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(54) **SCREENING DEVICE**

ABSCHIRMUNGSVORRICHTUNG

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Description

[0001] The present invention relates to a screening device with a winding reel for a cord guidance system for the screening of a window according to the introductory part of claim 1.

[0002] Winding reels for screening devices are known in the art and are used in screening devices of the type comprising a screening body which is movable in a longitudinal direction of a window parallel to the plane of the window between a first end position in which it occupies a rolled-up, pleated or folded position at one of the top and bottom frame or sash members of the window and a second, active end position in which, for the screening of the window, it is extended between said top and bottom frame or sash members. The movement of the screening body from the first to the second end position is obtained by a cord guidance comprising typically two cords, each at one end being connected to a winding reel fixed to a roller at one of said top and bottom frame or sash members, and at the other end being connected to a bottom bar attached to the a terminal end of the screening body, the cords being spring-loaded at these ends. At the sides of the window the cords are guided in guide rails past respective pulleys at the top or bottom frame or sash member of the window opposite from the roller.

[0003] Examples of screening devices are described in e.g. WO 02/06621 A1, EP-B1-0 804 674 and DK 174 398 B1. Such screening devices are known in many forms and comprise, for example, roller shutters, where the screening body in the non-screening position is rolled-up on the roller. In screening devices of this type the winding reels are usually located in a top box at the ends of the roller, the winding reels being fixed to the roller such that the winding reels and the roller move with similar rotational speeds during winding of the cords. It is crucial for proper operation of the screening device that the cords be tensioned to a suitable degree in all positions of the screening device.

[0004] The winding of each cord on the respective winding reel is normally obtained by winding of the cord in several cord layers on the winding reel, the cord oscillating from one side of the winding reel to the other during the winding operation. In a roller shutter the screening body is in the form of a number of interconnected shutter slats positioned in continuation of each other, these slats typically having a thickness much greater than the diameter of the cord. This may also be the case, although to a lesser extent, with other types of screening devices such as awning blinds and roller blinds. Therefore, the diameter of the rolled up screening body varies as it is wound on and off the roller. Further, the winding reels are typically provided with a diameter smaller than or corresponding to the diameter of the roller, the diameter of the winding reels thus being much smaller than that of a completely wound up screening body. Thus, for a given amount of winding up of slats more cord is wound off of the winding reels because the winding reels and

the roller move with identical rotational speeds. This generates a need for a very flexible cord, which is usually solved by providing spring means, e.g. in the form of helical springs, at the connection of the cords to the screening body. The spring means are typically provided in the bottom bar connected to the screening body, varying amounts of the cords having been taken up in the bottom bar dependent on the position of the screening body. In the case of a thick screening body, e.g. a roller shutter, very long springs are needed because large amounts of cord will have to be taken up in the bottom bar when moving the screening body to its active end position. As an example, roller shutter slats typically have a thickness of about 6 mm or more. In a window of normal size provided with such a roller shutter it is thus necessary to take up about 300 mm of cord or more. Equally large amounts of space must therefore be available in the bottom bar, the provision of which most often being very hard to come by. Further, during winding of the cord one or more windings of an upper cord layer may suddenly fall down between the windings of a lower cord layer, resulting in the forming of knots and a more difficult winding of the cord, and/or a disturbing, loud noise that may be perceived, by the user, as a malfunction of the screening device.

