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(54) **FABRIC ROLLER BLIND PROVIDED WITH A DEVICE FOR ADJUSTING THE TENSION**

(57) Fabric roller blind, which comprises: two vertical uprights (7) fixed to a portal along respective sides of an opening (A) of the portal itself; a take-up roller (4) rotatably supported between the two vertical uprights (7); a fabric (5) rollable around the take-up roller (4); a return spring (8) mechanically associated with the take-up roller (4) and adapted to exert an elastic torque on the latter, in a manner so as to be elastically opposed to the unwinding of the fabric (5) and facilitate the re-winding of the fabric (5) itself; means (10) for adjusting the tension of the return spring (8) mechanically connected to the take-up roller (4) in order to vary the tensioning of the return spring (8). The adjusting means (10) of the blind (1) comprise: an actuator member (13) rotatably mounted inside at least one of the uprights (7) and accessible by means of a hole (71) made on the same upright (7) from within the opening (A) such that the actuator member (13) is susceptible of being rotated into different angular positions in which the actuator member (13) can be engaged by means of provided mechanical engagement means (20); and transmission means (18) for transmitting the rotation torque of the actuator member (13) to the take-up roller (4), consequently varying the tensioning of the return spring (8).

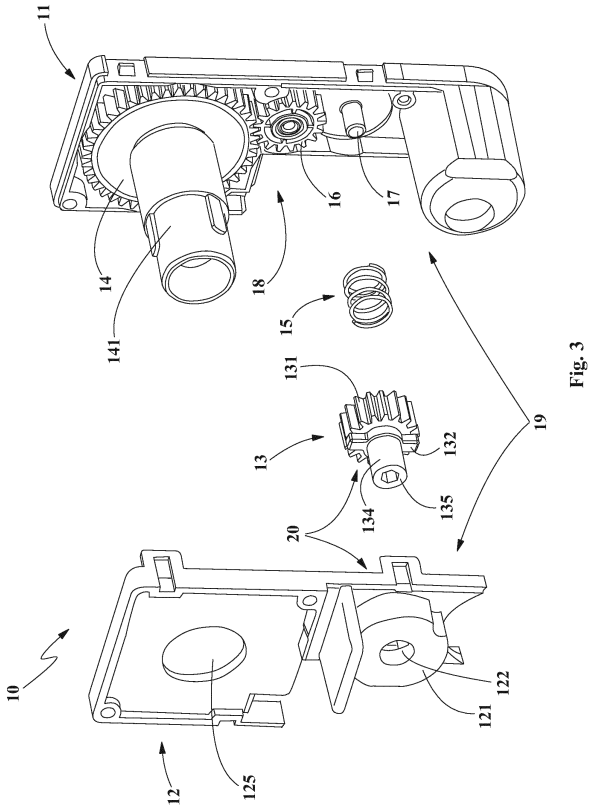

Fig. 3

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Description

Field of application

[0001] The present invention regards a fabric roller blind provided with a device for adjusting the tension according to the preamble of the independent claim 1.

[0002] The fabric roller blind equipped with the present adjusting device is intended to be advantageously employed for adjustably closing provided openings or gaps of building walls, in particular relative to windows, doors, French windows, skylights and similar doors/windows/shutters, since it is possible to precisely adjust the tension of elastic means adapted to exert, through a take-up roller, an elastic return force on the fabric roller of the blind.

[0003] The fabric roller blind equipped with the device for adjusting the tension, 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 fabrics for sun-protection or air-protection, or also in the field of production of mosquito screens or similar products.

State of the art

[0004] Blinds are known on the market for intercepting 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 at its interior houses a roller, 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 stretch the fabric itself.

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

[0007] In particular, the bottom bar is obtained with an aluminum section closed at the lateral ends by two lateral terminals slidably coupled to the respective lateral guides.

[0008] Each lateral guide is obtained with a corresponding aluminum profile of rectangular section, internally hollow and provided with an internal side (facing the internal side of the other lateral guide) on which a longitudinal slit is made, in which the corresponding lateral terminal of the bottom bar is slidably inserted.

[0009] In addition, each lateral guide is longitudinally 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.

[0010] In operation, the roller of the blind can be driven, typically through a motor, to rotate in order 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 base terminals placed at the lower ends of the lateral guides.

[0011] In particular, blinds are known on the market provided with elastic return means, which are adapted to maintain the fabric taut when this is situated in the extended position and to allow the re-winding of the fabric itself in order to attain its collected position. Such elastic return means usually comprise a helical spring wound around the roller and torsion-loaded such that when the fabric is unwound from the roller (in order to attain the extended position) the spring is further loaded, storing elastic energy, and it produces a return action opposing the unwinding, i.e. a resistant torque which maintains the fabric roller under tension. In this manner, during the reverse rotation of the roller, in order to reach the collected position of the fabric, the elastic return means release the energy stored during the unwinding and produce a drive torque on the roller assisting the winding of the fabric around the roller, in order to easily attain the aforesaid collected position.

[0012] If the tension of the elastic return means is too weak, the fabric cannot be completely rewound and never reaches the collected position, or it may be slack when situated in extended position.

