoupling with respect to the locking element.

**[0024]** The friction of the rod sliding must be sufficiently low to be able to allow the horizontal sliding without blocking the vertical sliding of the bottom bar. On the other hand, the same friction must however not be too low, otherwise very small collisions in the locking element approaching steps can break the engagement with the same locking element, bringing the slider element directly towards the outlet opening of the track. Finally, a third drawback in the fabric roller blinds of the above-described known type lies in the excessive length of the vertical travel that the bottom bar must complete in order to allow the slider element to travel the track in the steps of coupling and uncoupling with respect to the locking element.

#### Presentation of the invention

**[0025]** In this situation, the problem underlying the present invention is to provide a fabric roller blind fixed to a bottom bar which allows locking and unlocking the bottom bar itself in a simple and safe manner.

**[0026]** Another object of the present invention is to provide a fabric roller blind which is entirely reliable in operation, and in particular capable of ensuring the correct retention of the bottom bar also in the case of sudden movements thereof and which can transmit pulses to the components of the locking device.

**[0027]** Another object of the present invention is to provide a fabric roller blind which is entirely efficient in operation, and in particular able to ensure the correct locking and unlocking of the bottom bar, maintaining the vertical travel of the bottom bar limited during the provided operations of locking and unlocking.

**[0028]** Another object of the present invention is to provide a fabric roller blind which is structurally simple and inexpensive to manufacture and install.

#### Brief description of the drawings

**[0029]** The technical characteristics of the invention, according to the aforesaid objects, can be clearly seen in the contents of the below-reported claims and the advantages thereof will be more evident in the following detailed description, made with reference to the enclosed drawings, which represent a merely exemplifying and non-limiting embodiment of the invention, in which:

- figure 1 shows a front perspective view of the fabric roller blind, object of the present invention;
- figure 2 shows a perspective view of a detail of the blind illustrated in figure 1, relative to a lateral guideway and to the corresponding lateral end of the bottom bar, with some parts removed or transparent in order to better illustrate other parts;
- figures 3A and 3B show two axonometric side views of a detail of the blind relative to an oscillating rotor in two different positions, with some parts removed in order to better illustrate other parts;
- figures 4a,b,c,d,e,f,g,h,i,l show 10 views of a detail of the blind relative to a slider element inserted in a shaped track of a guide body in different operating positions, with some parts removed in order to better illustrate other parts;
- figure 5 shows a perspective view of a detail of the blind illustrated in figure 1, relative to a guide body intended to be mounted at the ends of a bottom bar of the blind;
- figure 6 shows a perspective view of the guide body with, shown at the top, an element for engaging the oscillating rotor arranged just above a first step, with some parts removed in order to better illustrate other parts;
- figure 7 shows a front view of the guide body with, shown at the top, the element for engaging the oscillating rotor arranged in abutment beyond a first step and before a second step, with some parts removed in order to better illustrate other parts;
- figure 8 shows a perspective view of the guide body with, shown at the top, the element for engaging the oscillating rotor arranged housed in the seat of a locking element after the second step, with some parts removed in order to better illustrate other parts;
- figure 9 shows a perspective view of the guide body with, shown at the top, the engagement element of the oscillating rotor arranged in abutment beyond the third step, with some parts removed in order to better illustrate other parts;
- figure 10 shows a front view of the guide body with, shown at the top, the engagement element of the oscillating rotor arranged in its highest stop position against an end stop of the shaped track and lowest stop position against the locking element and with the travel between such stop positions underlined, as well as with some parts removed in order to better illustrate other parts.

### Detailed description of a preferred embodiment

**[0030]** With reference to the enclosed drawings, reference number 1 overall indicates the fabric roller blind, object of the present invention.

**[0031]** The blind 1 is, in operation, employable for adjustably closing an opening A of a door/window/shutter, e.g. of a window, a door or a French window, obtained in a load-bearing element such as a building wall or the load-bearing structure of any building.

**[0032]** In accordance with the embodiment illustrated in figure 1, the blind 1 comprises a support frame 2 intended to be fixed to the load-bearing element, in which the opening A is obtained, and preferably comprising a rolling-shutter box 3 intended to be positioned above the opening A itself.

**[0033]** Advantageously, the rolling-shutter box 3 comprises a hollow tubular body, in particular obtained with an aluminum extrusion, which is extended with axis substantially horizontal between two opposite ends closed by two lateral caps, in particular made of plastic material.

**[0034]** The blind 1 also comprises a take-up roller 4 rotatably constrained to the support frame 2, advantageously housed inside the rolling-shutter box 3, and provided with a rotation axis X that is substantially horizontal.

**[0035]** Around the take-up roller 4, a flexible fabric 5 is susceptible of being wound and unwound; such fabric preferably passes through a lower slit of the rolling-shutter box 3. The fabric 5 can be intended for obtaining a darkening screen, e.g. in substitution of a rolling shutter, a shading screen for filtering sunlight or for obtaining a mosquito netting. Generally, the fabric 5 can be dedicated to closing the opening of a door/window/shutter in order to protect an internal area from sun and/or from wind and/or, more generally, from the atmospheric conditions of the outside environment.

**[0036]** The fabric 5, as a function of its different applications, can be made of synthetic or natural material fabric and it can have the form of a mesh or have a continuous surface of obscurant, filtering or transparent type.

**[0037]** The fabric 5 has a preferably rectangular form and is provided, in a manner *per se* known to the man skilled in the art, with an upper edge fixed to the take-up roller and with a lower edge fixed to a bottom bar 6 arranged parallel to the take-up roller 4 and aimed to pull the fabric 5.

**[0038]** The blind 1 also comprises two lateral guideways 7 extended parallel to each other and side-by-side, between which it is susceptible to slide the fabric 5 following its winding and unwinding around the take-up roller 4.

**[0039]** More in detail, each lateral guideway 7 is longitudinally extended according to a respective first extension direction Y, preferably vertical and substantially orthogonal to the rotation axis X of the take-up roller 4, between an upper end 8 thereof, preferably arranged at the rolling-shutter box 3, and an opposite lower end 9 intended to be arranged at the lower edge of the opening

A, e.g. on a floor or on a windowsill.

**[0040]** The two lateral guideways 7 are intended to be arranged along corresponding sides of the opening A and to be fixed to the load-bearing element (in which the opening A itself is obtained), e.g. by means of anchorage screws.

**[0041]** Advantageously, each lateral guideway 7 is preferably obtained by means of extruded metal sections, in particular of aluminum, and is provided with a transverse section with substantially C-shaped form.

**[0042]** In particular, each lateral guideway 7 is provided with an open side 10, arranged facing the open side 10 of the other lateral guideway 7, and on which a longitudinal slit 11 is obtained in which the bottom bar 6 is slidably constrained.

**[0043]** The bottom bar 6 of the blind 1, fixed to the lower edge of the fabric 5, is longitudinally extended along a second direction of extension Z parallel to the rotation axis X of the take-up roller 4, between two lateral ends thereof 14 slidably engaged with the respective lateral guideways 7.

**[0044]** In particular, the bottom bar 6 is internally hollow and preferably comprises a central body 6', for example constituted by a metal section of extruded aluminum, at whose ends the lateral ends 14 are mechanically mounted.

**[0045]** The latter are preferably made of plastic material, and are placed to laterally close the central body 6' of the bottom bar 6.

**[0046]** In particular, each lateral end 14 of the bottom bar 6 is provided with an enlarged base portion 14', mechanically associated with the lateral end of the central body 6', and a connection portion 140 projectingly extended from the base portion 14' towards the corresponding lateral guideway 7 and slidably inserted in the longitudinal slit 11 of the latter.

**[0047]** The blind 1 also comprises movement means (not illustrated in the enclosed figures) mechanically connected to the take-up roller 4 and adapted to rotate the latter in order to move the fabric 5 between a collected position, in which the fabric 5 is wound around the take-up roller 4, and an extended position, in which the fabric 5 is unwound from the take-up roller 4 to at least partially close the opening A.

**[0048]** In particular, when the fabric 5 is in the collected position, the bottom bar 6 preferably abuts against the rolling-shutter box 3 and, when the fabric 5 is in the extended position, the bottom bar 6 is placed at the lower ends 9 of the lateral guideways 7 with the fabric 5 unwound for the substantially total closure of the opening A.

**[0049]** The fabric 5 is therefore completely guided in its winding and unwinding following the rotation of the take-up roller 4, with its lateral edges advantageously engaged in rails (not illustrated) placed inside the lateral guideways 7, and with the lower edge fixed to the bottom bar 6 in turn engaged in the lateral guideways 7 themselves.