[0005] As is described in GB 2369146 A and EP 379977 A1 one solution to these problems is to wind the cord in a single layer in a conically helical cord thread extending in the axial direction of the winding reel. This solution entails, however, significant problems since the winding reel must be provided with a correspondingly large width. From an aesthetic and practical point of view, it is generally preferable to provide the winding reels and, thereby, the top box with a width as small as possible. Also, in many situations, for example if two or more windows are to be placed next to one another in the immediate proximity of each other, only a limited winding reel space is available at each side of the window. In order to reduce the accumulated width of the screening device the winding reels are often offset inwards with respect to the guiding of the cords at the sides of the window sash. Usually, the width of the winding reel thus determines the greatest possible width of a screening body that may be used with the current window. The cause of this is the position of the winding reel in the top box of the screening device, occupying part of the roller. Thus, the offset of the winding reels makes it difficult and often impossible to provide a screening body wide enough to completely cover the aperture of the window. In many cases, e.g. in the case of a blackout curtain, such an inadequate screening is a significant drawback. Furthermore, when the cord is wound in a single layer in a cord track on the winding reel, the guide rails at the sides of the window must be provided with an equivalent width so that the part of the cord running along the side of the window is able to move from one end of the winding reel to the other. As a result, the guide rails will often project over the window aperture, decreasing the view through the

window and, particularly in the case of outside mounting of the screening device, providing the window with an unpleasant appearance. The width of the guide rails may be reduced by providing a guiding device in the form of an auxiliary reel at the winding reel. This, however, complicates and raises the production costs of the screening device.

[0006] It is thus an object of the present invention to provide a screening device of the type mentioned in the introduction, the winding reel of which has a sufficiently small width to overcome or reduce the above-described problems and, at the same time, provides for a reliable and smooth winding of the cords of a screening device without the need for taking up large amounts of cord, e.g. in the bottom bar, during the winding operation.

[0007] To meet this object, a screening device as defined in the introductory part comprises the further features according to the characterizing part of claim 1.

[0008] When winding reels are applied to a screening device according to the invention, the provision of a first, helical cord thread portion and a second, circular cord thread portion of each winding reel provides for a winding reel, which offers an optimal solution regarding screening bodies of larger thicknesses, such as roller shutters. The provision of the second, circular cord thread portion makes it possible to provide the winding reel with a limited width because, on this portion, the cord is wound up in several layers in a single cord width. Alleviating said space problems, this makes it possible for two adjoining windows to be installed in close proximity of each other, both being equipped with screening devices comprising winding reels according to the invention. Further, the first, helical cord thread portion to a large extent alleviates the need for taking up large cord lengths in the bottom bar of the screening device. In the case of a roller shutter with a roller slat thickness of about 6 mm, employing a first cord thread portion with three cord rotations and a second cord thread portion also with three cord rotations reduces the cord length to be taken up in the bottom bar from about 300 mm or more to about 40 to 50 mm. Such smaller cord lengths may easily be taken up in a conventional bottom bar. A controlled, tight winding of the cord on the winding reel may thus readily be provided by means of suitable spring means such that proper operation of a screening device employing the winding reel according to the invention is ensured at all times. Also, employing the winding reel according to the invention, it is no longer possible for one cord section to fall from an upper layer to a lower layer with the concomitant noise and operation problems.

[0009] It is to be understood that the depth of the cord thread may vary over the circumference of the winding reel.

[0010] In a preferred embodiment said winding reel is configured such that said cord is allowed, in a first part of said winding operation, to be wound up on said first cord thread portion and, in a second, subsequent part of said winding operation, to be guided from said first cord

thread portion to said second cord thread portion to be wound up in at least two layers in said depth on said latter portion.

[0011] In another preferred embodiment said first portion extends at least two complete rotations, preferably at least three rotations, about said axis of the winding reel.

[0012] In another preferred embodiment said second cord thread portion has a circumference which is smaller than the smallest circumference of said first cord thread portion.

[0013] In another preferred embodiment said first cord thread portion has a depth corresponding to at least three times the diameter of said cord, said cord being allowed, in said first part of said winding operation, to be wound up in at least three layers in said depth on said second cord thread portion.

[0014] In yet another preferred embodiment said first cord thread portion substantially has the configuration of a conical helix.

[0015] In another preferred embodiment said radial depth of said second cord thread portion corresponds to at least about 1.6 x the diameter of said cord.

[0016] In another preferred embodiment the winding reel is connected to a cap, said cap having a form and position such that an outer contour of said cap follows an outer contour of said cord thread in order to ensure that said cord does not exit from said cord thread of said winding reel.