[0013] For the purpose of remedying such drawback, fabric roller blinds have been known on the market for some time which are provided with a device for adjusting the tension of the elastic return means, in particular provided with a gear positioned at a lateral end of the roller. Such gear, once driven to rotate from the outside (for example by means of an Allen wrench), loads or unloads the elastic return means for a suitable adjusting of the tension thereof. Nevertheless, the gear is accessible by means of a hole made on the external side (facing the wall on which the opening to be screened is made) of one of the lateral guides, in a position substantially coaxial to the roller.

[0014] The fabric roller blind equipped with the adjusting device of known type, briefly described herein thus far, has in practice proven that it does not lack drawbacks.

[0015] A first drawback lies in the fact that the adjusting of the tension of the elastic return means can only be executed during installation of the blind, otherwise it is necessary to disassemble the lateral guides of the blind in order to be able to access the hole for accessing the tensioning gear of the elastic return means. Therefore, the elastic return means are hard to adjust.

[0016] A second drawback of the fabric roller blind equipped with the adjusting device of known type lies in the fact that the adjustment requires the operator to carry out long and difficult operations for disassembling the lateral guides of the blind and accessing the adjustment of the elastic return means.

[0017] A third drawback lies in the fact that the adjust-

ment is not precise, since it is not possible to operate in a controlled manner on the gear, as it is only possible to rely on the experience of the operator.

[0018] A further drawback lies in the fact that the adjustment of the tension of the elastic return means requires the final user to possess technical knowledge of the field.

Presentation of the invention

[0019] In this situation, the problem underlying the present invention is to provide a fabric roller blind provided with a device for adjusting the tension, which allows adjusting the elastic return means even after the installation of the blind, without requiring the disassembly thereof.

[0020] Another object of the present invention is to provide a fabric roller blind provided with a device for adjusting the tension, which is entirely reliable in operation, and in particular capable of ensuring a precise adjustment of the elastic return means.

[0021] Another object of the present invention is to provide a fabric roller blind provided with a device for adjusting the tension, which is entirely efficient in operation, and in particular capable of ensuring the adjustment of the elastic return means without requiring particular effort/exertion by the final user and which does not require particular technical knowledge of the field.

[0022] Another object of the present invention is to provide a device for adjusting the tension of the elastic return means of a windable cover, which is structurally simple and inexpensive to make and install.

Brief description of the drawings

[0023] 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 a blind provided with a device for adjusting the tension of the elastic return means, which is the object of the present invention;
- figure 2 shows a front axonometric view of a detail of the blind illustrated in figure 1, relative to a vertical upright provided with a through hole for accessing the adjusting device;
- figure 3 shows an exploded perspective view of the device for adjusting the tension of the elastic return means, object of the present invention;
- figure 4 shows a rear axonometric view of a detail of the adjusting device relative to a housing seat made in a sealing cover, in which a first toothed wheel of a transmission member thereof is housed.

Detailed description of a preferred embodiment

[0024] With reference to the set of drawings, reference number 1 overall indicates the fabric roller blind, object of the present invention.

[0025] The blind 1 is usable in operation for adjustably closing an opening A of a portal provided in a wall of a building or the load-bearing structure of any building premises, such as a window, a door or a French window,

[0026] With the term blind, it must be intended any one cover adapted to at least partially close an opening, for example a brise soleil, a mosquito screen or the like.

[0027] In accordance with the embodiment illustrated in figure 1, the blind 1 comprises a support frame 2 intended to be fixed to the portal, in which the opening A is obtained, and preferably comprising a rolling-shutter box 3 intended to be positioned in the upper part of the opening A itself.

[0028] Advantageously, the rolling-shutter box 3 comprises a hollow tubular body, in particular obtained with an aluminum extrusion, which is extended with substantially horizontal axis between two opposite ends closed by two lateral caps, in particular made of plastic material.

[0029] The blind 1 also comprises a take-up roller 4 rotatably supported by the support frame 2, advantageously housed inside the rolling-shutter box 3, in particular between two uprights 7 and provided with a substantially horizontal rotation axis X.

[0030] Around the take-up 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.

[0031] The fabric 5 can be intended for making a shading screen, e.g. in substitution of a rolling shutter, a brise soleil screen for filtering the sunlight or even for making a mosquito screen. Generally, the fabric 5 can be dedicated to closing the opening of a door/window/shutter in order to protect an internal area from the sun and/or from the wind and/or, more generally, from the weather conditions of the outdoor environment. 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 shading, filtering or transparent type.

[0032] The fabric 5 preferably has 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 4 and with a lower edge preferably fixed to a bottom bar 6 arranged parallel to the take-up roller 4 and adapted to stretch the fabric 5.

[0033] The blind 1 also comprises two vertical uprights 7 extended parallel to each other and side-by-side and between which the fabric 5 is susceptible of sliding following its winding and unwinding around the take-up roller 4.

[0034] More in detail, each vertical upright 7 is longitudinally extended according to a respective extension direction Y, preferably vertical and substantially orthog-

onal to the rotation axis X of the take-up roller 4, between an upper end thereof, preferably arranged at the rolling-shutter box 3, and an opposite lower end intended to be arranged at the lower edge of the opening A, for example on a floor or on a windowsill.