**[0050]** In particular, during the movement of the fabric

5, the bottom bar 6 keeps the fabric 5 itself stretched and is moved, remaining horizontal, with its lateral ends 14 engaged with the lateral guideways 7.

**[0051]** Preferably, the aforesaid movement means are of manual type and comprise, in a *per se* entirely conventional manner, a winding spring connected to the take-up roller 4 and housed together with the latter within the rolling-shutter box 3 of the blind 1. The unwinding of the fabric 5 will occur by manually overcoming the elastic reaction force of the aforesaid spring.

**[0052]** For the purpose of the present invention, the movement means can be obtained in a different manner, in a way that is *per se* entirely conventional, with a motor housed inside the take-up roller 4, advantageously at one end thereof.

**[0053]** The blind, object of the invention, then comprises at least one guide body 13 mechanically associated with a lateral end 14 of the bottom bar 6 (and preferably two guide bodies 13 associated with the two corresponding lateral ends 14).

**[0054]** Each guide body 13 defines a shaped track 15, delimited by a bottom and by a guide profile described in detail with reference to the single sections.

**[0055]** The shaped track 15 is intercepted by at least one locking element 16, advantageously projecting from the bottom and preferably shaped with a concavity directed at least partially upward so as to define a housing seat for a slider element 17A described in detail hereinbelow.

**[0056]** The shaped track 15 is also provided with at least one inlet opening 15A and with at least one outlet opening 15B susceptible of being crossed by the slider element 17A. The blind 1 also comprises at least one oscillating rotor 17, which is arranged at the lower end of at least one of the lateral guideways 7 and preferably rotatably engaged with at least one base terminal 18 mounted at the end of the lateral guideway 7. More in detail, the oscillating rotor is provided with an engagement portion 17A susceptible of sliding in a guided manner within the shaped track 15 of the guide body of the lateral end 14 of the bottom bar 6, in order to be engaged with and disengaged from the locking element 16 and consequently retaining and releasing the bottom bar 6.

**[0057]** In accordance with the idea underlying the present invention, the shaped track 15 is provided with one or more steps 19 descending in the travel direction from the inlet opening 15A to the outlet opening 15B and the slider element 17A of the oscillating rotor 17 is susceptible of sliding on the bottom of the shaped track 15 in its travel direction, overcoming the step 19 or the steps 19 if there is more than one.

**[0058]** Of course, it must be intended that the slider element 17A is susceptible of sliding on the bottom of the track 15 even only for sections close to the steps 19 and not necessarily for the entire path of the track 15.

**[0059]** Due to the aforesaid invention, therefore, the slider element 17A, and hence the oscillating rotor 17, is constrained once it has entered into the shaped track 15

to follow the entire path in order to exit from the same track, ensuring the correct locking and release of the same slider element 17A with respect to the guide body 13.

5 **[0060]** In other words, it is not possible to jump from one position to another of the shaped track 15, since such position jumps would be prevented by the steps 19 which act for the sake of safety for the non-return of the slider element 17A.

10 **[0061]** More in detail, each oscillating rotor 17 is rotatably engaged to the corresponding base terminal 18 by means of a pin 170 integral with the same oscillating rotor 17 and advantageously inserted in two through holes made on two shoulders projecting from the base terminal

15 18. **[0062]** The oscillating rotor 17 is preferably constituted by a small elongated rod transversely and projectingly bearing fixed thereto, at a first free end, the slider element 17A, and at the second constrained end, the pin 170.

20 **[0063]** Preferably, the oscillating rotor 17 is made of plastic material and is obtained in a single body both with its slider element 17A and with its pin 170.

**[0064]** The slider element 17A advantageously has a prismatic form, e.g. with triangular base. In order to maintain the slider element 17A in abutment against the bottom of the shaped track 15, at least at the steps 19, the oscillating rotor is maintained pressed by elastically pliable means in a transverse direction with respect to its rotation plane. Such means are obtained by the transverse elasticity of the oscillating rotor 17, which as stated advantageously is in rod form, and is susceptible of being elastically bent transversely with respect to the rotation plane of the oscillating rotor, overcoming the corresponding step 19.

25 **[0065]** Otherwise, in accordance with a different embodiment of the invention, not illustrated in detail since easy to understand for the man skilled in the art, the oscillating rotor 17 is elastically thrust transversely with respect to the rotation plane of the rotor by a spring mounted between the same oscillating rotor 17 and the base terminal 18 and for example mounted coaxially around the pin 170.

30 **[0066]** Once the step 19 has been overcome, the oscillating rotor 17 is thrust by the elastically pliable means towards the bottom of the shaped track 15 placed beyond the step, so as to encounter the rise of the step as insuperable constraint with respect to movements in the direction opposite that of travel of the shaped track 15.

35 **[0067]** The connection portions 140 of the lateral ends 14 mounted at the ends of the central body 6' of the bottom bar 6 vertically slide in the lateral guideways 7, being advantageously dimensionally engaged at their interior due to two first sliding portions 140', 140" (see figure 2) which slide on the internal faces of the lateral guideways

40 7. **[0068]** The guide bodies 13 of the lateral ends 14 of the bottom bar 6 are advantageously slidably movable with respect to the central body 6' of the bottom bar 6

and with respect to the connection portions 140 of the same lateral ends 14, preferably for a travel of less than a centimeter, in order to compensate for misalignments along the lateral guideways 7. For such purpose, the guide bodies 13 are provided with an elongated rod-like appendage 13' which is inserted in a groove 13" made in the central body 6' of the bottom bar 6. Advantageously, each guide body 13 is slidably engaged with respect to the overlying connection portion 140 due to a coupling of its slide appendage 130 in a track 130' obtained on a lower edge of the connection portion 140.

**[0069]** In turn, the guide body 13 is slidably mounted on the corresponding lateral end 14 along an axis parallel to the extension of the bottom bar 6 in order to always be maintained perfectly centered with respect to the lateral guideways 7 on which it advantageously slides due to two second sliding portions 130', 130" (see figure 2).

**[0070]** For such purpose, the guide body 13 is advantageously provided with a stem 1300, which is slidably inserted in a guided manner to size within a through hole obtained on the base portion 14' of the lateral end 14 of the bottom bar 6.

**[0071]** In accordance with the preferred embodiment of the invention illustrated in the enclosed figures, the shaped track 15 of the guide body 13 comprises three sections 151, 152 and 153 in succession in the direction V of travel by the slider element 17A. The first section 151 is delimited by a first bottom 151A and by a first upper guide profile 151B. The latter has a final portion 151B' having an orientation directed towards an end stop 20 and provided with at least one first vertical component 151BV oriented downward and with a first horizontal component 151BO, oriented in a first directed aimed in accordance with the travel direction of the shaped track 15.

**[0072]** The shaped track 15 then comprises, in addition to the end stop 20 placed at the end of the first section 151, also the locking element 16, substantially arranged below the end stop 20.

**[0073]** The first section 151 of the shaped track 15 is indicated with a solid line in figure 5 and provides for an initial ascent part relative to the engagement element 17A up to the end stop 20 and a final descent part relative to the engagement element 17A from the end stop 20 to the locking element 16.

**[0074]** The second section 152 of the shaped track 15 is in turn delimited by at least one second bottom 152A and by at least one second upper guide profile 152B. The latter has at least one second vertical component 152BV oriented downward, and a second horizontal component 152BO oriented in the above-specified first direction.

**[0075]** More in detail, the end stop 20 is advantageously obtained, in the case of the enclosed figures, with a face of the second upper guide profile 152B of the second section 152.

**[0076]** The third section 153 of the shaped track 15 is in turn delimited by at least one third bottom 153A and by at least one third guide profile 153B. The latter has,

at a final section thereof 153B', at least one third vertical component 153BV oriented upward, and a second horizontal component 153BO oriented in a second horizontal direction opposite the above-specified first horizontal direction.

**[0077]** The locking element 16 is partially directed upward or in a direction opposite the final portion 151B' of the first upper guide profile 151B of the first section 151 of the shaped track and opposite the second upper guide profile 152B of the second section 152 of the shaped track 15.

**[0078]** The locking element 16 also has a transfer guide profile 16B provided with a fourth vertical component 16BV oriented upward, and a fourth horizontal component 16BO oriented in the above-specified first direction.

**[0079]** In this manner, the engagement element 17A, being moved due to the horizontal components of the guide profiles of the track, bounces first on the final portion 151B' of the first upper guide profile 151B of the first section 151, then on the transfer guide profile 16B of the locking element 16 and then on the upper guide profile 152B of the second section 152.

