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Description

Field of application

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

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

[0003] The fabric can for example be employed for attaining a darkening screen, for example in substitution of a rolling shutter, a brise-soleil screen for filtering the sunlight or for making a mosquito netting.

[0004] The blind, object of the present invention, is therefore inserted in the industrial field of production of windows/doors/shutters, or even in the field of production of fabrics for protecting from the sun, in the field of mosquito netting or similar applications.

State of the art

[0005] Blinds for the manual closing of openings of windows/doors/shutters such as windows, doors or French doors) are known on the market, and are 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 therein on which a flexible fabric is susceptible of being wound and unwound. Elastic means are associated with the roller, such means aimed to maintain the fabric taut by acting in the sense of winding the same fabric again around the roller.

[0006] The fabric usually has rectangular shape and is provided with an upper edge fixed to the roller and with a lower edge fixed to a bottom bar aimed to stretch the fabric itself.

[0007] In addition, the blind comprises two lateral guideways arranged along the corresponding sides of the opening, generally vertically, and with which the bottom bar is slidably constrained.

[0008] In particular, the bottom bar comprises an aluminum section closed at the lateral ends by two lateral caps slidably coupled to the respective lateral guideways.

[0009] Each lateral guideway is usually obtained with a corresponding aluminum profile, internally hollow and provided with an internal side (facing the internal side of the other lateral guideway) on which a longitudinal slit is made in which the corresponding lateral cap of the bottom bar is slidably inserted.

[0010] Each lateral guideway is typically extended between an upper end, fixed to the rolling-shutter box, and a lower end closed by a base terminal fixed to the floor at the lower edge of the opening.

[0011] On the bottom bar, a handle is mounted which is manually grippable in order to move the bottom bar itself between two end portions, i.e. a closed position, in which the fabric is completely wound around the roller

and the bottom bar is arranged in abutment against the rolling-shutter box, and an open position, in which the fabric is unwound from the roller to close the opening and the bottom bar is arranged at the lower ends of the lateral guideways.

[0012] In particular, blinds are known on the market that are provided with handles having a locking mechanism associated therewith, such mechanism adapted to be manually actuated in order to stop the bottom bar in closed position, i.e. when it has reached the base terminals of the guideways. One example of these blinds of known type is described in the patent application EP2199529A2.

[0013] The aforesaid locking mechanism usually comprises stops that are normally positioned outside the lateral guideways in a visible position that is not very aesthetically pleasing, and usually at the base ends of the lateral guideways.

[0014] The locking mechanism also has locking pins, which are arranged at the ends of horizontal rods slidably mounted in the bottom bar, and they are susceptible of being engaged with the stop-like bolts, in order to retain the bottom bar in closed position.

[0015] In order to release the bottom bar, it is necessary to act on the rods in order to slidably move the pins towards the interior of the fabric, disengaging them from the stops.

[0016] One drawback of this blind lies in the fact that it is possible to lock the bottom bar in only one position, generally at the base of the lateral guideways (in closed position).

[0017] Indeed, the stops are unique and are susceptible of being mounted in only one position; this circumstance does not allow locking the bottom bar in intermediate positions.

[0018] Therefore, in accordance with the locking mechanism of the blind of known type described above, in order to release the bottom bar by moving the two horizontal rods inward, the user is required to use his/her hand while it is not comfortably possible to release the bottom bar through the use of the foot. Consequently, there is the clear drawback of these blinds in requiring the user to crouch down on the ground in order to actuate the handle to open the blind.

[0019] In accordance with another type of fabric roller blinds with manual actuation, the actuation of the release of the bottom bar can also occur by means of movement of a handle, connected to the two horizontal rods for engaging with the lateral stops. In this case, the locking mechanism also provides for the presence of kinematic mechanisms which transform the rotary movement of the handle into a horizontal translational movement of the rods.

[0020] This locking mechanism of this known type of blinds if on the one hand allows the use of the foot for releasing the pins from the stops, on the other hand it has proven to be complex to manufacture, requiring a high number of components.

[0021] In addition, it involves, like that of the blind described first, the drawback that the ends of the rods require processing in order to be constrained to the handle. Such configuration therefore has the drawback that if the bottom bar is produced to a greater extent than that necessary, it is not then possible to cut it to size in work sites without substituting the rods, since the latter - having the ends processed - cannot be readapted in work sites but rather must be sent back to the producer for the modification or substitution intervention.

[0022] In addition, in accordance with the mechanisms for locking the blinds known up to now and briefly described above, the pins which translate for locking/releasing the bottom bar are rigidly connected to the rods and therefore have a fixed position with respect to the vertical guideways. This involves the drawback that a possible out-of-square configuration of the lateral guideways might not be recovered by the pins that are situated either too far from or too close to the stops integral with the lateral guideways, with which they must be coupled/uncoupled.

Presentation of the invention

[0023] In this situation, the problem underlying the present invention is to provide a fabric roller blind with manual actuation, which can be easily mounted at work sites and in particular that can be adjusted into the size necessary for the optimal operation thereof.

[0024] Another object of the present invention is to provide a fabric roller blind with manual actuation, which allows stopping the bottom bar in multiple positions along the lateral guideways.

[0025] Another object of the present invention is to provide a fabric roller blind with manual actuation, which is operatively and easily actuatable both through using a hand and through using a foot.

[0026] Another object of the present invention is to provide a fabric roller blind with manual actuation, which is entirely efficient in operation, and in particular capable of ensuring the correct sliding of the bottom bar along the lateral guideways, also in installation conditions in which the guideways are not exactly parallel with each other, for example since they are mounted on walls that are not perfectly vertical.

[0027] Another object of the present invention is to provide a fabric roller blind with manual actuation which is structurally simple and inexpensive to attain and install.

[0028] Another object of the present invention is to provide a fabric roller blind with manual actuation, which is entirely reliable in operation.

[0029] Another object of the present invention is to provide a fabric roller blind with manual actuation, which does not provide for visible components that are not aesthetically pleasing, as for example stops mounted on the lateral guideways.

[0030] These and still other objects are all achieved by the fabric roller blind with manual actuation according to

the enclosed claims.

Brief description of the drawings

[0031] The technical characteristics of the invention, according to the aforesaid objects, are 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, with the proportions not respected for several components in order to better illustrate other components;
- figure 2 shows a side view of a detail of the blind illustrated in figure 1, relative to a lateral guideway and to a right portion of the bottom bar carrying a handle mounted thereon and terminating with a lateral cap;
- figure 3 shows an enlarged second side view of a detail of the blind illustrated in figure 1, relative to a lateral guideway and to a left portion of the bottom bar terminating with a lateral cap;
- figure 4 shows the detail of the blind of figure 3 in longitudinal section in order to view the connection between a pin and the transmission rods;
- figure 5 shows a side view of a detail of the blind illustrated in figure 1, relative to the bottom bar with some parts canceled in order to better illustrate other parts;
- figure 6 shows a perspective view of a detail of the blind illustrated in figure 1, relative to a portion of lateral guideway and to a stop mounted on the same lateral guideway;
- figure 7 shows a front view of the detail of figure 6;
- figure 8 shows a side view of the detail of figure 6;
- figure 9 shows the stop of figure 7 in an enlarged view;
- figure 10 shows a first cross section view of the bottom bar of the blind, object of the present invention, carried out at the lateral portion;
- figure 11 shows a second cross section view of the bottom bar of the blind, object of the present invention, carried out at a spring, arranged in loaded state and with the handle tilted in disengagement position;
- figure 12 shows the cross section view of figure 11 with the spring in unloaded state and with the horizontal handle in stop position;
- figures 13-16 show several details of the blind, object of the present invention, relative to the handle bar and one of the two lateral guideways, in different side views in which the pin of the stop means of the handle is respectively arranged above the stop, in contact with the stop, below the stop without contact and below the stop in engagement therewith;
- figure 17 repeats the view of the detail of figure 16,

different references having been reported in the same figure;

- figure 18 shows a perspective view of a detail of the blind according to the present invention relative to the handle mounted on the bottom bar.

Detailed description of a preferred embodiment

[0032] With reference to the enclosed drawings, reference number 1 overall indicates the fabric roller blind with manual actuation, object of the present invention.

[0033] The blind 1 is operatively engageable for adjustably closing an opening A of a window/door/shutter, for example of a window, of a door or of a French window, obtained in a load-bearing structure, such as the wall of a building or the load-bearing structure of any one building.

[0034] 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 structure, in which the opening A is obtained, and preferably comprising a rolling-shutter box 3 intended to be positioned above the opening A itself.

[0035] Advantageously, the rolling-shutter box 3 comprises a hollow tubular body, obtained in particular with an aluminum extrusion, which is extended with horizontal axis between two opposite ends closed by two lateral cuffs for example made of plastic material.

[0036] The blind 1 also comprises a spring winding roller 4 rotatably constrained to the support frame 2, housed within the rolling-shutter box 3, and provided with a substantially horizontal first rotation axis X. The winding roller 4 has been only been schematically indicated with dashed line in figure 1, since it is per se known to the man skilled in the art.