[0035] The two vertical uprights 7 are arranged along corresponding sides of the opening A and are mechanically fixed to the portal (where the opening A itself is made) for example by means of anchoring pressure screws.

[0036] Advantageously, each vertical upright 7 is preferably obtained by means of extruded metallic sections, in particular made of aluminum.

[0037] More in detail, each vertical upright 7 is preferably provided with an open side, arranged facing the open side of the other vertical upright 7, on which a longitudinal slit is made in which the bottom bar 6 is slidably constrained.

[0038] Preferably, the bottom bar 6 of the blind 1, fixed to the lower edge of the fabric 5, is longitudinally extended along a second extension direction Z parallel to the rotation axis X of the take-up roller 4, between two lateral terminals thereof slidably engaged with the respective vertical uprights 7.

[0039] The blind 1 also comprises a return spring 8 mechanically associated with the take-up roller 4 and adapted to exert an elastic return torque on the latter.

[0040] In particular, the take-up roller 4 is susceptible of being rotated around the rotation axis X in order to move the fabric 5 between a retracted 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.

[0041] In particular, when the fabric 5 is in the retracted position, the bottom bar 6 is preferably placed in abutment against the rolling-shutter box 3 and, when the fabric 5 is in the extended position, the bottom bar 6 is preferably placed at the lower ends of the vertical uprights 7 with the fabric 5 unwound to substantially totally close the opening A.

[0042] 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 shown) placed inside the vertical uprights 7, and with the lower edge fixed to the bottom bar 6, in turn engaged to the vertical uprights 7 themselves through the lateral terminals.

[0043] In particular, the bottom bar 6, during the movement of the fabric 5, keeps the fabric 5 itself extended and is moved remaining horizontal, with its lateral terminals engaged with the vertical uprights 7. For such purpose, the uprights are preferably obtained with aluminum or plastic extrusions with guides made along the extension thereof for the sliding of the lateral terminals.

[0044] Preferably, the aforesaid return spring 8 has helical form and is wound at least partially around the axis of the take-up roller 4 and is constrained at one end thereof to the rotary take-up roller and at the other end thereof to a part of the fixed frame, such as preferably to an adjustment shaft 141 coaxially arranged inside the roller and carrying, wound thereon, the helical spring.

[0045] The return spring 8 is elastically opposed to the unwinding of the fabric 5 from the retracted position to the extended position and facilitates the re-winding of the fabric 5 from the extended position to the retracted position. Therefore, when the fabric 5 is in extended position the elastic torque exerted by the return spring 8 on the take-up roller 4 maintains the fabric 5 taut, preventing the formation of folds or wrinkles of the material that forms the fabric 5 itself.

[0046] The blind 1, object of the present invention, also comprises means 10 for adjusting the tension of the return spring 8, which are mechanically connected to the take-up roller 4 in order to vary the tensioning of the spring 8.

[0047] The adjusting means 10 therefore allow varying the elastic torque which the return spring 8 exerts on the take-up roller 4, in order to vary the elastic force with which the spring 8 opposes the unwinding and simultaneously in order to vary the elastic force with which it facilitates the re-winding of the fabric 5.

[0048] According to the idea underlying the present invention, the adjusting means 10 of the blind 1 comprise an actuator member 13, rotatably mounted inside at least one of the uprights 7 of the support frame 2, preferably inside a housing seat thereof. Such actuator member 13 is accessible by means of a hole 71 made on the same upright 7 from within the opening A, in a position facing the opposite upright, and is susceptible of being rotated into different angular positions, preferably inside the aforesaid housing seat, exerting an adjusting torque on the actuator member 13 itself.

[0049] The means 10 for adjusting the tension of the return spring 8 also comprise mechanical engagement means 20 provided for mechanically engaging the actuator member 13 to the upright 7 in the aforesaid angular positions and transmission means 18 for transmitting the rotation torque of the actuator member 13 to the take-up roller 4, consequently varying the tensioning of the return spring 8.

[0050] Preferably, the upright 7 of the support frame 2, in which the actuator member 13 of the adjusting means 10 is housed, comprises a lateral cap 19 fixed to the same upright 7 at the upper part of the opening A.

[0051] Advantageously, the lateral cap 19 is provided with an external support shell 11 intended to face the internal face of the portal and with an internal shell 12 mechanically fixed to the external shell 11. The external and internal shells 11, 12 delimit a containment space inside of which the transmission means 18 are housed. In addition, the aforesaid shells 11, 12 delimit the seat 121 in which the actuator member 13 is housed for the means 10 for adjusting the tension of the return spring 8. Advantageously, the actuator member 13 of the adjusting means 10 comprises a first toothed wheel 131

rotatably and idly mounted on a pin 17 fixed to the lateral cap 19, and it is housed inside the seat 121 delimited by the external 11 and internal 12 shells of the cap 19 itself.

[0052] Advantageously, the actuator member 13 also comprises elastically pliable means 15 interposed between the toothed wheel 131 and the external shell 11 of the lateral cap 19 which are adapted to exert an axial elastic force along the pin 17 on the actuator member 13.