**[0080]** Preferably, at least one first step 19A is arranged at the first bottom 151A of the first section 151. More particularly, such first step 19A is arranged a bit higher than the locking element 16 (intercepted by the engagement element 17A in the initial part of the relative ascent of the first section 151 up to the end stop 20), in order to prevent, during the provided step of coupling the bottom bar 6, the slider element 17A of the oscillating rotor 17 from entering the first section 151 in a direction opposite that of travel V of the shaped track 15 and it does not go towards the end stop 20 of the first section 151. More in detail, due to the first step 19A, even if the slider element 17A has not reached the end stop 20, if the bottom bar 6 is retracted upward and if the slider element 17A has gone beyond the first step 19A, then the same slider element 17A is forced by the first step 19A itself to advance towards the end stop 20, as it is no longer able to return towards the inlet opening 15A.

**[0081]** The shaped track 15 is preferably also provided with a second step 19B substantially arranged on the bottom of the shaped track 15 itself between the end stop 20 and the locking element 16 (intercepted by the engagement element 17A in the relative final part of the descent of the first section 151 to the locking element 16), in order to prevent the slider element 17A - which is descending with respect to the bottom bar 6 that ascends - from returning towards the inlet opening 15A.

**[0082]** In addition, the shaped track 15 is preferably also provided with a third step 19C substantially arranged at the third bottom of the third section 153, in order to prevent, during the descent of the bottom bar 6, that the slider element of the oscillating rotor moves into the outlet opening 15B rather than the inlet opening 15A.

**[0083]** Such third step 19C is in particular arranged at the outlet opening 15B of the shaped track 15.

[0084] The rotation movement of the oscillating rotor 17 requires a very low force, which is applied in a position that is distal from the rotation axis X of the pin 170 of the oscillating rotor 17 and with a negligible rotation friction.

[0085] It follows that the tilted surfaces of the guide profiles of the sections of the shaped track 15, in order to move the slider element 17A of the oscillating rotor 17, can have a tilt greater than the conventional 45° used in the coupling/uncoupling devices of the known conventional blinds.

[0086] It results that the vertical travel H (see figure 10) of the bottom bar 6 necessary for the coupling-uncoupling is reduced (in the current case H is comprised between 3 and 6 mm and preferably is about 4.5 mm).

[0087] Therefore, advantageously, the first upper guide profile 151B of the first section 151 of the shaped track 15 is tilted with respect to the vertical with an angle A greater than 45° in order to decrease the vertical travel of the locking element.

[0088] Preferably, also the second upper guide profile 152B of the second section 152 of the shaped track 15 is tilted with respect to the vertical with an angle B greater than 45°, still in order to decrease the vertical travel of the locking element.

[0089] The first section 151 of the shaped track 15 is provided with an introduction slide 25 associated with the inlet opening 17A and susceptible of conveying the slider element 17A of the oscillating rotor 17 towards the opening 15A. Such slide 25 guides the slider element towards the inlet opening 15A of the shaped track 15 also by forcing it transversely to the rotation plane of the same oscillating rotor 17, for such purpose being tilted with respect to the rotation plane of the oscillating rotor 17.

[0090] In operation, the blind 1 described up to now mainly regarding structure allows locking and unlocking the bottom bar 6 at the lower end of the lateral guideways 7 due to the engagement and disengagement of the oscillating rotors 17 with respect to the guide bodies 13.

[0091] In figures 4a-4l (lacking illustrations of the steps for the sake of representation simplicity), the sequence of rotation movements of the oscillating rotor 17 is indicated. Initially, this is brought into the inlet opening 15A of the shaped track due to a tilted introduction profile 40.

## Claims

1. Fabric roller blind (1), which comprises:

- a support frame (2) intended to be fixed to a load-bearing element in which an opening (A) is made;
- a take-up roller (4) rotatably constrained to said support frame (2), having a substantially horizontal rotation axis (X), and intended to be positioned above said opening (A);
- two lateral guideways (7) extended parallel to one other and side-by-side each other along re-

spective first extension directions (Y) substantially orthogonal to the rotation axis (X) of said take-up roller (4), and intended to be fixed to said load-bearing element along respective sides of said opening (A);

- a fabric (5) extended between an upper edge thereof fixed to said take-up roller (4) and a lower edge thereof, and susceptible of sliding between said lateral guideways (7);

- a bottom bar (6), to which the lower edge of said fabric (5) is fixed and which is extended, along a second extension direction (Z) parallel to the rotation axis (X) of said take-up roller (4), between two lateral ends thereof (14) slidably engaged with the corresponding lateral guideways (7);

- movement means mechanically connected to said take-up roller (4) and adapted to rotate said take-up roller (4) so as to move said fabric (5) between a retracted position, in which said fabric (5) is wound around said take-up roller (4), and an extended position, in which said fabric (5) is at least partially unwound from said take-up roller (4) extended between said lateral guideways (7) to cover at least part of said opening (A);

- at least one guide body (13), which is mechanically associated with a lateral end (14) of said bottom bar (6) and is provided with a shaped track (15), intercepted by at least one locking element (16) and provided with at least one inlet opening (15A) and with at least one outlet opening (15B);

- at least one oscillating rotor (17), placed at the lower end of at least one said lateral guideway (7), is provided with a slider element (17A) susceptible of sliding in a guided manner within the shaped track (15) of the guide body (13) of the lateral end (14) of said bottom bar (6) in order to be engaged with and disengaged from said locking element (16) and consequently retaining and releasing said bottom bar (6);

said blind (1) being **characterized in that** said shaped track (15) is provided with one or more steps (19) descending in the travel direction (V) from said inlet opening (15A) to said outlet opening (15B) and **in that** the slider element (17A) of said oscillating rotor (17) is susceptible of sliding on the bottom of said shaped track (15) in said travel direction (V), overcoming said one or more steps (19) during descent.

2. Blind according to claim 1, **characterized in that** said oscillating rotor (17) is elastically thrust against the bottom of said shaped track (15), transversely with respect to the rotation plane of said rotor by elastically pliable means at said step (19).

3. Blind according to claim 1, **characterized in that** said oscillating rotor (17) is elastically bent towards the bottom of said shaped track (15) transversely with respect to the rotation plane of said oscillating rotor (17), by exerting an elastic pressure against the bottom of said track at least at said step (19). 5
4. Blind according to any one of the preceding claims, **characterized in that** said bottom bar (6) comprises a central body (6') and the guide body (13) of said at least one lateral end (14) of said bottom bar (6) is slidably mounted on said central portion (6'), in order to compensate for misalignments of the lateral guide-ways (7). 10
5. Blind according to any one of the preceding claims, **characterized in that** the shaped track (15) of said guide body (13) comprises at least one first section (151) delimited by at least one first bottom (151A) and by at least one first upper guide profile (151B) having at least one first vertical component (151BV) oriented downward; at least one end stop (20) placed at the end of said first section (151); at least one locking element (16) substantially arranged below said end stop (20); at least one second section (152) delimited by at least one second bottom (152A) and by at least one second upper guide profile (152B) having at least one second component oriented downward (152BV), at least one third section (153) delimited by at least one third bottom (153A) and by at least one third lower guide profile (153B); said shaped track (15) being provided with at least one first step (19A) arranged at the first bottom (151A) of said first section (151). 15  
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6. Blind according to claim 5, **characterized in that** said shaped track (15) is provided with at least one second step (19B) arranged substantially on the bottom of said shaped track (15) between said end stop (20) and said locking element (16). 40
7. Blind according to claim 5, **characterized in that** said shaped track (15) is provided with at least one third step (19C) substantially arranged at the third bottom of said third section (153). 45
8. Blind according to claim 5, **characterized in that** the first upper guide profile (151B) of the first section (151) of said shaped track (15) is tilted, with respect to the vertical with an angle (A) greater than 45°. 50
9. Blind according to claim 5, **characterized in that** the second upper guide profile (152B) of the second section (152) of said shaped track (15) is tilted, with respect to the vertical with an angle (B) greater than 45°. 55
10. Blind according to any one of the preceding claims,

**characterized in that** said shaped track (15) is provided with an introduction slide (25) associated with said inlet opening (15A) and susceptible of conveying the slider element (17A) of said oscillating rotor (17) towards said inlet opening (15A), by transversely forcing it with respect to the rotation plane of said oscillating rotor (17) itself.