[0037] Around the winding roller 4, a flexible fabric 5 is susceptible of being wound and unwound, which preferably passes through a lower slit of the rolling-shutter box 3.

[0038] The winding roller 4 is associated, in a per se known manner, with a spring aimed to act in the fabric 5 rewinding sense.

[0039] The fabric 5 can be intended for attaining a darkening screen, e.g. in substitution of a rolling shutter, a brise-soleil screen for filtering sunlight or even for making a mosquito netting. In an entirely general manner, the fabric 5 can be dedicated to closing the opening of a window/door/shutter in order to protect an internal area from the sun and/or from the wind and/or, more generally, from the atmospheric conditions of the outside environment.

[0040] The fabric 5, as a function of its different applications, can be made of woven synthetic or natural material and can have the form of a mesh or have a continuous surface of darkening, filtering or transparent type.

[0041] 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 winding

roller and with a lower edge.

[0042] The support frame 2 of the blind 1 also comprises a bottom bar 6, to which the lower edge of the fabric 5 is fixed, and it is extended, along a second extension direction Z, parallel to the first rotation axis X of the winding roller 4.

[0043] The blind 1 also comprises two lateral guideways 7 extended parallel to one another and side-by-side each other, and between which the fabric 5 is susceptible of sliding following its winding and unwinding around the winding roller 4.

[0044] The bottom bar carries, mechanically fixed at the ends thereof, two lateral caps 14, which are slidably engaged in the aforesaid lateral guideways 7.

[0045] 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 first rotation axis X of the winding 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, for example on a floor or on a window sill.

[0046] 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 made) for example by means of anchorage screws.

[0047] Advantageously, each lateral guideway 7 is preferably obtained by means of extruded metallic sections, in particular made of aluminum, and is provided with a cross section shaped as better specified hereinbelow.

[0048] The blind 1 also comprises stop means 10 for locking/releasing the bottom bar 6 with respect to the lateral guideways 7.

[0049] In accordance with the idea underlying the present invention, the stop means 10 comprise at least one stop 22 fixed along a corresponding lateral guideway 7 at a locking position along its extension. Such position, as explained hereinbelow, can be easily adjustable.

[0050] The stop means 10 also comprise at least one handle 11, which is rotatably mounted on the bottom bar 6 around a second rotation axis X' (see figure 18) parallel to the second extension direction Z of the bottom bar 6, or parallel to the first rotation axis X of the winding roller 4. The handle 11 is susceptible of rotating between at least two angular positions, including a stop position AR, and a disengagement position B.

[0051] The stop means 10 also comprise at least one locking pin 12 associated with a corresponding lateral cap 14 of the bottom bar 6, which is free to rotate around the second rotation axis X' and at least one drive shaft 13 which mechanically connects the handle 11 to the locking pin 12 in order to transmit the rotary motion of the handle 11 to the locking pin 12 and is susceptible of rotating around the same second rotation axis X' of the handle 11 (in particular horizontal).

[0052] The stop means 10 also comprise elastic means

15, which are interposed between the bottom bar 6 and the handle 11 in order to force the latter towards the stop position AR.

[0053] The handle 11 is then actuatable to be manually moved between the stop position AR, in which the locking pin 12 is engaged in retention relationship with said stop 22, and the disengagement position B, in which the locking pin 12 is released from the stop 22.

[0054] Hence, in accordance with the present invention, by acting on the handle 11 i.e. by moving it between the two stop AR and disengagement positions B, it is possible to bring the locking pin 12 to be engaged and disengaged with respect to the stop 22.

[0055] Advantageously, the handle 11 will be employed by the user in order to free the locking pin 12 of the stop 22, bringing the bottom bar 6 from the stop position AR to the disengagement position B. Otherwise, in order to move the bottom bar 6 along the lateral guideways 7 and in particular downward to close of the opening A, the user can manually act on a grip profile 60 of the bottom bar 6 which continues, with analogous form, in the caps 14 provided with corresponding portions 60'.

[0056] Advantageously in order to symmetrically distribute the forces, the locking means are symmetrically arranged at the two lateral guideways 7 (i.e. with reference to a middle longitudinal plane of the blind 1) and for such purpose comprise two drive shafts 13, which mechanically connect two opposite ends 11A, 11B of the handle 11 to two locking pins 12, each of which mechanically and rotatably associated with a lateral cap 14 of the bottom bar 6 in order to be engaged and disengaged with respect to a corresponding stop 22, adjustably fixable along the corresponding lateral guideway 7.

[0057] According to a preferred embodiment reported in the enclosed figures, the locking pin 12 has at least one tooth 12' which rotates in a plane orthogonal to the plane of the fabric 5 and which is susceptible of being engaged with a protuberance 22' of the stop 22.

[0058] In accordance with the preferred embodiment illustrated in the enclosed figures, the bottom bar 6 comprises a main profile 61, which is extended between the two lateral caps 14, and a central support 62, which is engaged in a housing seat made in the main profile 61 in middle position.

[0059] The handle 11 is rotatably connected to the central support 62 by means of a hinge 16.

[0060] The elastic means 15, mentioned above, preferably act between the main profile 61 and the central support 62 and are advantageously constituted by a pair of springs, obtained with a wire of shaped steel, as illustrated in the enclosed figures 11 and 12.

[0061] In accordance with an advantageous characteristic of the invention, each drive shaft 13 is provided with a first end 13A, engaged on a first lateral pin 17 (indicated with dashed line in figure 18) of the handle 11, and with a second end 13B engaged on a second pin 18 of the corresponding locking pin 12 (see figures 3 and 4).

[0062] Each drive shaft 13 can then be slidably en-

gaged on the first or on the second pin 17, 18 in different axial positions, maintaining the rotational mechanical engagement which allows the transmission of the rotation from the handle 11 to the locking pin 12.

[0063] In accordance with the embodiment presented in the enclosed figures, the drive shafts 13 are internally hollow such that the pins 17 and 18 can be inserted at their interior, being rigidly engaged with respect to axial rotations around the aforesaid second rotation axis X'. Advantageously, the first pin 17 associated with the handle 11 is inserted up to the end stop in the hole of the drive shaft 13 while the second pin 18 is inserted with adjustable depth so as to account for possible shifts of the guideways 7 with respect to design data. The engagement of the pins 18 of the locking pins 12 to the (external) second ends 13B of the drive shafts 13 can occur with ribs inside the drive shaft 13, which are inserted in longitudinal grooves made on the external surface of the pins 18.

[0064] The hinge 16, mentioned above and adapted to rotatably connect the handle 11 to the central support 62, advantageously comprises an at least partially cylindrical body 160, which defines a cylindrical seat and which is arranged on the handle 11, and at least one second pin 161 provided on the central support 62 and rotatably engaged in the aforesaid cylindrical seat.

[0065] Preferably the main profile 61 is internally hollow and constituted by a metallic section, for example made of extruded aluminum, and is provided with an opening 64, which is directed substantially orthogonally to the lying plane of the fabric 5. The bottom of such opening 64 defines the housing seat 63 for the engagement of the central support 62 to the main profile 61.

[0066] More in detail, the handle 11 is provided with a stem 110, which is extended through the opening 64 of the central support 62 from the cylindrical body 160 to a head portion 111.

[0067] The latter has an enlarged form for an easy grip thereof and an easy actuation thereof with a user's hand and for an easy actuation thereof also with a user's foot. In substance, it is possible to act on the head portion 111 of the handle 11 in order release it from the stop position AR, also by acting with a foot as if it was a pedal.

[0068] More in detail, the lateral caps 14 of the bottom bar 6 are preferably made of plastic material, are placed to laterally close the metal profile 6' of the bottom bar 6 and are fixed to the latter by means of screws or similar means, for example.

[0069] Each lateral guideway 7 is provided with an open side, arranged opposite the open side of the other lateral guideway 7, on which a longitudinal slit is made in which a portion of the lateral cap 14 is slidably constrained, in a manner per se known to the man skilled in the art and hence not described in detail.

[0070] The lateral guideways 7 also each comprise a longitudinal seat 20 within which at least one stop 22 is slidably engaged, e.g. through a slide portion 222 thereof. Such stop 22 is locked along the lateral guideway 7 at

the desired height by means of retention means 23. The latter for example comprise a step-like portion 220 laterally projecting from a central body 221 of the stop 22, and a grub screw 21 which is engaged in a threaded seat 24 of the stop 22 and which is susceptible of being thrust against the lateral guideway 7 in order to lift the step-like portion 220 in abutment against an elastic appendage 20' of the lateral guideway 7 itself which delimits the longitudinal seat 20. In this manner, due to the contrast action exerted on the stop 22 by the grub screw 21 and by the elastic appendage 20', the stop 22 remains rigidly constrained to the lateral guideway 7. The bottom end of the grub screw 21 is engaged in a longitudinal groove made on the lateral guideway 7 such that by slightly unscrewing the grub screw 21 it is possible to make the stop 22 slide along the lateral guideway 7 and stop it in the desired position.