[0053] Preferably, the first toothed wheel 131 of the actuator member 13 is provided with a central hole 136 axially and slidably engaged on the pin 17, which is fixed to the external support shell 11 of the lateral cap 19.

[0054] The elastically pliable means 15 of the actuator member 13 advantageously comprise a second helical spring coaxially wound around the pin 17 fixed to the external shell 11 of the lateral cap 19.

[0055] The mechanical engagement means 20 for the adjusting means 10 preferably comprise at least one first shaped face of the first toothed wheel 13 and at least one second shaped face of the seat 121 in which the actuator member 13 is housed. Such two shaped faces are forced in a mechanical retention relationship against each other by the elastic force exerted by the elastically pliable means 15 of the actuator member 13.

[0056] In particular, the first shaped face of the first toothed wheel 131 of the actuator member 13 is provided with at least one locking tongue 132, and in particular is preferably provided with two locking tongues 132 each positioned at 180° with respect to each other. Such tongue 132 projectingly protrudes towards the second shaped face of the seat 121, which is provided with at least one housing cavity 123 of the locking tongue 132 in order to define the aforesaid retention engagement therewith.

[0057] More in detail, the second shaped face of the seat 121 delimited between the external 11 and internal 12 shells of the lateral cap 19 is provided with two or more teeth 124 which delimit the corresponding housing cavity 123 therebetween.

[0058] Advantageously, each tooth 124 of the seat 121 is provided with a slide profile 1241 in a first rotation direction, in particular in the rotation direction in which the tension of the return spring 8 increases, in order to facilitate the sliding of the locking tongue 132 of the first toothed wheel 131 thereon during the rotation of the actuator member 13, and with a step profile 1242 in a second rotation direction, in particular in the rotation direction in which the tension of the return spring 8 decreases, in order to lock the locking tongue 132 in the housing cavity 123.

[0059] In accordance with a different embodiment of the blind 1 not illustrated in the enclosed figures, the first shaped face of the first toothed wheel 131 of the actuator member 13 is provided with at least one first friction surface, for example a plurality of knurling, i.e. roughness, i.e. a material layer with high static friction coefficient, such as a composite with polymer matrix, directed towards the second shaped face of the seat 121 of the first toothed wheel 131, which is in turn provided with at least one second friction surface in order to define the aforesaid retention engagement with the first friction surface of the first toothed wheel 13.

[0060] Preferably, the transmission means 18 comprise at least one second toothed wheel 14 coaxially fixed to the take-up roller 4, in particular along the rotation axis X, and mechanically engaged with the first toothed wheel 131 of the actuator member 13.

[0061] In accordance with the preferred embodiment illustrated in the enclosed figures, the second toothed wheel 14 is centrally provided, on the face directed away from the lateral cap 19, with a projecting tubular portion, which is mechanically connected to the adjustment shaft 141 which internally retains the first end of the helical return spring 8 by means of a retention mouth (not illustrated in the enclosed figures) housed inside the adjustment shaft 141. The return spring 8 is therefore positioned inside the take-up roller 4 and mechanically constrained at its second end to the opposite upright. Simultaneously, the other end of the shaft 141 is rotatably supported by the cap of the opposite upright itself.

[0062] The rotation of the second toothed wheel 14 allows changing the angular position of the adjustment shaft 141 in which the first end of the return spring 8 is retained and then varying the tensioning force thereof.

[0063] Advantageously, the internal shell 12 is provided with a through hole 125 aligned with the aforesaid projecting tubular projection, which protrudes towards the interior of the opening A through such through hole 125 of the internal shell in order to be coaxially engaged with the shaft 141 mounted inside the take-up roller 4.

[0064] In accordance with the preferred embodiment illustrated in the enclosed figures, the transmission means 18 preferably also comprise at least one third toothed wheel 16 idly mounted on the lateral cap 19, in particular pivoted on a further pin 160 fixed to the internal shell 12 of the lateral cap 19, and mechanically engaged to the first and second toothed wheel 131, 14 for transmitting the motion between the first toothed wheel 131 and the second toothed wheel 14.

[0065] The kinematic chain obtained by means of the aforesaid first, second and third toothed wheels 131, 14, 16 can be enlarged with other members and in particular with other toothed wheels, for the purpose of varying the transmission ratio, without departing from the protective scope of the present patent.

[0066] Preferably, such toothed wheels 131, 14, 16 are made of plastic material, such as polystyrene, or a thermosetting resin.

[0067] In accordance with the preferred embodiment illustrated in the enclosed figures, the actuator member 13 also comprises a projecting central portion 134, which protrudes from the first shaped face of the first toothed wheel 131

[0068] The aforesaid projecting central portion 134 is inserted in a through hole 122 which is made on the internal shell 12 of the lateral cap 19, at the seat 121, and

is aligned with the access hole 71 obtained on the upright 7, in which the lateral cap 19 itself is installed.

[0069] Advantageously, the projecting central portion 134 of the actuator member 13 is provided with a terminal face 135 with a shaped seat obtained thereon, which is accessible from within the opening A, being aligned with the aforesaid through holes 71, 122.