[0017] In a preferred embodiment of the invention the screening device comprises at least two winding reels according to any of the above embodiments. More preferably, said winding reels are configured such that the respective second cord thread portions of said winding reels face each other.

[0018] In another preferred embodiment the screening device according to the invention is a roller shutter.

[0019] In the following the invention will be explained in detail by means of examples of embodiments with reference to the schematic drawings, in which

Fig. 1 is a perspective view of a screening device according to the invention mounted on the exterior of a standard window, the screening device comprising a first embodiment of a winding reel according to the first aspect of the invention positioned in a reel house;

Fig. 2 is a cross section through the winding reel of the screening device according to Fig. 1 in more detail;

Fig. 3 is a sectional view of a second embodiment of a winding reel to be used in the invention;

Fig. 4 is a side view of the winding reel of Fig. 3 mounted on a screening device;

Fig. 5 is a perspective view of the winding reel of Figs 3 and 4 mounted on the screening device;

Fig. 6 is an exploded perspective view of a third embodiment of a winding reel to be used in the invention, a cap and a reel house; and

Fig. 7 is a view corresponding to that of Fig. 3 of the winding reel of Fig. 6 mounted with the cap of Fig. 6.

[0020] Fig. 1 is a perspective view of a screening device according to the invention provided with a first embodiment of two winding reels 1a, 1b according to the first aspect of the invention. The screening device shown is an external roller shutter, which is shown mounted on the external face of a window 30. The screening device comprises a screening body 2 with a number of interconnected shutter slats 2a which in one end are connected to a roller 3 via a connecting rubber member 2b (cf. Fig. 2), the roller 3 constituting a reception means for the screening body and mounted in a top casing 4 indicated by dashed lines and positioned at the top frame member of the window. The opposite free/terminal end of the screening body 2 is connected to a hollow bottom bar 5. The screening body 2 is movable in a longitudinal direction of the window 30 parallel to the plane of the window 30 between a first end position in which it occupies a rolled-up, pleated or folded position at a top frame or sash member of the window 30 and a second, active end position in which, for the screening of the window 30, it is extended between top and bottom frame or sash members, substantially covering a window aperture 6 of the window 30. In Fig. 1 the screening device is in a position between the end positions, having almost reached the second end position.

[0021] The screening device further comprises a side guide rail (not shown) positioned at each side of the window, the guide rails in a mounted position being connected to side members of the sash structure of the window 30. The side guide rails accommodate and guide the ends of the bottom bar 5 and the edges of the screening body 2.

[0022] For movement of the bottom bar 5 and the end of the screening body 2 connected to the bottom bar 5 from a first end position in which the bottom bar 5 is positioned at or in the top casing 4 such that the window is not screened by the screening body 2, to a second end position in which the bottom bar 5 is positioned at a bottom frame or sash member of the window, the bottom bar 5 is connected to a cord guidance comprising two cords 8 and 9 which are led each in their respective side guide rail.

[0023] Fig. 2 shows the winding reel 1a of Fig. 1 in more detail and in vertical cross-section, the winding reel 1b being of a similar configuration, but being provided mirror-inverted at the opposite end of the bottom bar 5. The winding reel 1a is shown in the form of a solid element; it may, however, comprise one or more cavities, e.g. with the purpose of saving materials and lowering the weight. In the position of the screening device shown in Fig. 2 the screening body is in the second end position. A reel house 15 located at one end of the top casing 4 encloses the winding reel 1a. The cord 8 is at one end secured to the winding reel 1a, which in the shown design is placed on the left end of the roller 3. Further a cord guidance means (not shown), e.g. in the form of a curved

panel, may be provided for guiding the cords 8, 9 out of and into the reel house 15. The winding reels 1a and 1b may be coupled to an electric drive unit in the form of an electric motor (not shown) with an associated transmission such that the displacement of the bottom bar 5 from the first to the second end position is effected by electric operation of a keyboard designed for this purpose, perhaps a remote control. The electric motor may, for example, be in the form of a small motor device located inside the roller 3, the roller being provided, for example, as a hollow tubular member.