[0071] By simply acting on the grub screw 21, it possible to move the stop 22 along the lateral guideway 7 at the desired height.

[0072] In addition, advantageously, multiple stops 22 can be mounted on the two lateral guideways 7 in order to allow the bottom bar 6 to be locked in different positions which correspond to different closure conditions of the fabric 5 on the opening A of the walling.

[0073] Preferably, the blind 1 also comprises elastically pliable engagement means 25 (see figure 18), which are mechanically associated with the handle 11 and with the bottom bar 6, and in particular with its central support 62, and are susceptible of removably retaining the handle in the disengagement position B, overcoming the force of the elastic means 15.

[0074] Such engagement means 25 comprise for example first and second studs 26, 27 respectively associated with the handle 11 and with the central support 62 and susceptible of interacting with each other during the rotation of the handle 11 at the attainment of the stop position AR.

[0075] In operation, the blind 1 described up to now in a mainly structural manner provides, in accordance with its preferred embodiment, the following operation. In order to at least partially obstruct the opening A in the load-bearing structure, the user acts with his/her hands on the grip profile 60 of the bottom bar 6, by moving the latter up to the height of the stops 22 with respect to which he/she wishes to stop the bottom bar itself. In such movement, the user overcomes with his/her own force F_s the rewinding force F_m of the winding roller 4.

[0076] During the descent of the bottom bar 6, the locking pins 12 intercept the stops 22, being moved in order to pass beyond, for such purpose rotating around the second rotation axis X' .

[0077] With the handle in stop position AR and once the bottom bar 6 is released below a stop 22, the latter will rise up until locking pins 12 are stopped against the stops 22 fixed in opposite pairs in the lateral guideways 7.

[0078] At this point, by acting with the hand or with a foot on the head portion 111 of the handle 11, it is possible

to move the handle 11 from the stop position AR to the disengagement position B and consequently release the locking pin 12 from the mechanical engagement with the stop 22 so as to allow the ascent of the fabric 5. During such movement, the handle 11 can stably remain in the disengagement position B due to the engagement means 25 which will retain the handle 11 in such disengagement position B, overcoming the force of the elastic means 15. By acting on the handle 11 in the opposite direction, it will be possible to overcome the force for retaining the engagement means 25 and bring the handle back into the stop position AR stably maintained by the elastic means 15.

[0079] More in detail, in accordance with figures 13-17 and the reference numbers reported therein, the bottom bar 6 in stop condition with the elastic means 15 in rest condition have the retention pin with the extension axis S tilted with respect to the vertical in accordance with that illustrated in figure 13.

[0080] In accordance with the drawing of figure 13, the manual thrust force F_s of the user overcomes the force of the spring F_m of the winding roller 4 and makes the bottom bar 6 descend downward. When the locking pin 12 encounters the stop, the extension axis S of the pin, which first was tilted with respect to the vertical, rotates in a clockwise sense due to the contact between the two parts.

[0081] The rotation of the locking pins 12 is transmitted through the drive shafts 13 to the handle 11. Therefore, when the bottom bar 6 encounters the stops 22, the elastic means 15 are loaded. When the bottom bar 6 goes beyond the stops 22, the elastic force of the elastic means 15 brings the locking pins back into tilted position with the elastic means 15 in rest position (the bottom bar 6 is in stop position AR).

[0082] After having gone beyond the stop 22, if the manual force F_s imparted by the user is removed, with the intention of stopping the bottom bar 6 in that position, then the bottom bar 6 itself is pulled upward by the return force F_m of the spring of the winding roller 13 so that the locking pins 12 do not engage the relative stops 22.

[0083] At this point, two forces arise: the locking force F_b between the pin and the stop and the horizontal reaction force F_g between the cap and the lateral guideway 7. Indeed, while the vertical component of the force F_b is compensated for by the force F_m of the spring of the winding roller 13, the arm between these two equal and opposite components creates a moment which tends to rotate the bottom bar 6. This moment is compensated for by the moment created by the horizontal reaction force F_g between the cap and the lateral guideway 7.

[0084] In order to release the bottom bar 6 and be able to make it rise upward, it is necessary to rotate the handle 11. With the normal chain of constraints, described above, this rotates the locking pins 12 which impart reaction forces (F_r) on the stops; the vertical component of such forces, together with the rotary movement imparted by the handle 11, is sufficient for "uncoupling" the

two parts.

[0085] Hence, the bottom bar 6 is released by a handle 11 which can be easily moved a hand but also by a foot. In addition the rotation of the handle 11 is transmitted to the locking pins 12 in an advantageously direct manner. In other words, other parts are preferably not present in the handle 11-drive shaft 13-retention pin 12 couplings.

[0086] Hence, the invention, as described up to now and in accordance with the presented preferred embodiment, provides a blind 1 equipped with stops 22 adapted to allow the stop of the bottom bar 6, which are so compact as to be housed within the standard lateral guideways commonly used for blinds. Due to the present invention, the bottom bar 6 can be stopped in positions which can be directly selected by the final user by actuating simple adjustments of the position of the stops along the lateral guideways 7.

[0087] The drive shafts 13 do not require any processing at the ends since both the handle 11 and the locking pins 12 are inserted within the main profile 61 of the bottom bar 6. Therefore, if the bottom bar 6 is for example produced to a greater extent than that necessary, it is possible to reprocess the bottom bar 6, cutting it to size without having to substitute the drive shafts 13. Hence, the blind 1 can be re-adapted in work sites. In addition, the locking pins 12 are inserted on the main profile 61 of the bottom bar 6 following the mounting of the lateral caps 14 and can translate axially and compensate for possible out-of-square situations between the lateral guideways 7.

[0088] Each stop 22 is rigidly connected to the lateral guideway 7 through a grub screw 21. The possibility of selecting the position of the stops along the lateral guideways 7 is given by the fact that the stops 22 are mounted on the lateral guideways 7 during the mounting of the blind 1, together with the client. The stops 22 are inserted within the lateral guideways 7 and, due to the engagement of their slide portion 222 in the longitudinal seat 20 and of the grub screw 21 in the groove on the bottom of the lateral guideway 7, the stops 22 can only be moved vertically along the lateral guideway 7 itself. At this point, upon indication of the client, the assembler fixes the stops in the desired position due to the grub screws 21.

[0089] It must also be considered that the stops 22 are placed within the lateral guideways 7 such that they are not aesthetically displeasing. In addition, the bottom bar 6 can be stopped as many times as the number of stops 22 which are inserted in the lateral guideways 7 (at the client's discretion).

Claims

1. Fabric roller blind with manual actuation, which comprises:

- a support frame (2) intended to be fixed to a load-bearing structure in which an opening (A)

is made;

- a spring winding roller (4) rotatably constrained to said support frame (2), having a substantially horizontal first rotation axis (X), and intended to be positioned in the upper part of said opening (A);

- two lateral guideways (7) extended parallel to one another and side-by-side each other along respective first extension directions (Y) substantially orthogonal to the first rotation axis (X) of said winding 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 winding roller (4) and a lower edge thereof;

- 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 first rotation axis (X) of said winding roller (4), between two lateral caps (14) thereof which are slidably engaged in the corresponding lateral guideways (7);

- stop means for locking/releasing said bottom bar (6) with respect to said lateral guideways (7);

characterized in that said stop means (10) comprise:

- at least one stop (22) fixed along at least one corresponding said lateral guideway (7);

- at least one handle (11) rotatably mounted on said bottom bar (6) around a second rotation axis (X') parallel to the second extension direction (Z) of said bottom bar (6) between at least two angular positions, including a stop position (AR) and a disengagement position (B);

- at least one locking pin (12) associated with a corresponding said lateral cap (14), free to rotate around said second rotation axis (X');

- at least one drive shaft (13), which mechanically connects said handle (11) to said locking pin (12) in order to transmit the rotary motion of said handle (11) to said locking pin (12);

- elastic means (15) being interposed between said bottom bar (6) and said handle (11) in order to force said handle (11) towards said stop position (AR);

said handle (11) being actuatable to be manually moved between said stop position (AR), in which said locking pin (12) is engaged in retention relationship with said stop (22); and a disengagement position (B), in which said locking pin (12) is released from said stop (22).

2. Blind according to claim 1, **characterized in that** said bottom bar (6) comprises a main profile (61),

which is extended between the two lateral caps (14), and a central support (62) which is engaged in a housing seat (63) made in said main profile (61); said handle (11) being rotatably connected to said central support (62) by means of a hinge (16); said elastic means (15) acting between said main profile (61) and said central support (62).