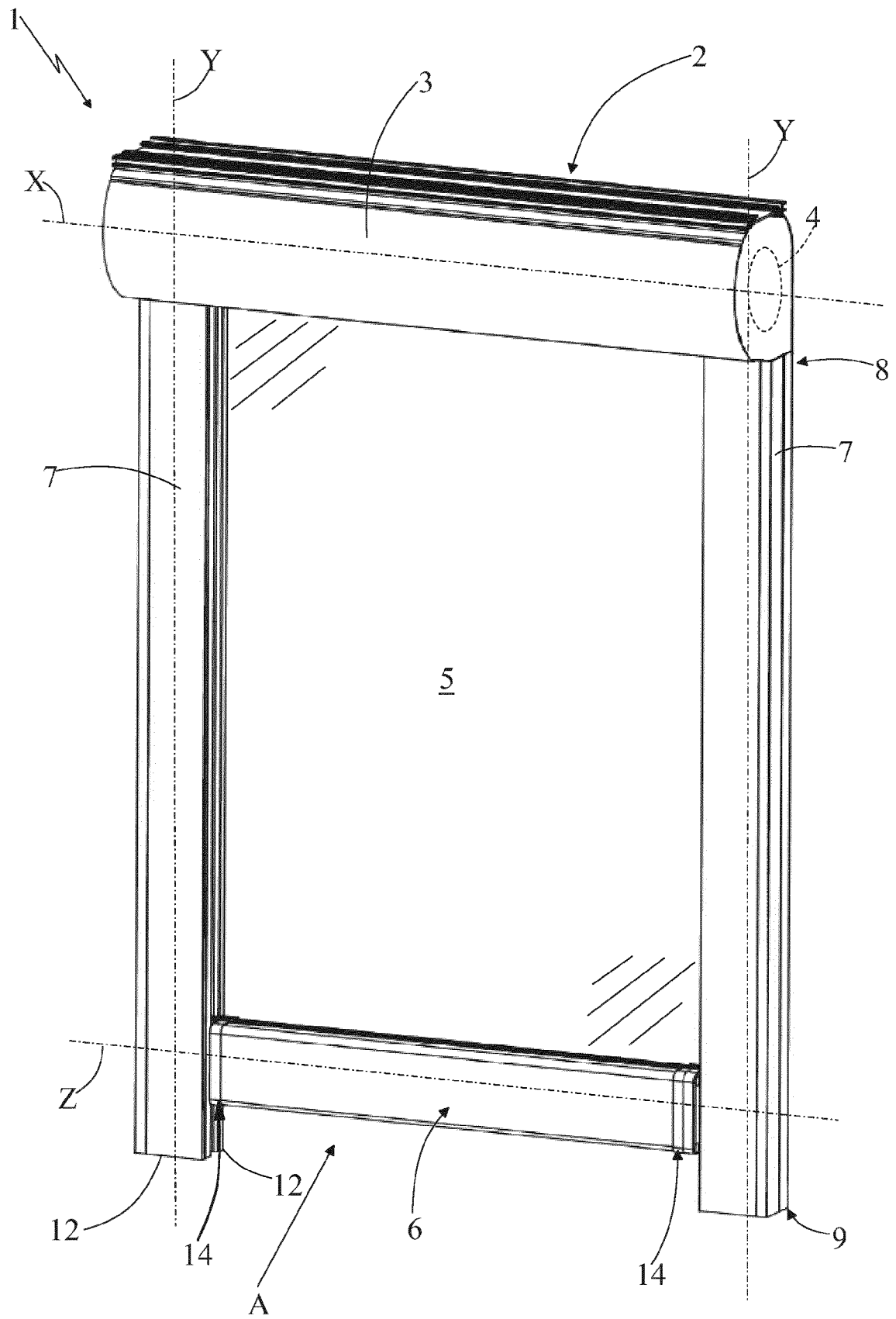


Fig. 1

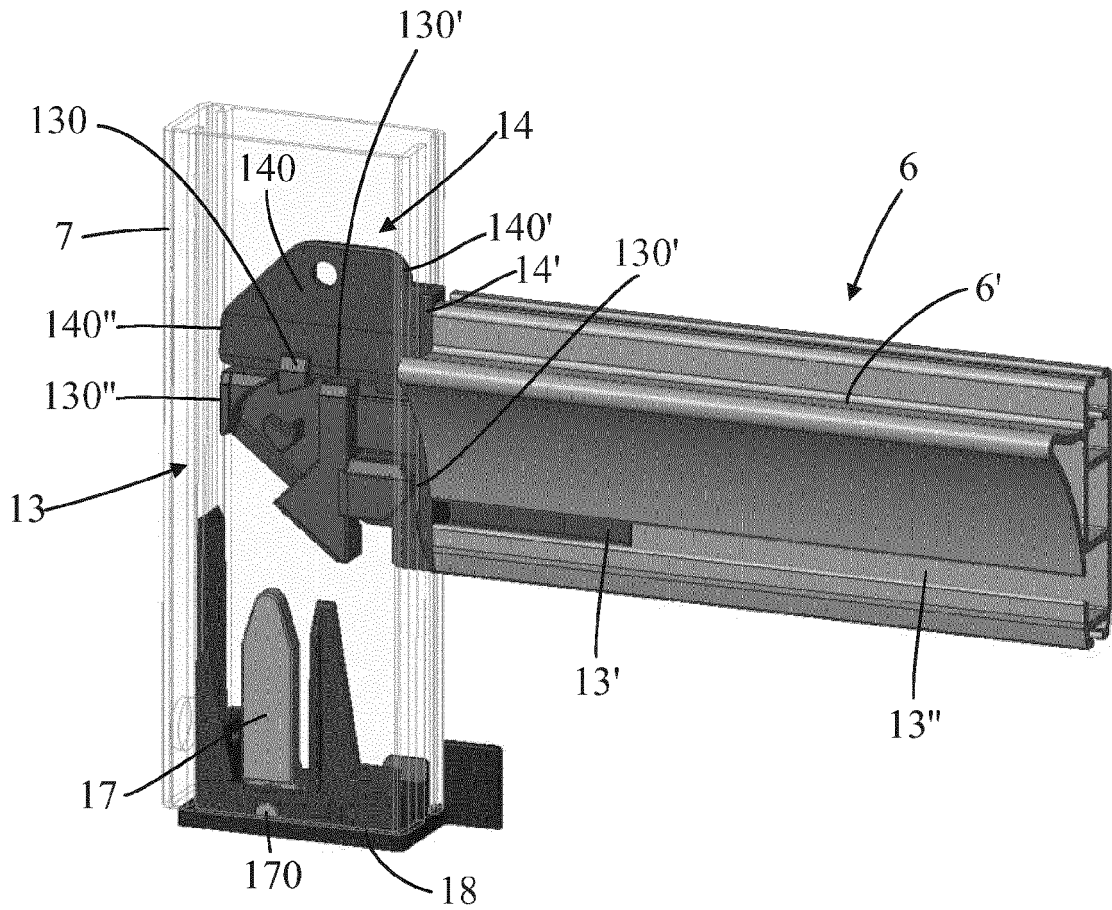


Fig. 2

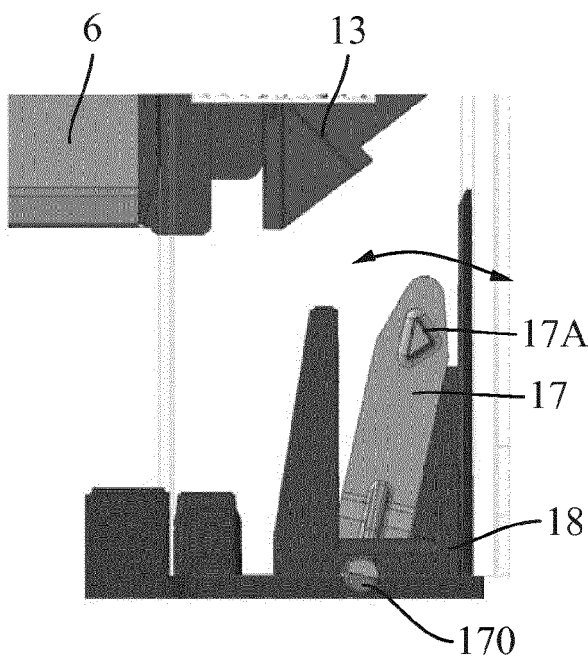


Fig. 3A

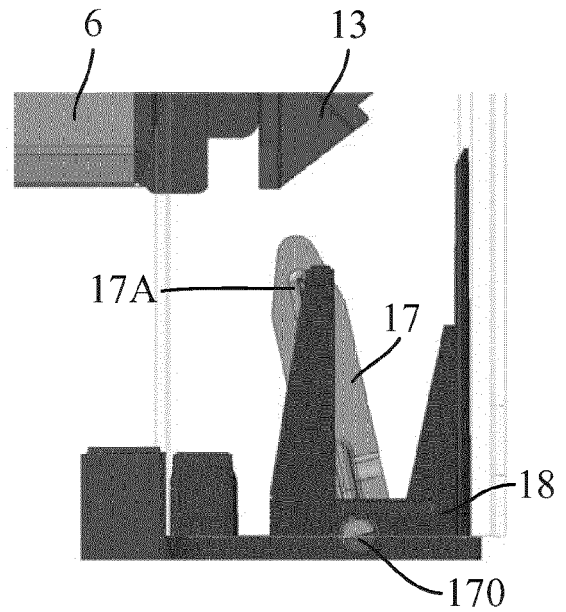


Fig. 3B

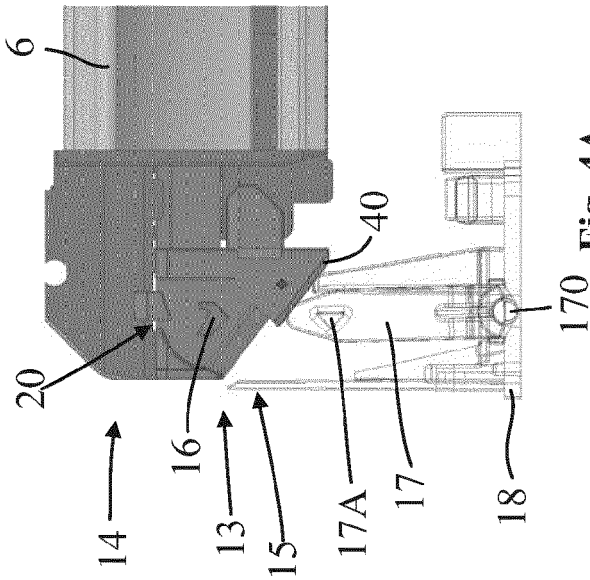


Fig. 4A

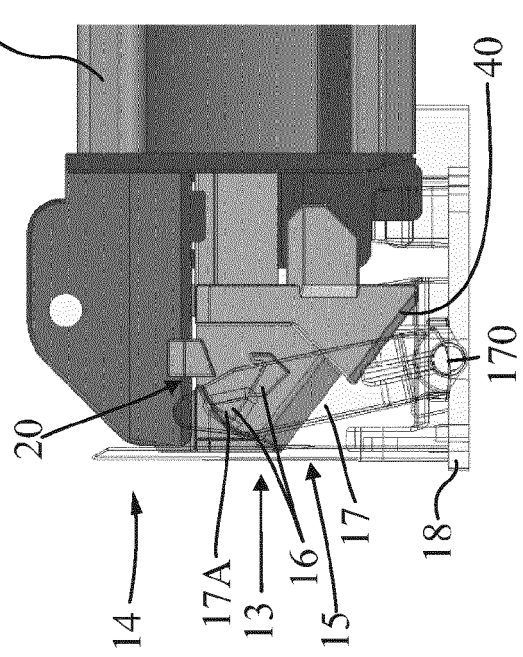


Fig. 4C

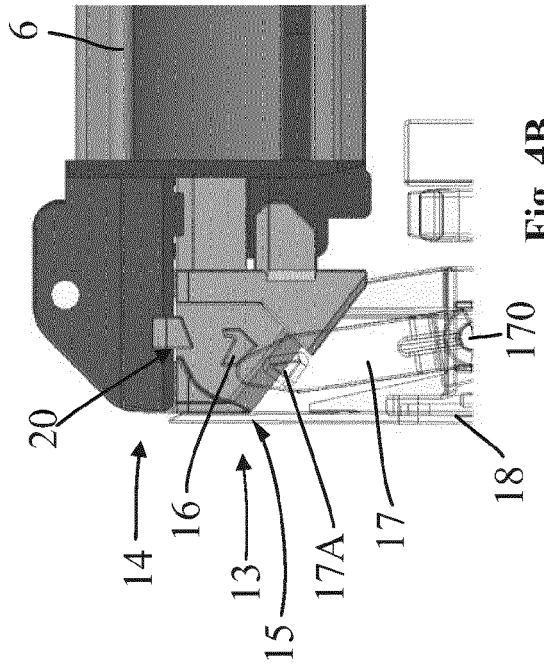


Fig. 4B

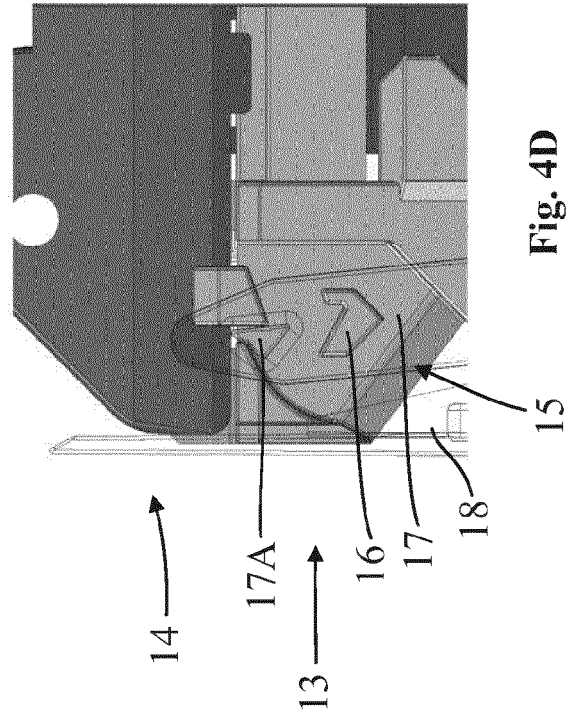


Fig. 4D