[0024] Referring to both Figs. 1 and 2, from the winding reels 1a, 1b, each cord 8, 9 is through the associated side guide rail led around a cord return element in the form of pulleys 17, 18 placed at the bottom frame or sash member of the window 30 and into opposite ends of the hollow bottom bar 5, where the free cord ends are each connected to one end of a screw compression spring 19, 20 (i.e. the ends of the springs 19, 20 which are facing each other), the other end of said springs 19, 20 being connected to the bottom bar 5. This provides for a spring-loading of the cords 8, 9.

[0025] As shown in Fig. 2 the winding reel 1a comprises a cord thread 7 with a width corresponding substantially to the diameter of the cord 8. The cord thread 7 comprises a first cord thread portion 7a with the configuration of an ascending, conical helix such that each of three rotations of the first cord thread portion 7a has a different circumference, said circumference descending in the direction of a second cord thread portion 7b. The second cord thread portion 7b is of a circular configuration and is provided in axial continuation of the first cord thread portion 7a. The circumference of the second cord thread portion 7b is smaller than the smallest circumference of the first cord thread portion 7a. In the embodiment of Figs 1 and 2 the second cord thread portion 7b has a radial depth corresponding to about three times the diameter of the cord 8. The cord 8 is fastened to the winding reel 1a at one end 22 of the winding reel 1a.

[0026] The movement of the screening body 2 from the first to the second end position is obtained by means of the cord guidance via rotation of the roller 3 and, thereby, the winding reels 1a, 1b. In the first end position the cords 8, 9 are completely wound off of the winding reels 1a, 1b. As previously mentioned the cords 8, 9 are at one end secured to their respective winding reel 1a, 1b, e.g. by means of a clip snapped over the surface of each winding reel 1a, 1b facing the roller 3. During rotation of the winding reels 1a, 1b in the proper direction, the cords 8, 9 are wound up on the winding reels 1a, 1b, starting on the largest circumference of the first cord thread portion 7a and moving towards the second cord thread portion 7b. When the cords 8, 9 have been wound up on the smallest circumference of the winding reels 1a, 1b, a first part of the winding operation has been completed. Each cord 8, 9 is then guided to its respective second cord thread portion 7b, e.g. by means of a guiding device such as a transferring track. Then the cords 8, 9 are wound

up in three layers on the second cord thread portion in a second part of the winding operation. When filling up the second cord thread portion 7b, the diameter of the wound up cords 8, 9 increases with each rotation of the roller. As the cords 8, 9 are wound up, the bottom bar 5 is displaced from the first towards the second end position of the screening body 2.

[0027] The first cord thread portion 7a of each winding reel 1a, 1b has been provided with a descending circumference corresponding to the descending diameter of the rolled up screening body 2 on the roller 3 such that during the first part of the winding operation no elasticity of the cords 8, 9 is necessary to ensure proper function of the screening device. Thus, during the first part of the winding operation no spring deformation of the screw compression springs 19, 20 is performed. However, during the second part of the winding operation the diameter of the wound up cords 8, 9 increases as the cords 8, 9 are wound up on the winding reels 1a, 1b. This does not correspond to the descending diameter of the screening body 2 rolled up on the roller 3 and, as a consequence, the helical springs 19, 20 are compressed during this phase. Thus, during the winding operation, each cord 8, 9 is, as a consequence, kept tightly extended.

[0028] The combination of the conically helical first cord thread part 7a and the circular second cord thread part 7b with an enlarged depth thus, surprisingly, provides for an advantageous screening device with a relatively small width of the winding reel and a reduced need for taking up cord in the bottom bar 5 during operation of the screening device. At the same time a reliable and smooth winding up of a screening body of the screening device is provided.

[0029] Rolling up the screening device is carried out by reversing the described process, the cords 8, 9 first being wound off of the second cord thread portion 7b and subsequently being wound off from the first cord thread portion 7a.