[0070] Such shaped seat is susceptible of receiving, via shape coupling, an actuator tool for the rotation of the actuator member 13, such as an Allen wrench, or a screwdriver, movable by a user in order to impart a rotation torque to the actuator member 13 and thus varying the tension of the return spring 8 in a quick and easy manner.

[0071] In operation, for the purpose of increasing the tension of the return spring 8, the user applies the aforesaid rotation torque to the actuator member 13 inside the seat 121 in a first rotation direction. The actuator member 13 imparts such rotation torque to the take-up roller 4 and to the return spring 8 by means of the transmission means 18 housed inside the containment space delimited between the external 11 and internal 12 shells of the external cap 19.

[0072] Each locking tongue 132 slides on the slide profile 1241 of the corresponding tooth 124, until the tongue 132 reaches the cavity 123 obtained between each tooth 124 and the successive contiguous tooth 124 (successive according to the rotation direction), in order to then encounter the slide profile 1241 of the subsequent tooth 124. Upon reaching the desired tension of the return spring 8, the user removes the rotation torque from the actuator member 13 and the elastic return force of the spring 8 pushes the tongue 132 in abutment against the step profile 1242 of the preceding tooth 124, preceding with respect to the aforesaid first rotation direction, locking the actuator member 13 in such position and simultaneously maintaining the return spring 8 at the desired tension.

[0073] In addition, for the purpose of decreasing the tension of the return spring 8, the user pushes the actuator member 13 (preferably by acting on the terminal wall 135 of the projecting central portion 134) in order to overcome the elastic force exerted by the elastically pliable means 15, and thus to release the first shaped face of the first toothed wheel 131 of the actuator member 13 from the second shaped face of the seat 121, and in particular, in accordance with the preferred embodiment illustrated in the enclosed figures, in order to move beyond the step profile 1242 of the tooth 124 against which each tongue 132 lies in abutment. The elastic return force of the spring 8 forces the actuator member 13 to rotate, until each tongue abuts against the step profile 1242 of the preceding tooth 124, therefore upon rotation of the actuator member 13, the tension of the return spring 8 mechanically associated with the take-up roller 4 decreases.

[0074] In this manner it is possible to lock the actuator member 13 in different angular positions, and in particular it is possible to vary the tension of the return spring 8 without having to disassemble the support frame 2 of the blind 1, hence this is a quick, easy operation, not requiring the final user to possess technical knowledge of the field. The fabric roller blind 1 provided with a device for adjusting the tension thus conceived therefore attains the preestablished objects.

Claims

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

- a support frame (2) provided with at least two vertical uprights (7) and intended to be fixed in an opening (A) of a portal, of a window or of a door; said two vertical uprights (7) extended parallel to each other and side-by-side fixed to said portal along respective sides of said opening (A);
- a take-up roller (4) rotatably supported by said support frame (2), between said two vertical uprights (7), along a substantially horizontal rotation axis (X), and intended to be positioned in the upper part 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 vertical uprights (7);
- at least one return spring (8) mechanically associated with said take-up roller (4) and adapted to exert an elastic torque on said take-up roller (4);

said take-up roller (4) being susceptible of being rotated around the rotation axis (X) in order 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);

said return spring (8) being elastically opposed to the unwinding of said fabric (5) from said retracted position to said extended position and facilitating the re-winding of said fabric (5) from said extended position to said retracted position;

- adjusting means (10) for adjusting the tension of said return spring (8), mechanically connected to said take-up roller (4) in order to vary the tensioning of said return spring (8);

said blind (1) being **characterized in that** said adjusting means (10) comprise:

- an actuator member (13), rotatably mounted inside at least one of said uprights (7) of said support frame (2), accessible by means of a hole (71) obtained on the same upright (7) in a posi-

tion facing the opposite upright (7), from within said opening (A) and susceptible of being rotated into different angular positions; mechanical engagement means (20) being provided for mechanically engaging said actuator member (13) with said upright (7) in said angular positions;
- transmission means (18) for transmitting the rotation torque of said actuator member (13) to said take-up roller (4), consequently varying the tensioning of said return spring (8).

2. Blind according to claim 1, **characterized in that** the upright (7) of said support frame (2) comprises a lateral cap (19) fixed to said upright (7) at said upper part, and provided with:

- an external support shell (11) intended to face the internal face of the portal;
- an internal shell (12) mechanically fixed to said external shell (11), delimiting with said external support shell (11) a containment space housing said transmission means (18) and a seat (121) in which said actuator member (13) is housed.

3. Blind according to claim 2, **characterized in that** said actuator member (13) comprises:

- a first toothed wheel (131) rotatably and idly mounted on a pin (17) fixed to said lateral cap (19), housed within the seat (121);
- elastically pliable means (15) interposed between said toothed wheel (131) and said lateral cap (11) and adapted to exert an axial elastic force along the pin (17) on said actuator member (13);

said mechanical engagement means (20) comprising at least one first shaped face of said first toothed wheel (13) and at least one second shaped face of the seat (121) in which said actuator member (13) is housed, forced in a mechanical retention relationship against each other by said elastically pliable means (15).

4. Blind according to claim 3, **characterized in that** the first shaped face of said first toothed wheel (131) of said actuator member (13) is provided with at least one locking tongue (132) which projectingly protrudes towards the second shaped face of the seat (121) of said first toothed wheel (131); the latter being provided with at least one housing cavity (123) for said locking tongue (132) in order to define said retention engagement therewith.