3. Blind according to any one of the preceding claims, **characterized in that** said drive shaft (13) is provided with a first end (13A) engaged on a first lateral pin (17) of said handle (11) and with a second end (13B) engaged on a second pin (18) of said locking pin (12). 5
4. Blind according to claim 3, **characterized in that** said drive shaft (13) is slidably engageable on said first or on said second pin in different axial positions, maintaining the rotational mechanical engagement. 10
5. Blind according to claim 2, **characterized in that** said hinge (16) comprises an at least partially cylindrical body (160), which defines a cylindrical seat and is arranged on said handle (11), and at least one second pin (161), which is provided on said central support (62) and is rotatably engaged in said cylindrical seat. 15
6. Blind according to claim 2, **characterized in that** said main profile (61) is provided with an opening (64) directed substantially orthogonally to the lying plane of said fabric (5), and such opening (64) defines, with its bottom, said housing seat (63) for the engagement of said central support (62). 20
7. Blind according to claims 5 and 6, **characterized in that** said handle (11) is provided with a stem (110), which is extended through the opening (64) of said central support (61) from said at least partially cylindrical body (160) to a head portion (11) susceptible of being actuated with a hand or with a foot of the user. 25
8. Blind according to any one of the preceding claims, **characterized in that** two said drive shafts (13) are provided, which mechanically connect two opposite ends (11A, 11B) of said handle (11) to two locking pins (12), each locking pin (12) being mechanically rotatably associated with a lateral cap (14) of said bottom bar (6). 30
9. Blind according to any one of the preceding claims, **characterized in that** said bottom bar (6) comprises at least one grip profile (60) for manually moving said bottom bar (6) along said lateral guideways (7). 35
10. Blind according to any one of the preceding claims, **characterized in that** each of said lateral guideways 40

(7) comprises a longitudinal seat (20) within which at least one said stop (22) is slidably engaged; retention means (23) being provided for locking said stop (22) in said lateral guideway (7) at the desired height.

11. Blind according to any one of the preceding claims, **characterized in that** it comprises elastically pliable engagement means (25), mechanically associated with said bottom bar (6) and with said handle (11) and susceptible of removably retaining said handle (11) in said disengagement position (B), overcoming the force of said elastic means (15). 45