[0030] Fig. 3 shows a second, more concrete embodiment of a winding reel 1a to be used in the invention, the winding reel being drawn to scale and being for use in a roller shutter. Figs 4 and 5 show the winding reel of Fig. 3 mounted on a screening device. Elements of Figs. 3, 4 and 5 have been given the same reference numerals as corresponding elements of Figs 1 and 2.

[0031] The second embodiment of the winding reel 1a of Figs. 3, 4 and 5 has a configuration very similar to the winding reel 1a of Fig. 2. Only differences between the two embodiments will be described in the following.

[0032] As is clear from Fig. 3 the winding reel 1a comprises a number of cavities 21, the purpose of which is to lessen the weight of the winding reel 1a and to save material during manufacture. As can be seen from Figs 4 and 5, in the mounted position of the winding reel 1a a reel house 15 encloses the winding reel 1a and comprises a cord guidance means 16 in the form of a curved panel for guiding the cords 8 out of and into the reel house 15. A side rail for accommodating the cord 8 and an end

of a bottom bar 5 is also shown.

[0033] In the embodiment shown the diameter of the largest circumference of the first cord thread part 7a is approximately 90 mm, and the smallest circumference of the first cord thread part 7a is approximately 70 mm, both measurements being taken at the bottom of the threads. The equivalent value (i.e. the diameter) of the second cord thread part 7b is approximately 55 mm at the bottom. The cords 8, 9 used have a diameter of about 20 mm. The depth of the second cord thread part is 5-6 times the diameter of the cords, providing for a buffer of 2-3 rotations of cord.

[0034] These dimensions of the winding reels 1a, 1b and the cords 8, 9 are suitable for a roller shutter with a roller slat thickness of about 6 mm. Since approximately two rotations of the helix of the first cord thread part 7a have been saved applying the winding reel 1a according to the second embodiment, the total width of each winding reel 1a, 1b has been reduced from about 23 mm to about 15 mm compared to a similar prior art helical winding reel, i.e. with about 1/3 of the total width. The advantages of such a reduction of the width of the winding reels have been explained in the above.

[0035] Referring to both the first and the second embodiment of the winding reel to be used in the invention, instead of being positioned in the top casing 4, the winding reels 1a, 1b may, along with the associated electric drive unit, be arranged in a bottom casing at the bottom frame or sash member of the window. In the embodiments shown the movement of the screening body 2 in the opposite direction may be effected by impact from the roller by a constant force, e.g. a spring force, or electrically by means of a separate rewinding motor.

[0036] Furthermore, the first cord thread portion 7a may be descending in the direction opposite from the embodiments shown. The second cord thread portion 7b may, in principle, be positioned at either side of the first cord thread portion 7a, the winding up of the cords 8, 9 starting at either one of the thread portions 7a, 7b.

[0037] Figs 6 and 7 show a third embodiment of a winding reel 1a to be used in the invention. Fig. 6 also shows a cap 40 and a reel house 15. Elements of Figs. 6 and 7 have been given the same reference numerals as corresponding elements of Figs 1 to 5.

[0038] The winding reel 1a and the reel house 15 of Fig. 6 correspond substantially to the above-described second embodiment of Figs 3 to 5, and similar elements will not be described in the following. Fig. 7 shows a cross sectional view of the winding reel 1a of Fig. 6 put together or connected with the cap 40. As can be seen, the cap 40 has a form and position such that an outer contour 41 of the cap follows an outer contour 42 of the cord thread 7 in order to ensure that the cord (not shown in the Figs 6 and 7) does not exit from the cord thread 7 of the winding reel 1a.

[0039] From Fig. 7 it can be seen that a small part 7c of the winding thread 7 of the winding reel 1a at the bottom of the thread revolution intended to face the screening

device (the right thread revolution) in this embodiment does not descent in the general cone shape of the substantially helical cord thread 7. Instead it has a more linear configuration. The purpose of this configuration of the cord thread part 7a is to make room for a bearing component in the inner part of the winding reel 1a.