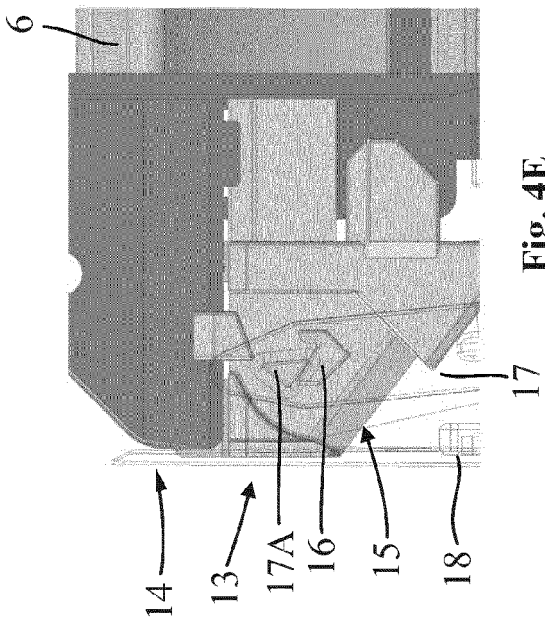


Fig. 4E

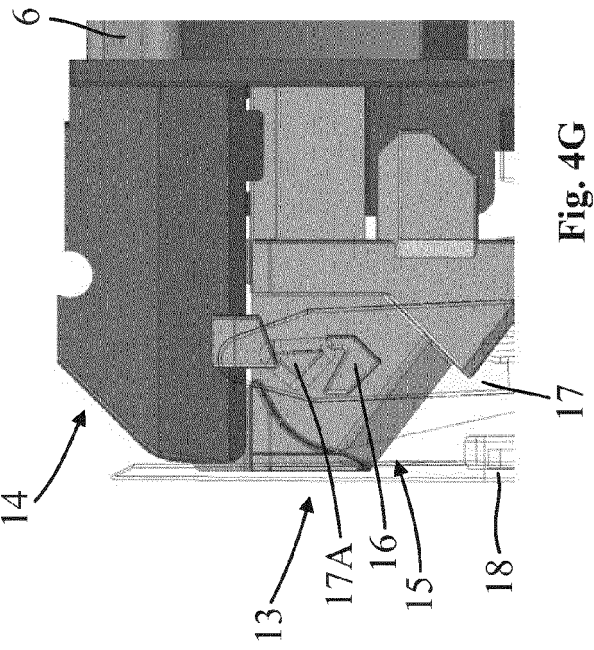


Fig. 4G

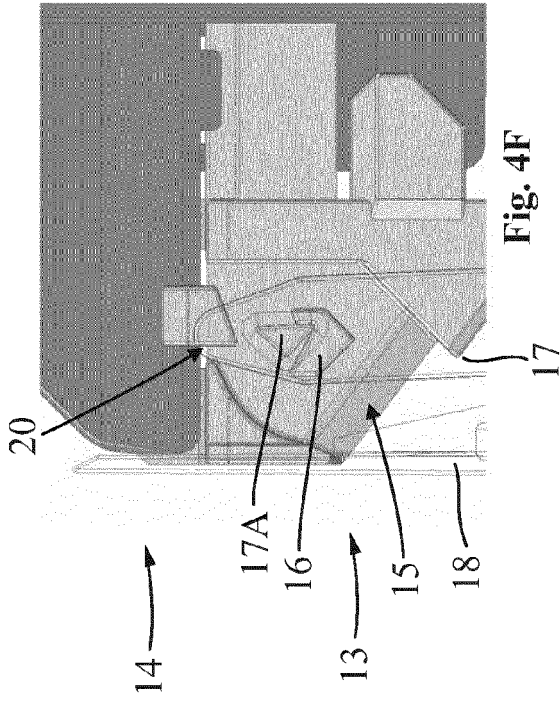


Fig. 4F

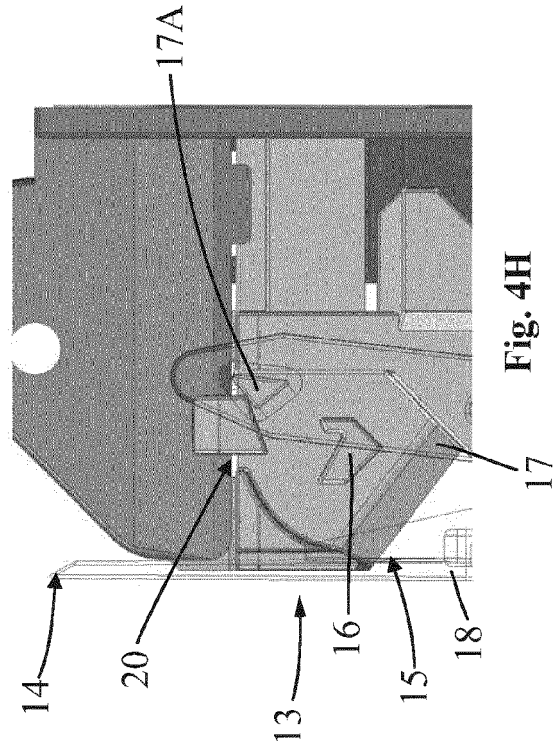


Fig. 4H

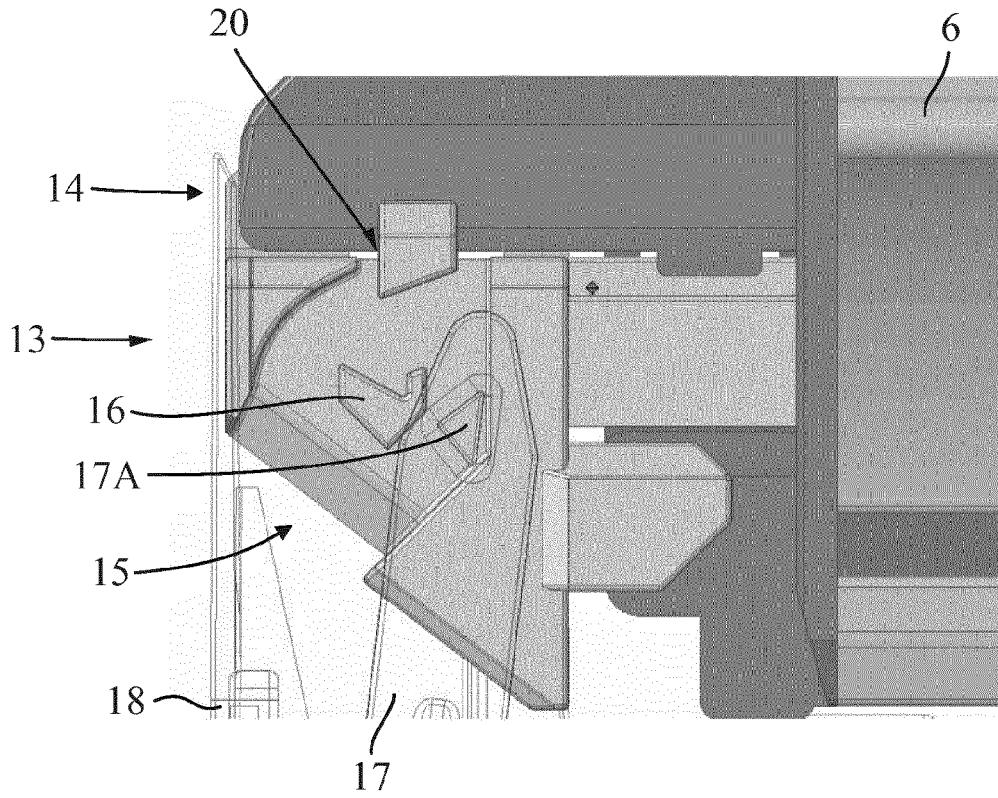


Fig. 4I

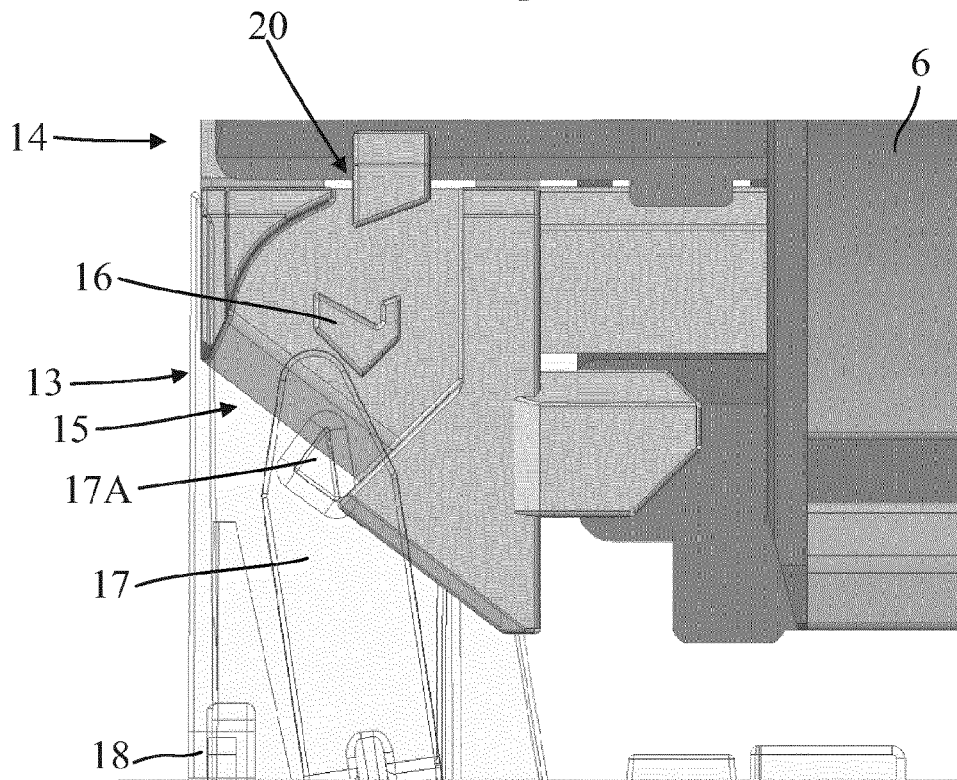


Fig. 4L

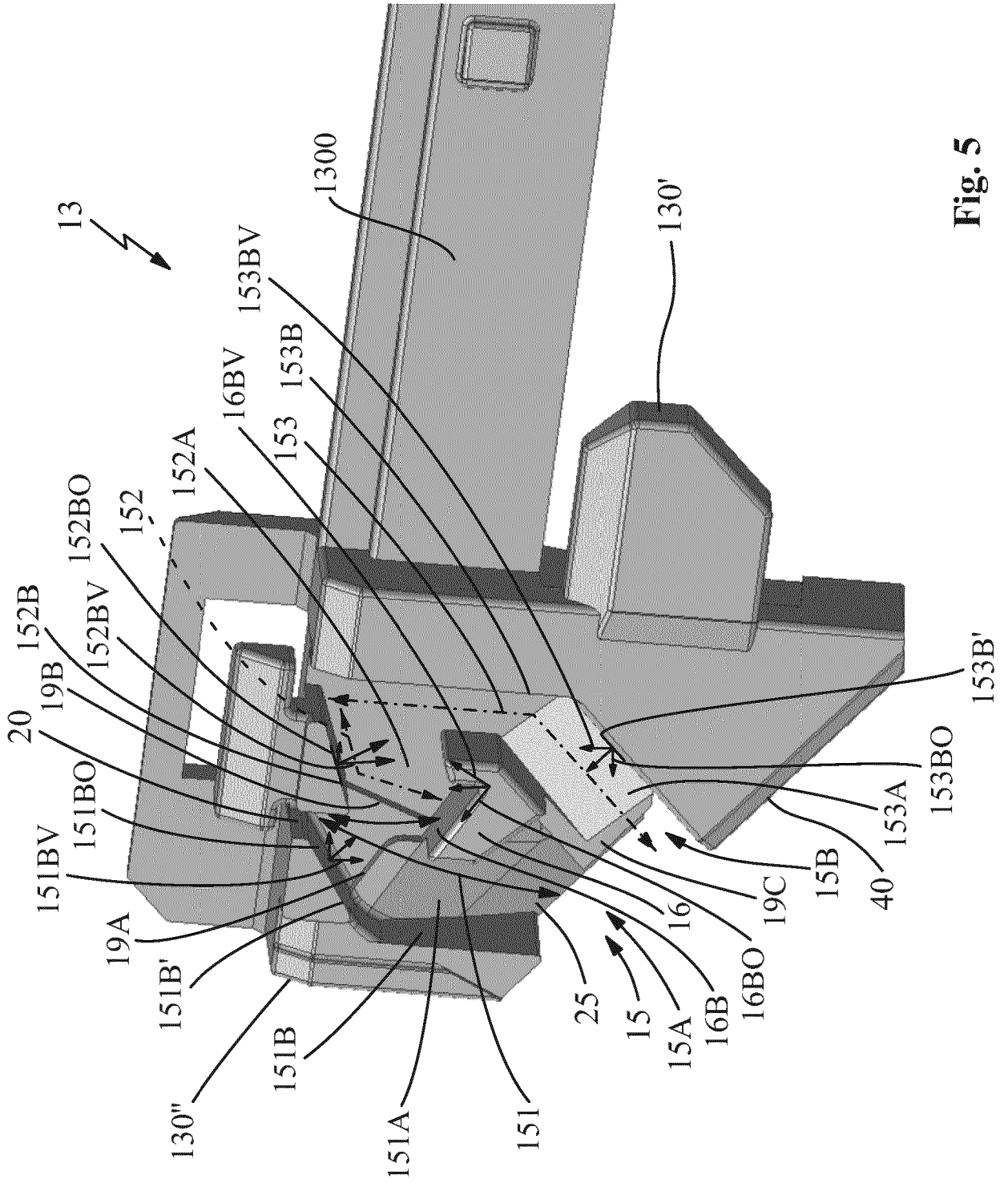


Fig. 5

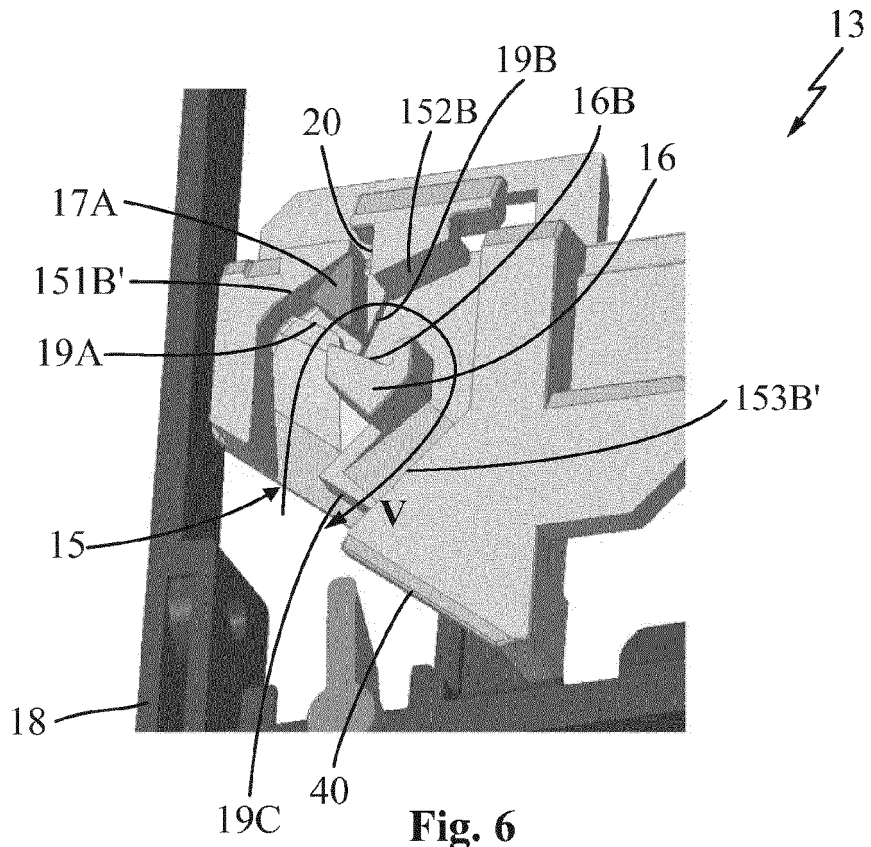


Fig. 6