5. Blind according to claim 4, **characterized in that** the second shaped face of the seat (121) of said first toothed wheel (131) of said actuator member (13) is provided with two or more teeth (124) delimiting corresponding said housing cavities (123) therebetween.

6. Blind according to claim 5, **characterized in that** each said tooth (124) is provided with a slide profile (1241) in a first rotation direction, in order to facilitate the sliding of the locking tongue (132) thereon during the rotation of the actuator member (13), and with a step profile (1242) in a second rotation direction in order to lock the locking tongue (132) in said housing cavity (123).

7. Blind according to claim 3, **characterized in that** the first shaped face of said first toothed wheel (131) of said actuator member (13) is provided with at least one friction surface directed towards the second shaped surface of the seat of said first toothed wheel; the latter being provided with at least one second friction face in order to define said retention engagement therewith.

8. Blind according to claim 1, **characterized in that** said transmission means (18) comprise at least one second toothed wheel (14) coaxially fixed to said take-up roller (4).

9. Blind according to claim 6, **characterized in that** said transmission means (18) comprise at least one third toothed wheel (16) idly mounted on said lateral cap (19) and mechanically engaged with said first and second toothed wheel (131, 14) in order to transmit the motion of the first (131) to the second (14).

10. Blind according to claim 3 **characterized in that** said first toothed wheel (131) of said actuator member (13) internally delimits a central hole (136) slidably engaged with the pin (17) of said external support shell (11) of said lateral cap (19).

11. Blind according to claim 1 **characterized in that** said actuator member (13) of said adjusting means (10) is susceptible of being rotated into different angular positions through a tool insertable in said hole (71) and removably engageable with a shaped seat of said actuator member (13).