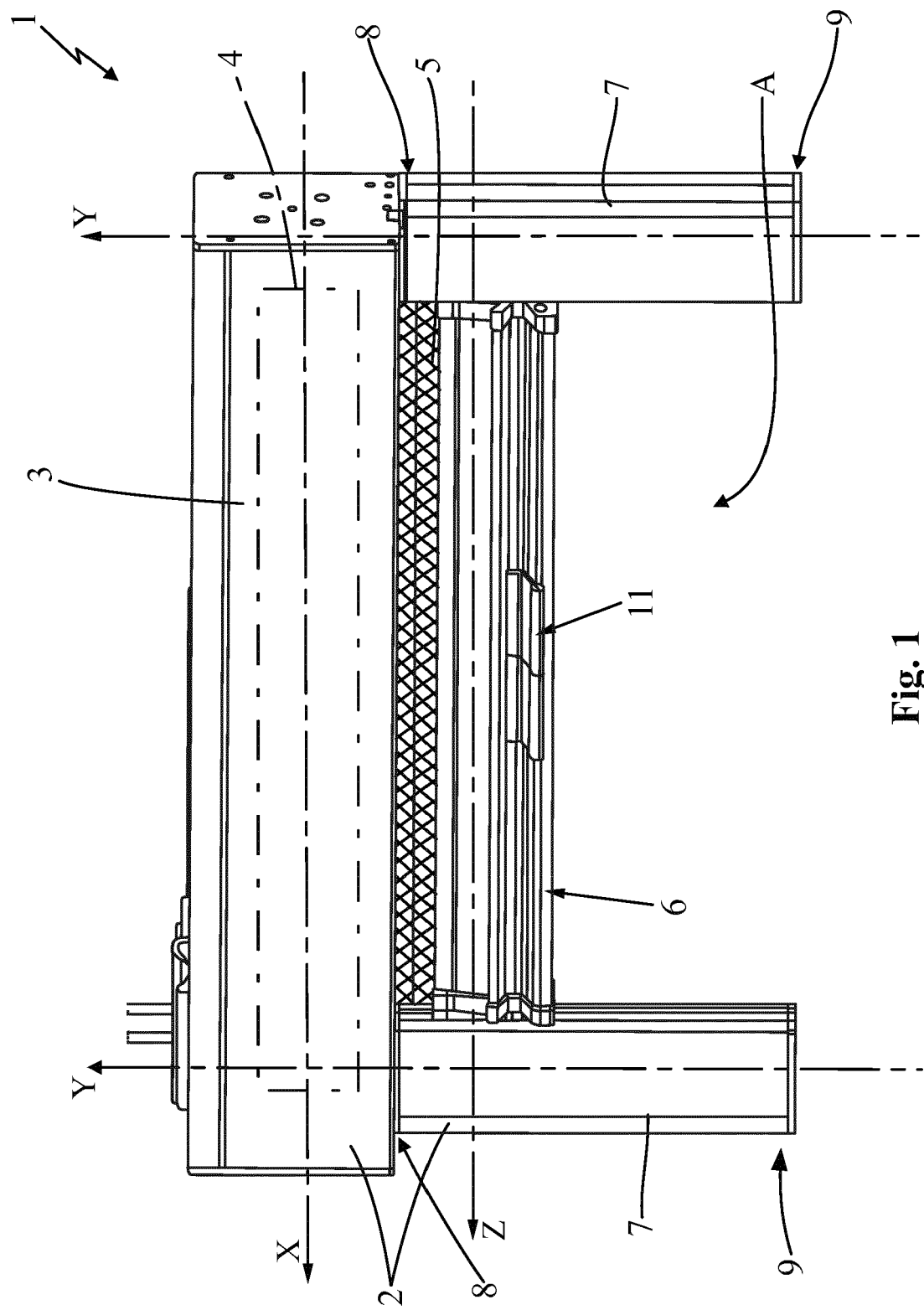


Fig. 1

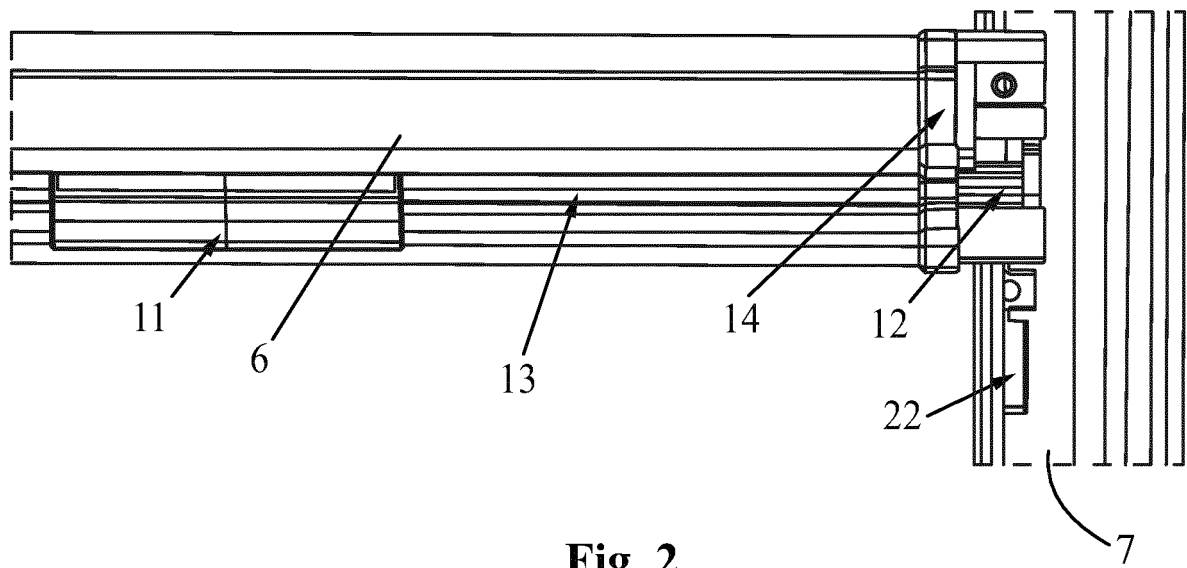


Fig. 2

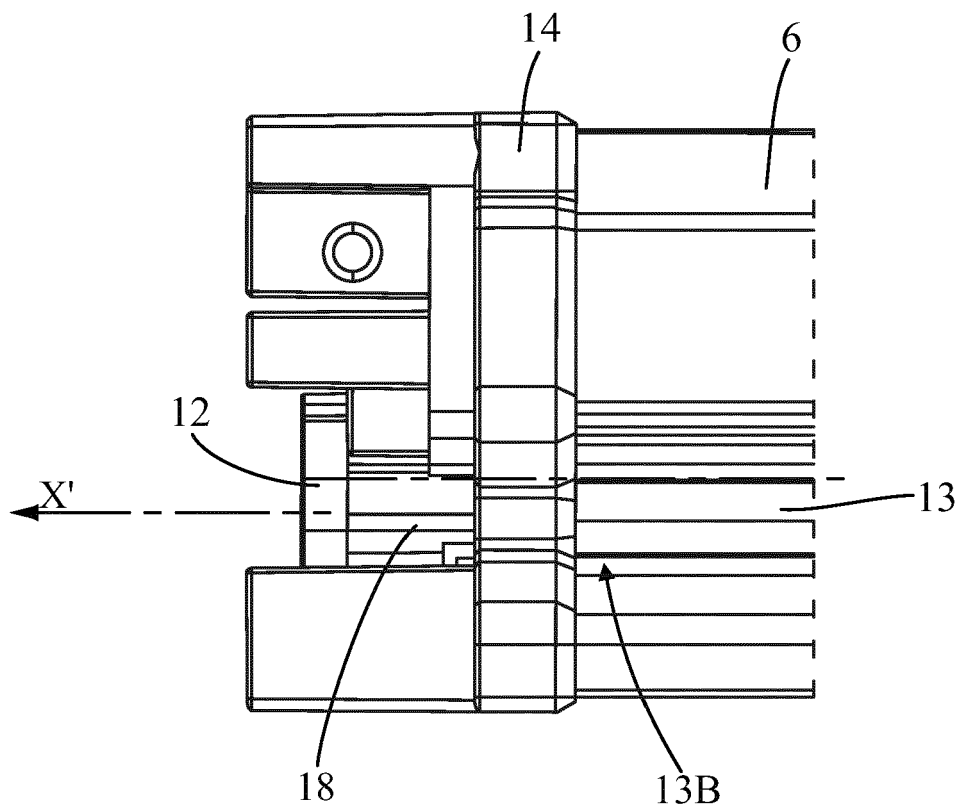


Fig. 3

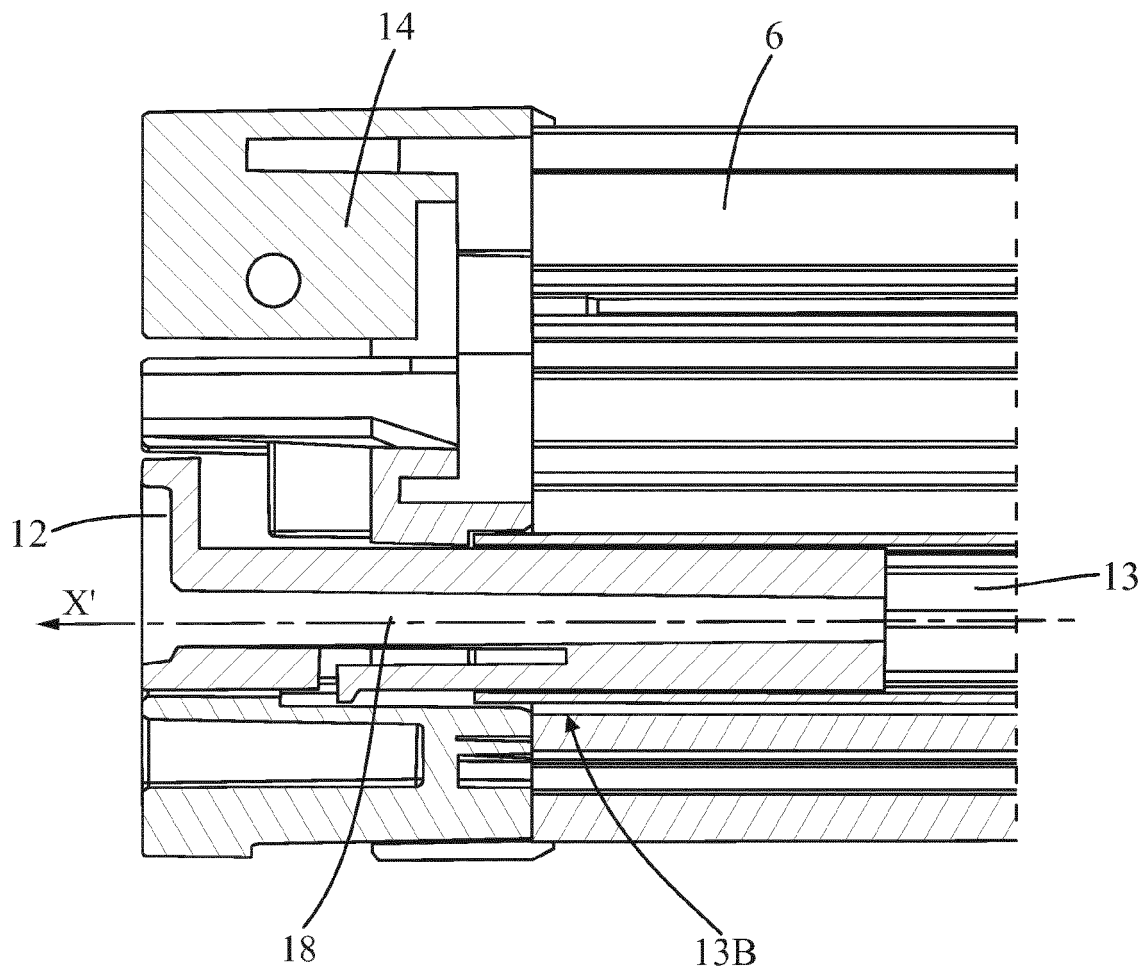


Fig. 4

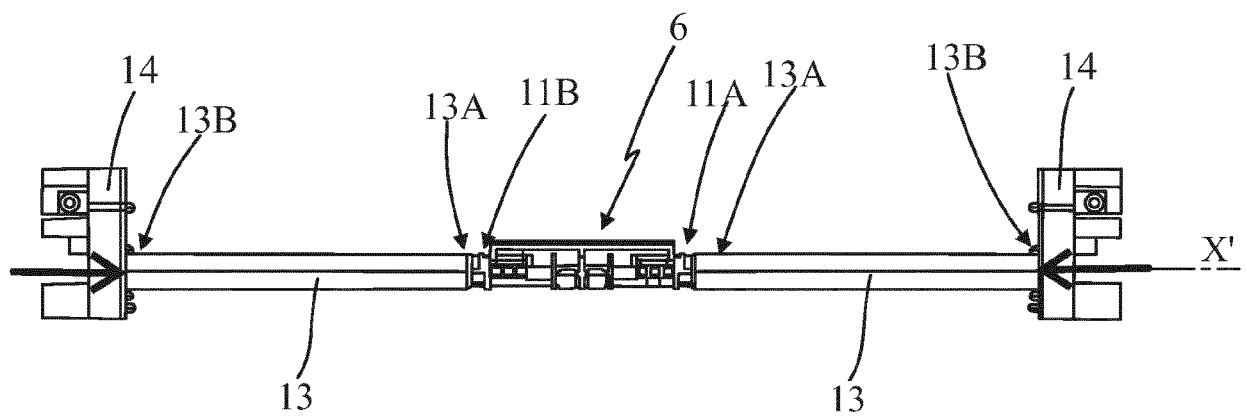


Fig. 5

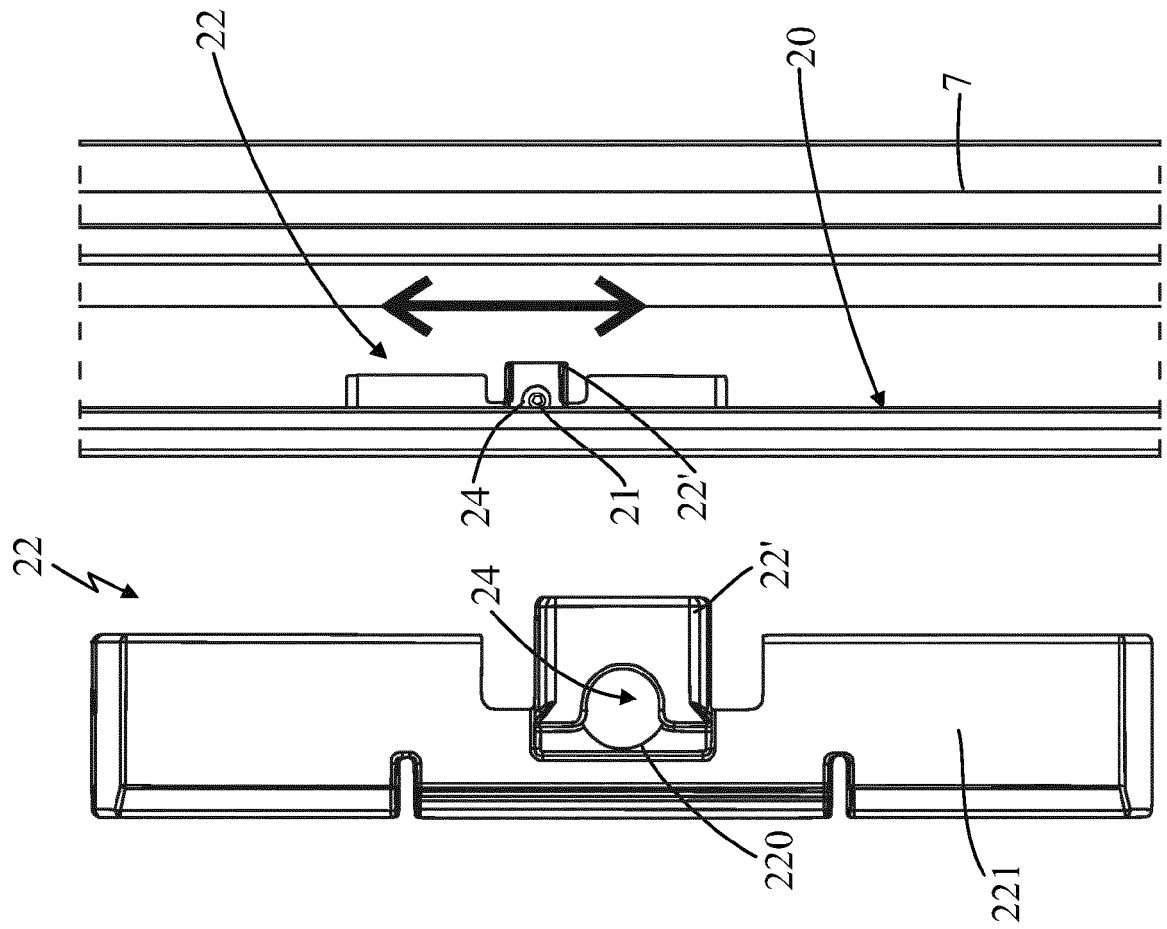


Fig. 7

Fig. 9

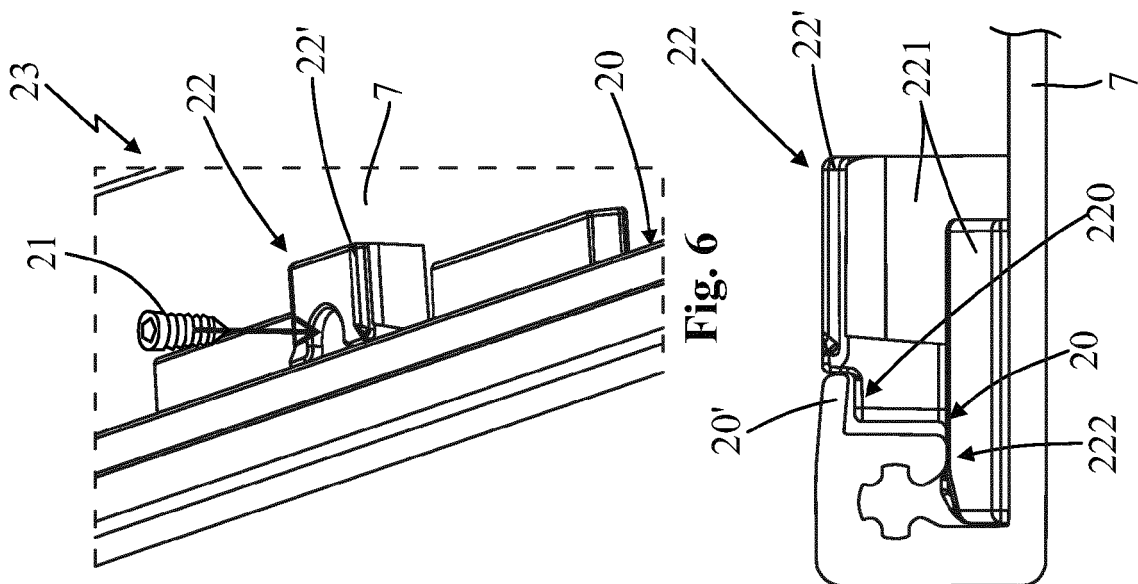


Fig. 6

Fig. 8

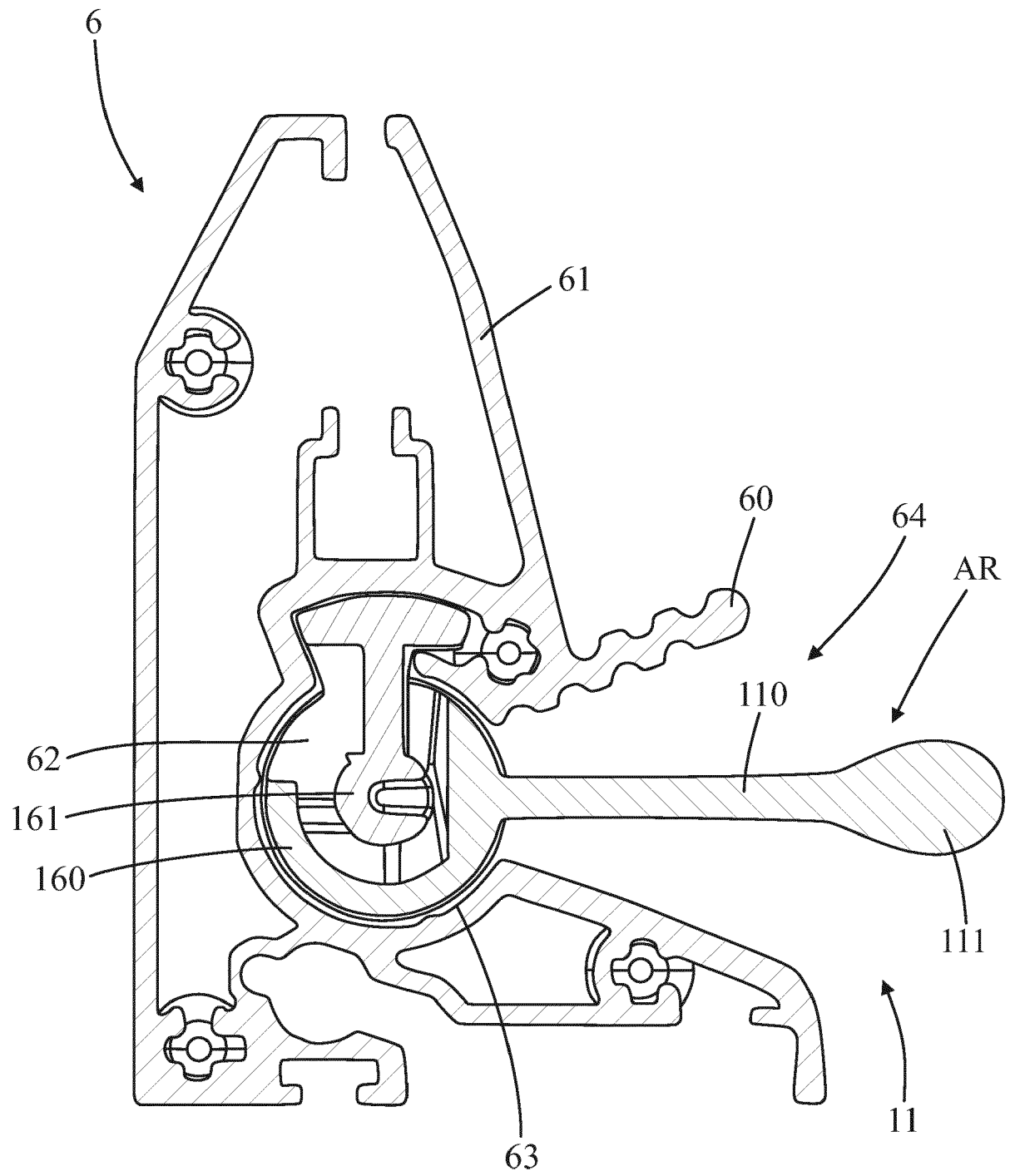


Fig. 10

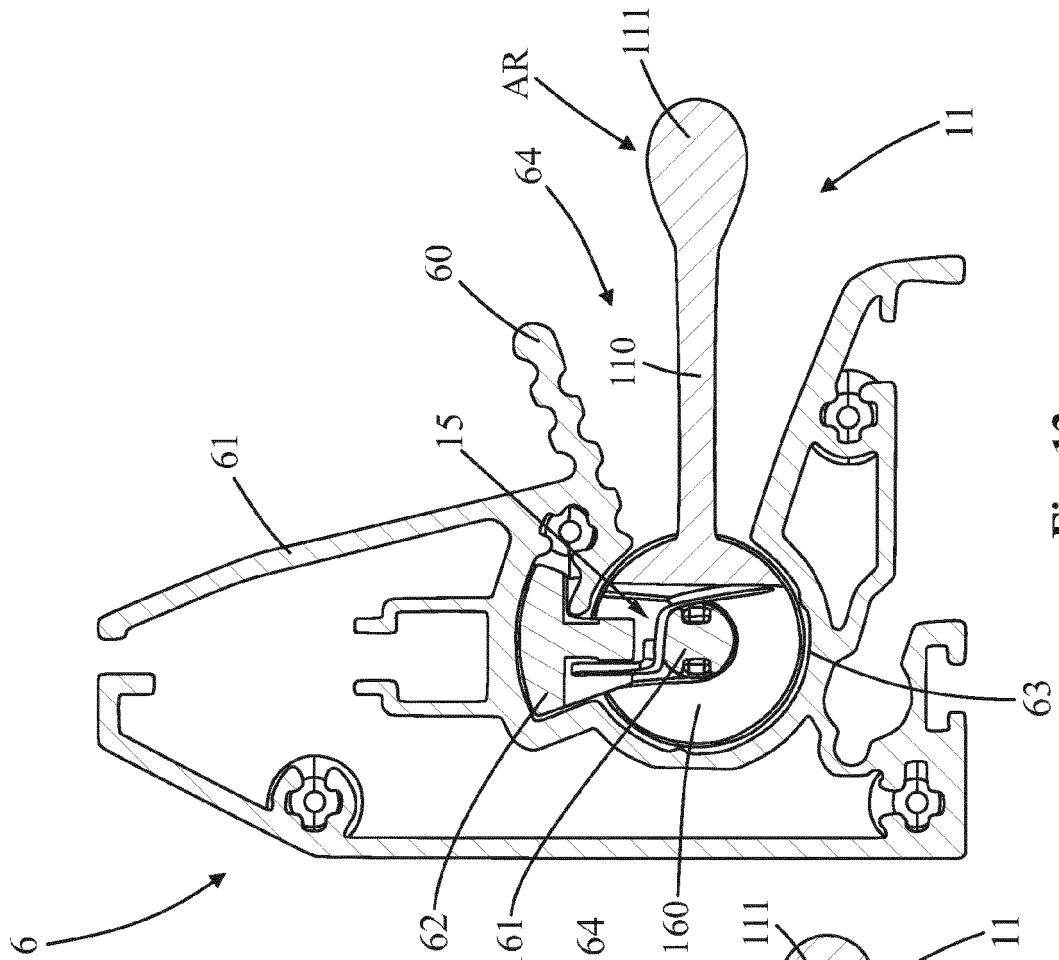