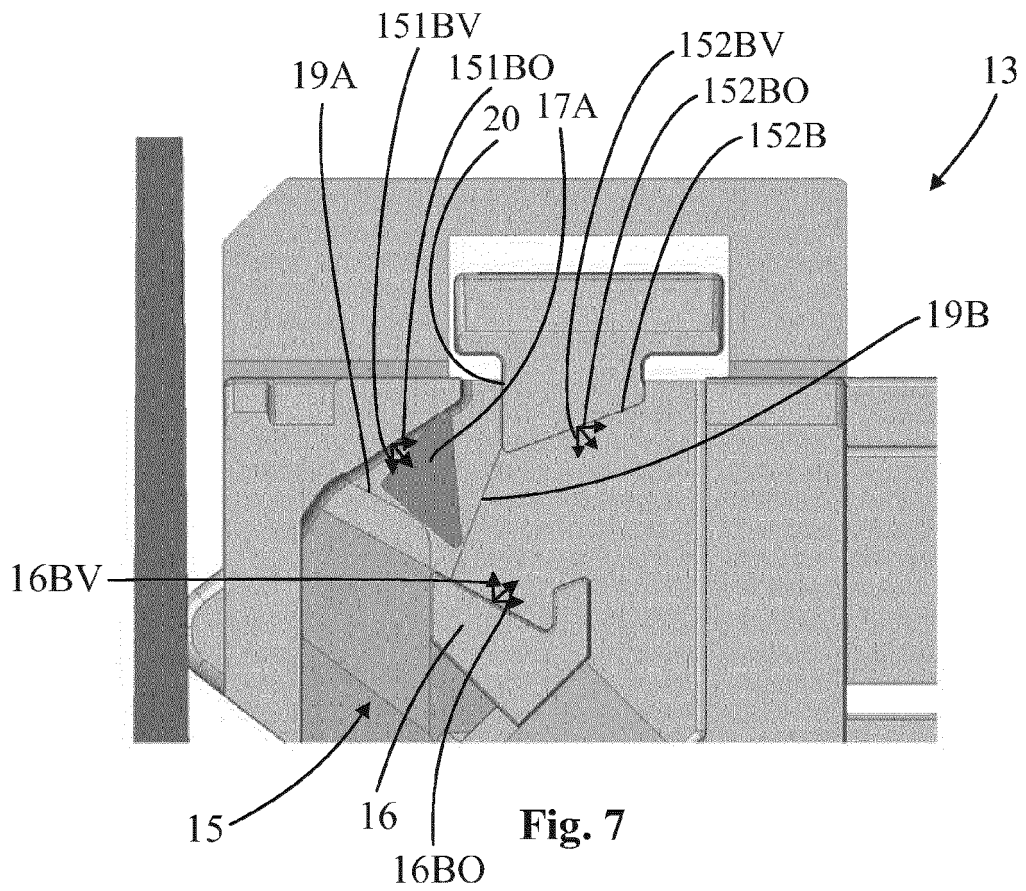


Fig. 7

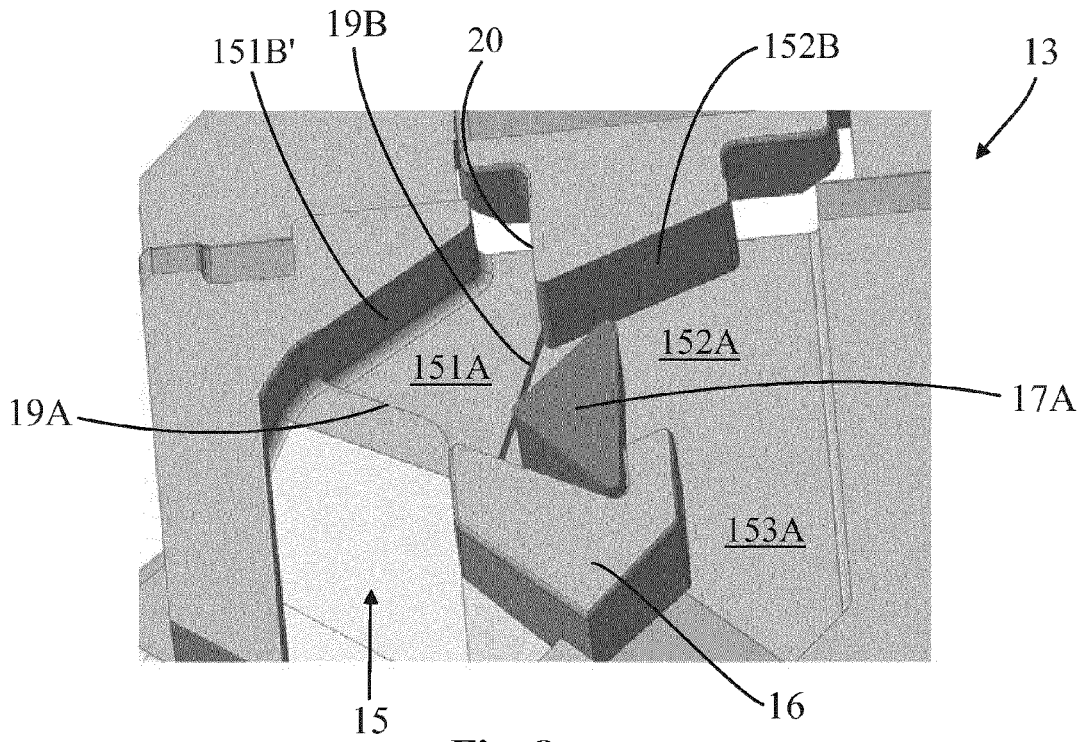


Fig. 8

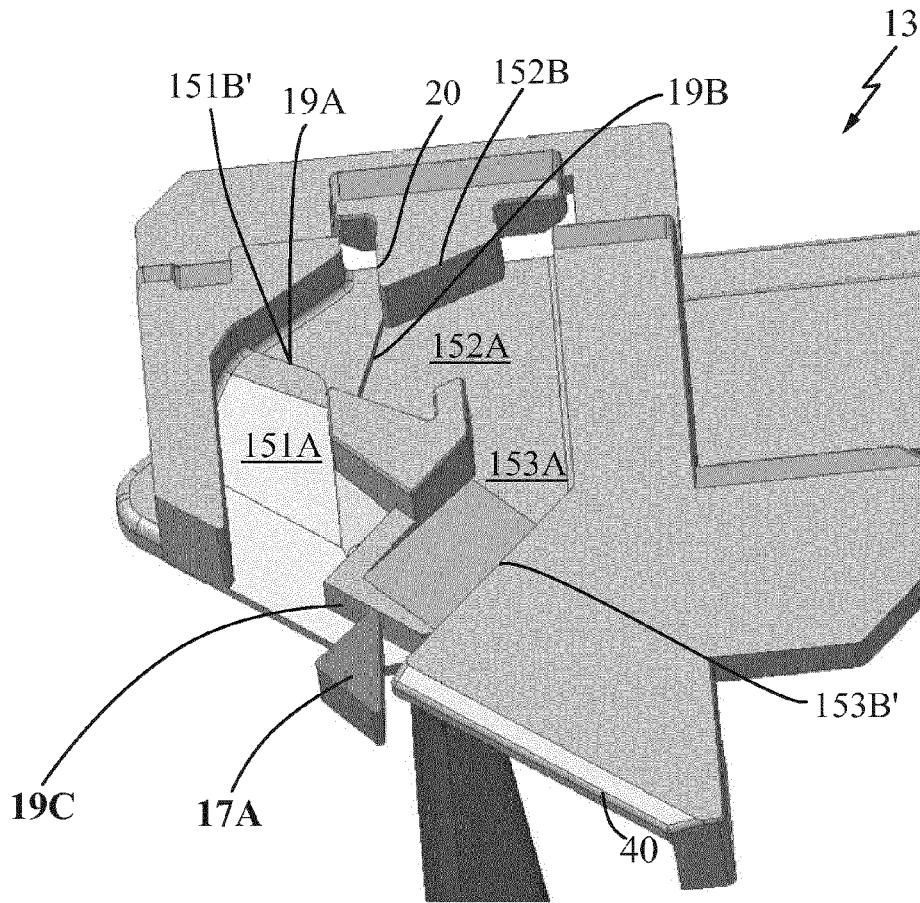


Fig. 9

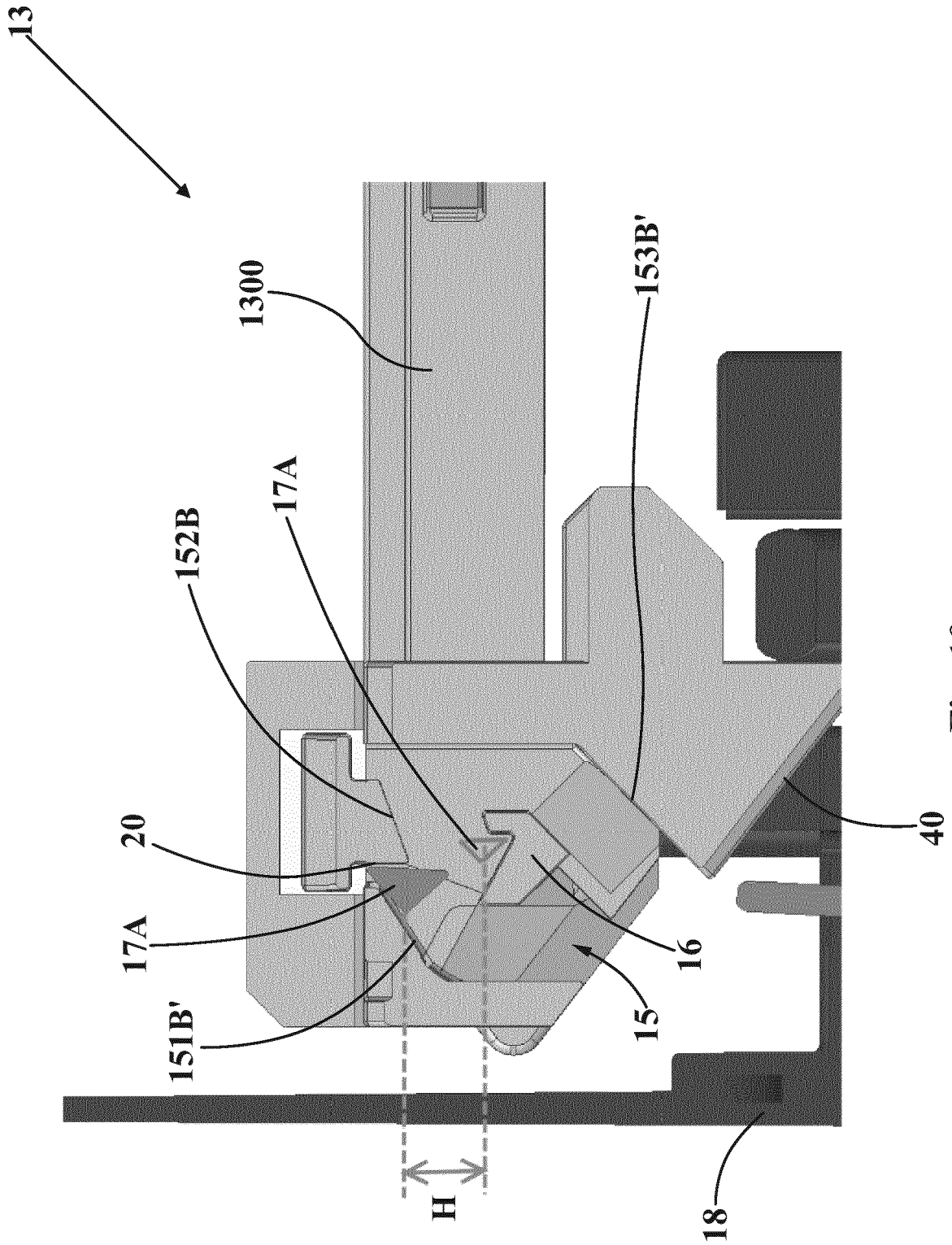


Fig. 10



EUROPEAN SEARCH REPORT

Application Number  
EP 17 17 2583

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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,D	EP 2 631 388 A2 (CORRADI S P A [IT]) 28 August 2013 (2013-08-28) * paragraph [0038] - paragraph [0045]; figures *  -----	1	INV. E06B9/54 E06B9/58  ADD. E06B9/80 E06B9/88
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>12 October 2017</b>	Examiner <b>Peschel, Gerhard</b>
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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ON EUROPEAN PATENT APPLICATION NO.**

EP 17 17 2583

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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12-10-2017

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2631388 A2	28-08-2013	EP 2631388 A2	28-08-2013
		IT B020120024 U1	23-08-2013
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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**Patent documents cited in the description**

- EP 2631388 A [0012]
- US 6591889 B [0018]