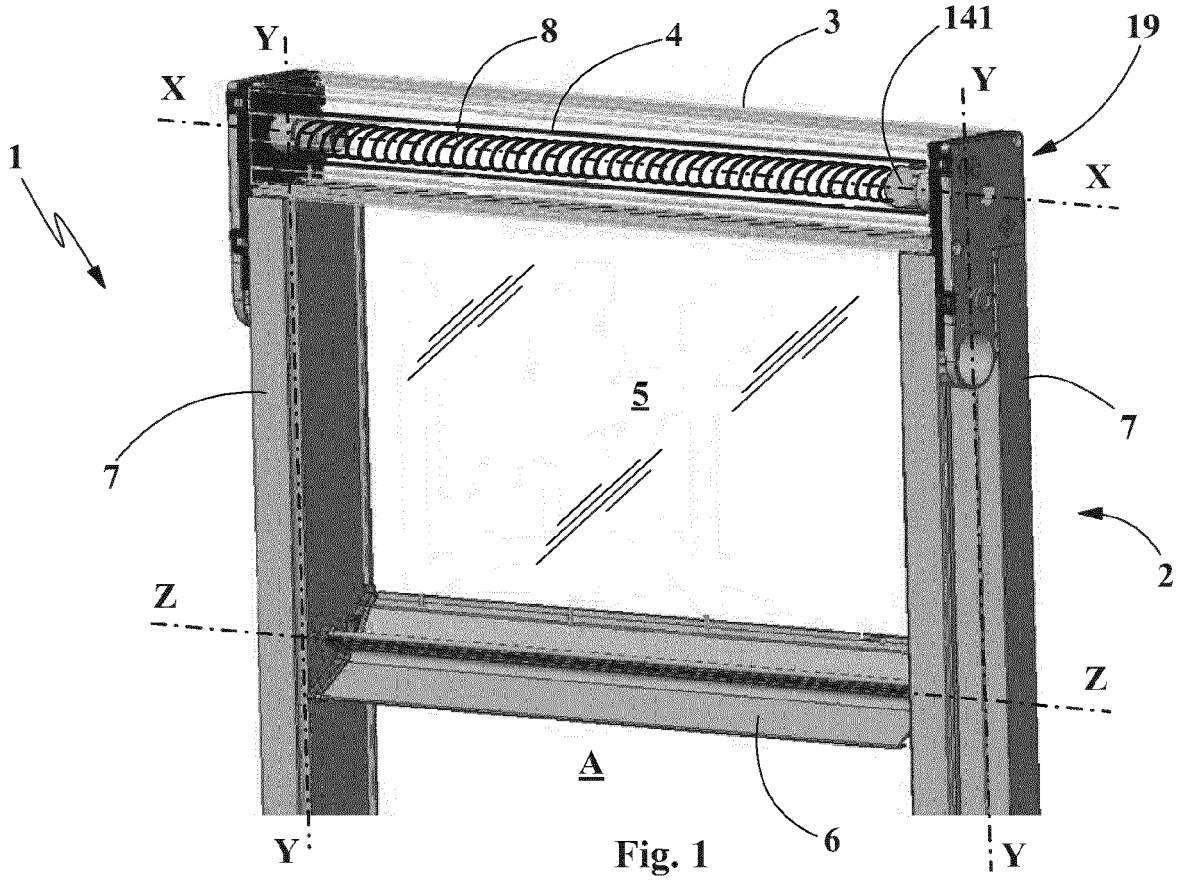

Fig. 1

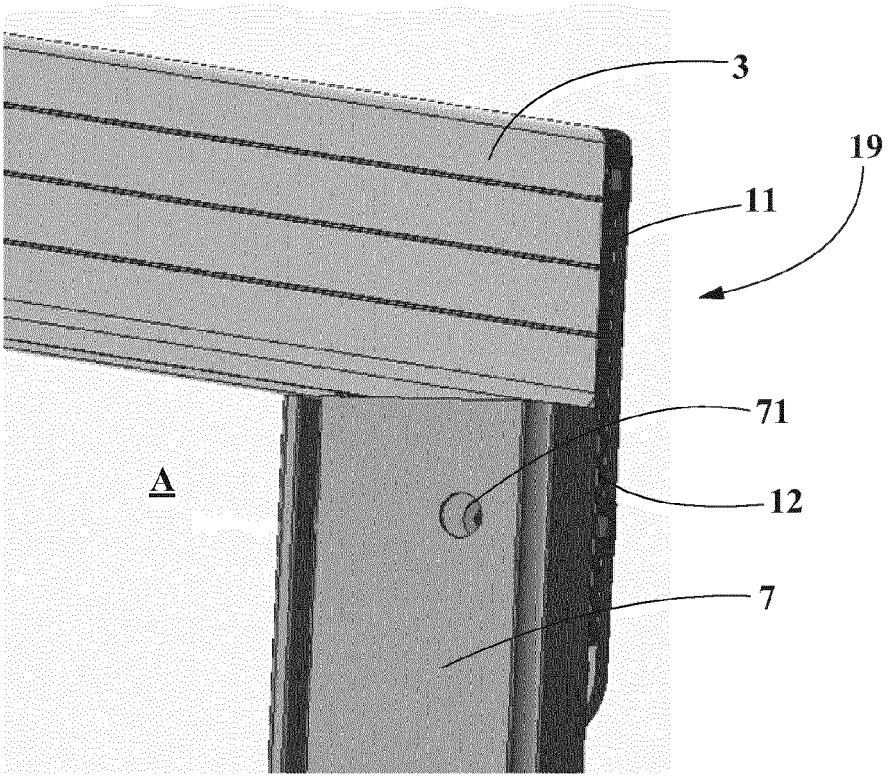

Fig. 2

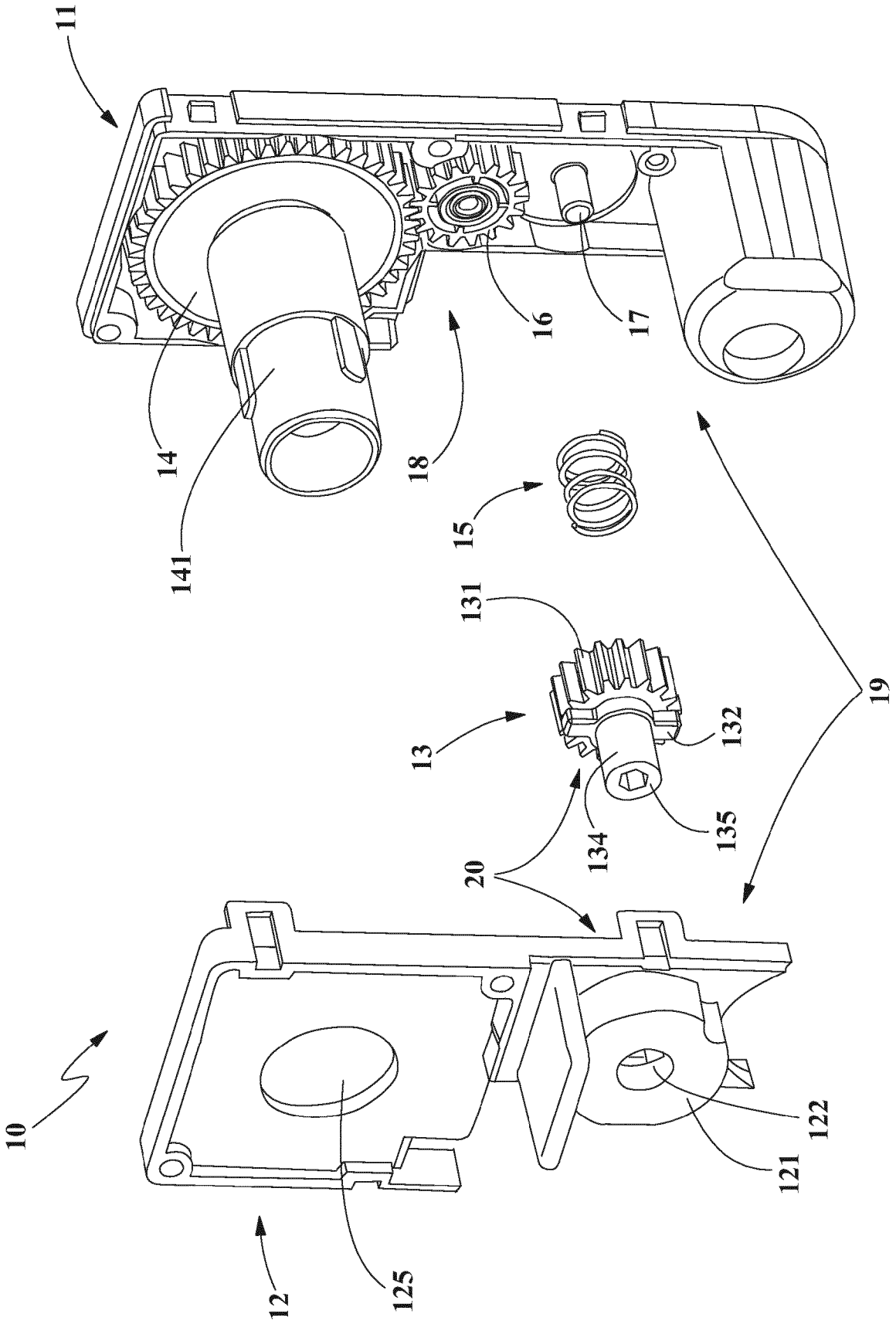

Fig. 3

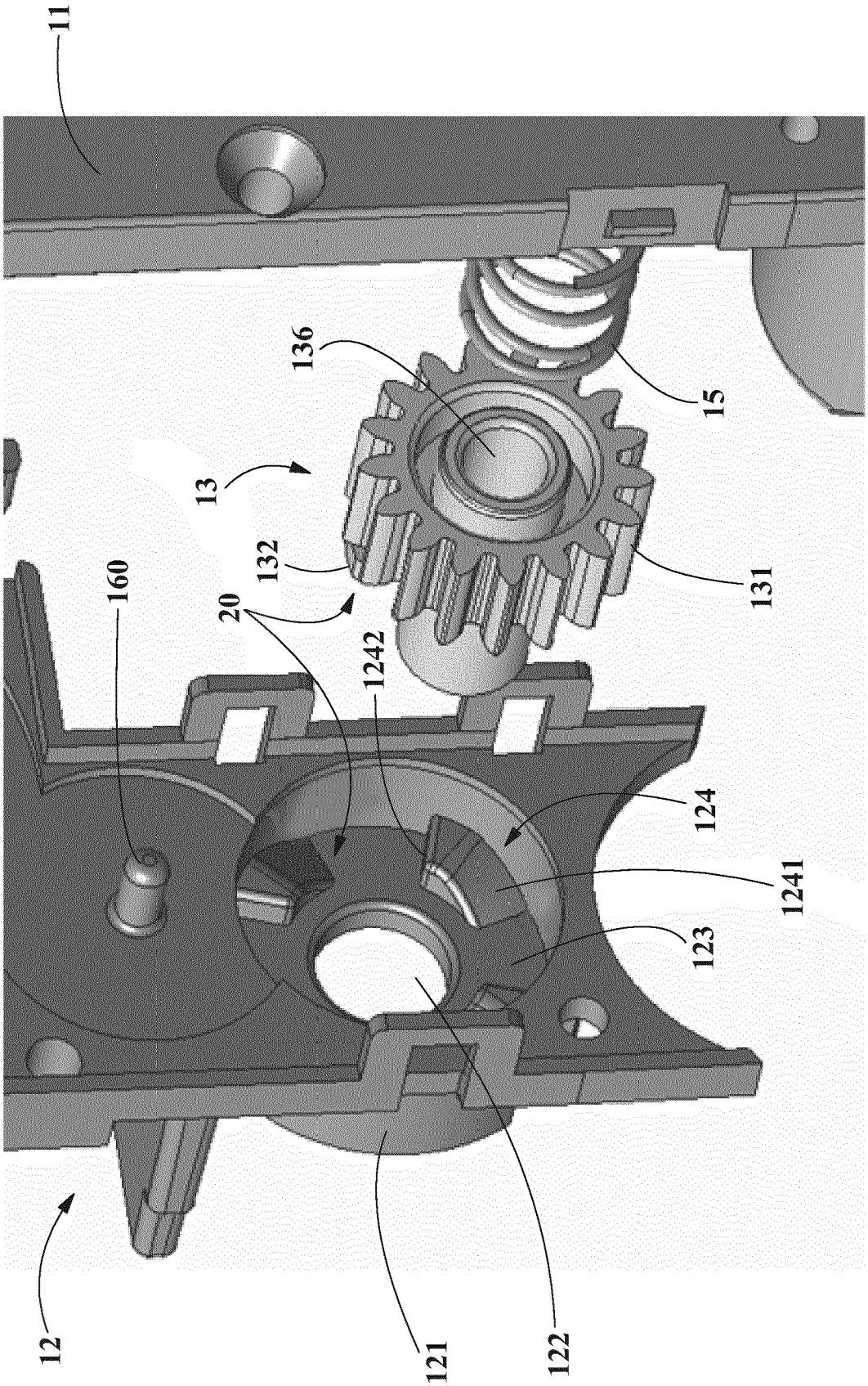

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 17 18 8884

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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E06B
E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 January 2018	Merz, Wolfgang

CATEGORY OF CITED DOCUMENTS

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