Fig. 11

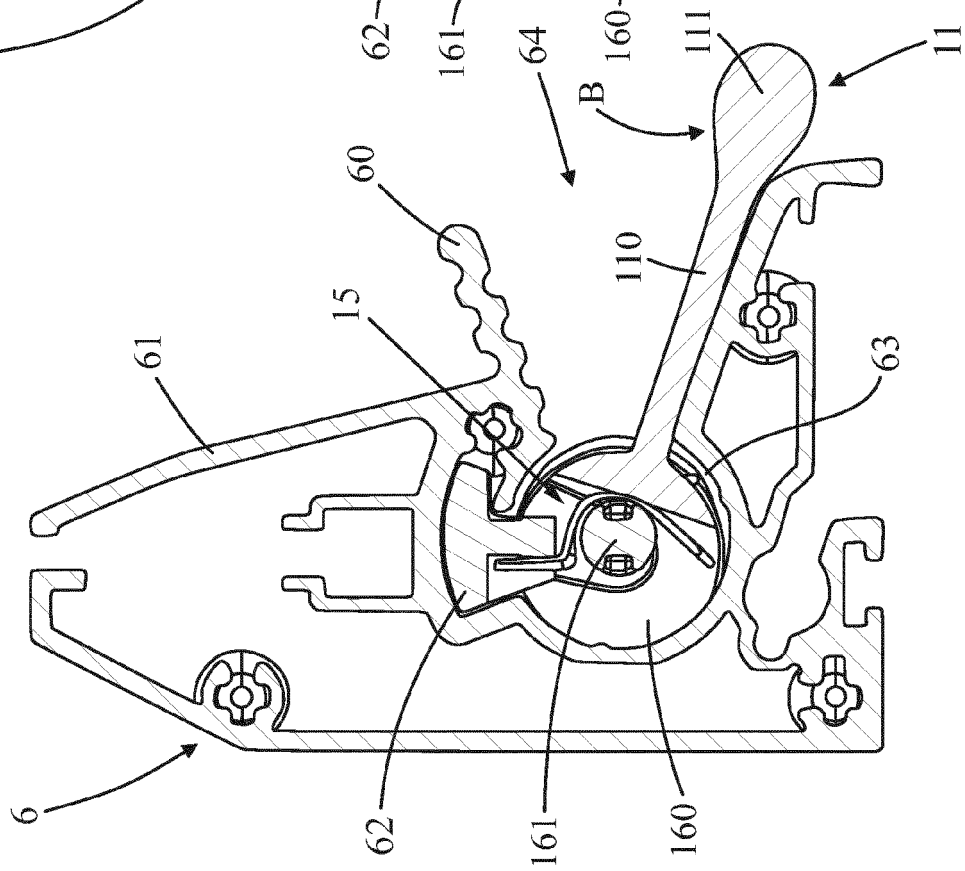


Fig. 12

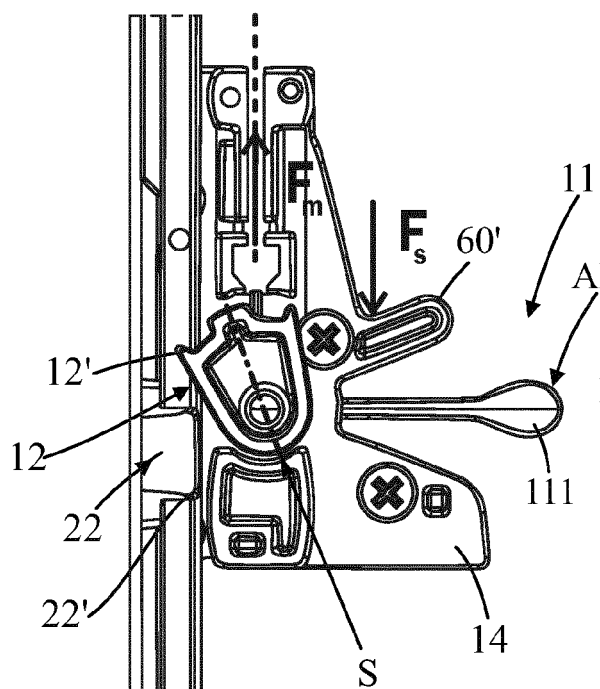


Fig. 13

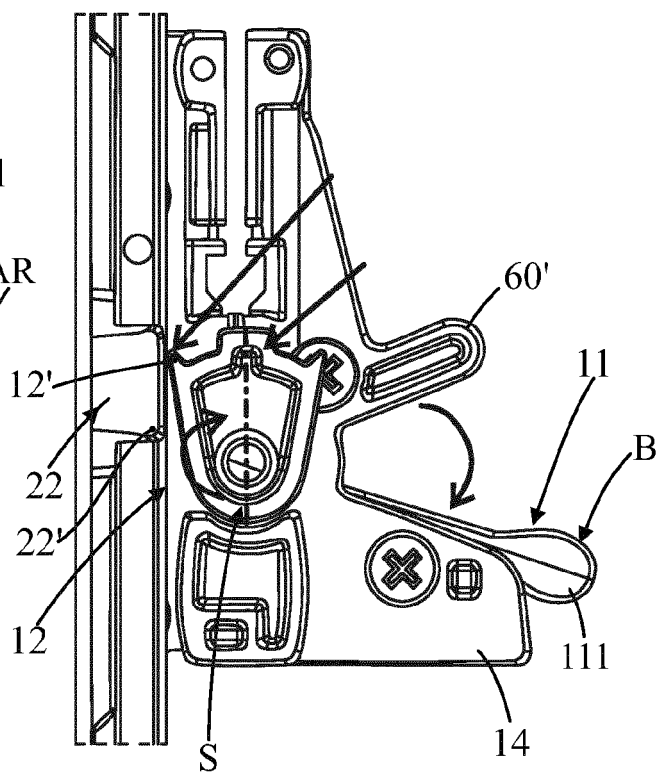


Fig. 14

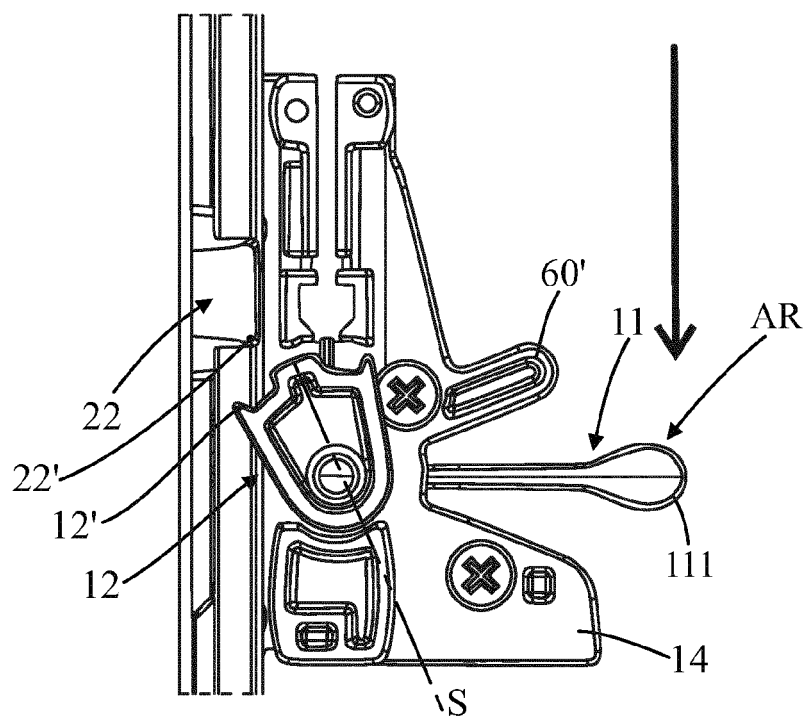


Fig. 15

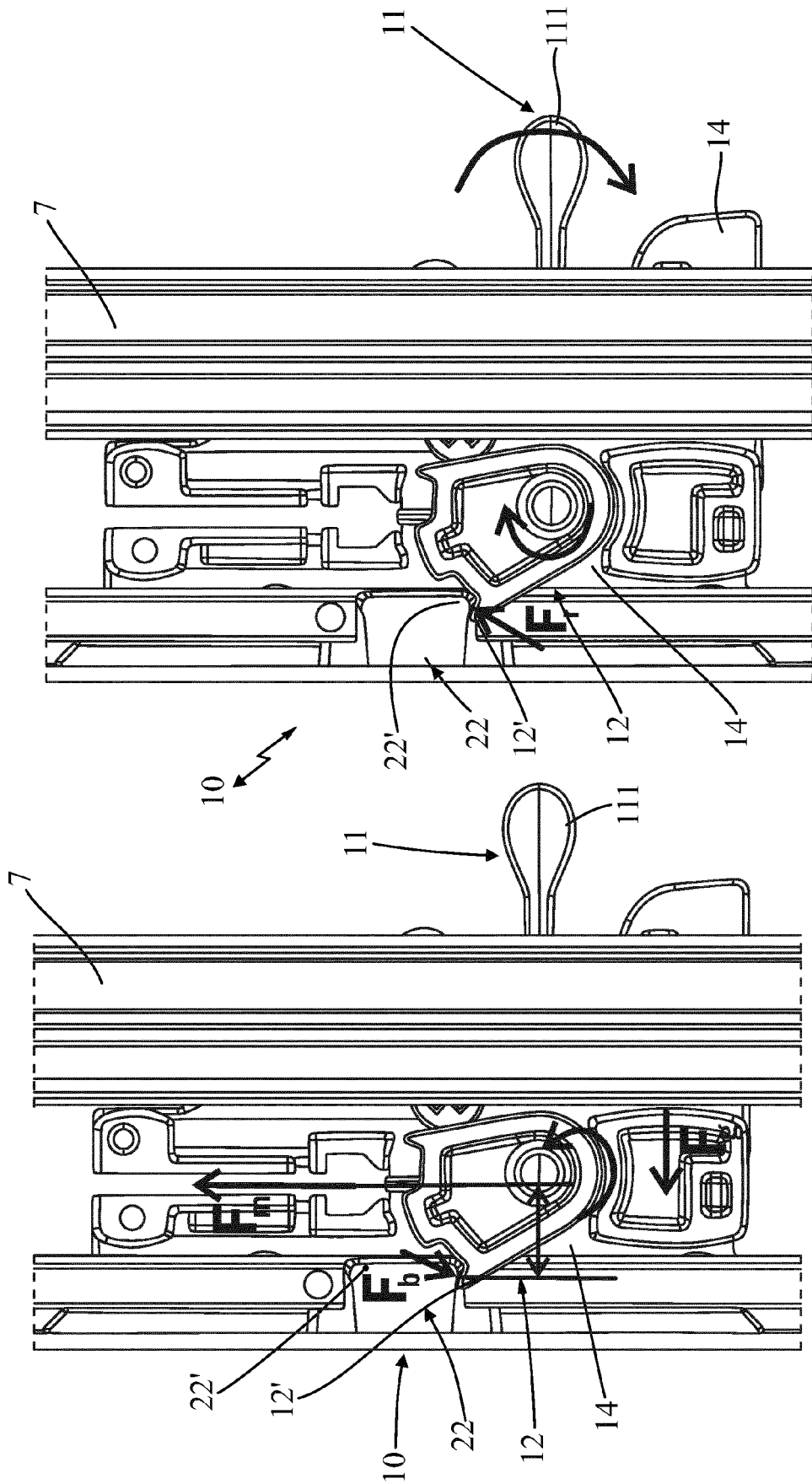


Fig. 17

Fig. 16

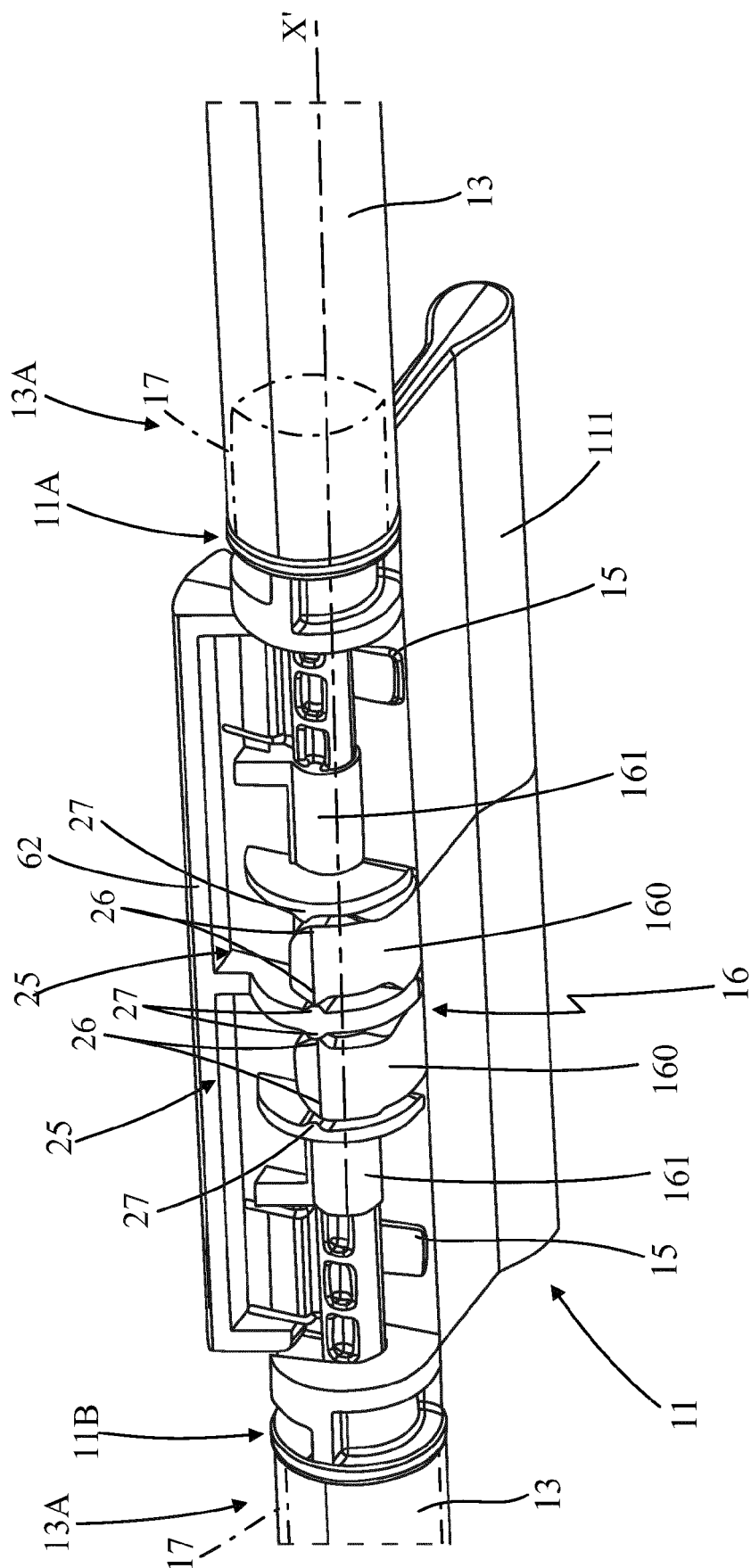


Fig. 18



EUROPEAN SEARCH REPORT

Application Number
EP 19 20 2093

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 199 529 A2 (FOURDS LTD [GB]) 23 June 2010 (2010-06-23) * paragraphs [0001], [0013] - [0018]; figures 1-7 *	1-11	INV. E06B9/80 E06B9/78 E06B9/90
A	DE 10 2006 032933 A1 (HAPPICH FAHRZEUG & IND TEILE [DE]) 14 February 2008 (2008-02-14) * paragraphs [0001], [0019] - [0021]; claim 1; figures 1-4 *	1-11	
A	DE 22 14 848 A1 (WIDMER FA OSKAR) 11 October 1973 (1973-10-11) * pages 4-6; figures 1-2 *	1-11	
A	US 2014/000820 A1 (DIAMOND CORMAC [GB] ET AL) 2 January 2014 (2014-01-02) * paragraphs [0001], [0009] - [0021], [0048] - [0052], [0058] - [0064]; figures 1-26 *	1-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 January 2020	Examiner Altamura, Alessandra
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 19 20 2093

5 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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29-01-2020

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