[0040] Further, the outer contour 42 of the partition walls of the cord thread 7 does not accurately follow the conically ascending bottom part of the cord thread 7. Instead it consists of a conical part (the two left revolutions of the cord thread 7 in Fig. 7) and a horizontal part (the two right revolutions of the cord thread 7 in Fig. 7). As mentioned in the above the outer, inwards facing contour 41 of the cap 40 has a form corresponding to the outer contour 42 of the winding reel 1a, i.e. the contour 41 also has a conical part and a horizontal part. Thereby, the cord (not shown) is prevented from exiting the cord thread 7 during winding of the cord.

[0041] In the embodiments shown the general configurations of the cord thread portions 7a are those of ascending conical helixes, i.e. the diameter of the cord thread 7 ascends continuously in these portions 7a. However, the skilled person may think of other configurations falling within the scope of the present invention. These include the "diameter" being constant for each revolution (i.e. circular revolutions) such that a transitional cord thread section would provide the transition between each two revolutions. The "diameter" can even vary locally on each revolution, which might be advantageous for certain kinds of screening devices.

[0042] In the embodiments shown the second cord thread part 7b takes up a total of three rotations of the cords 8, 9, which has proven to be optimal. However, according to the invention a minimum of two rotations would provide the described advantages over the prior art.

[0043] Even though the invention in the above has been described for an external roller shutter as an example, it may also be used in other current forms of screening arrangements such as awning blinds.

Claims

1. A screening device for the screening of a window (30), comprising a screening body (2) movable in a longitudinal direction of the window (30) parallel to the plane of the window (30) between a first end position in which it occupies a rolled-up, pleated or folded position at one of the top and bottom frame or sash members of the window (30) and a second, active end position in which, for the screening of the window (30), it is extended between said top and bottom frame or sash members, in which the movement of the screening body (2) from said first to said second end position is obtained by a cord guidance comprising at least one cord (8,

9), which in one end is connected to a winding reel (1a, 1b) at one of said frame or sash members, and in the other end is connected to a bottom bar (5) or the like, the at least one cord (8, 9) being spring-loaded at its respective other end,

said cord (8, 9) of said cord guidance being adapted, in a winding operation, to be wound up about an axis of said winding reel (1a, 1b), said winding reel (1a, 1b) having a radial direction normal to said axis, said winding reel (1a, 1b) comprising a cord thread (7) with a width in a direction of said axis corresponding substantially to a diameter of said cord, said cord thread (7) comprising a first cord thread portion (7a) substantially having the configuration of an ascending helix such that each rotation of said first cord thread portion (7a) has a different circumference,

characterized in that

said cord thread (7) further comprises a second cord thread portion (7b) of substantially circular configuration, said second cord thread portion (7b) being provided in axial continuation of said first cord thread portion (7a) and having a cord thread depth in said radial direction such as to be able to take up at least two windings of said cord (8, 9), said screening device being arranged such that when said cord (8, 9) is wound up on said winding reel (1a, 1b), said second cord thread portion (7b) takes up at least two windings of said cord (8, 9).

2. A screening device according to claim 1, said second cord thread portion (7b) having a cord thread depth in said radial direction corresponding to at least three times said width of said cord thread (7), a cord (8, 9) with a diameter corresponding substantially to a diameter of said cord thread (7) thus being allowed to be wound up in at least three layers in said depth on said second cord thread portion (7b).
3. A screening device according to claim 1 or 2, wherein said winding reel is configured such that said cord is allowed, in a first part of said winding operation, to be wound up on said first cord thread portion and, in a second, subsequent part of said winding operation, to be guided from said first cord thread portion to said second cord thread portion to be wound up in at least three layers in said depth on said latter portion.
4. A screening device according to any of claims 1 to 3, wherein said first portion extends at least two complete rotations, preferably at least three rotations, about said axis of the winding reel.
5. A screening device according to any of claims 1 to 4, wherein said second cord thread portion has a circumference which is smaller than the smallest circumference of said first cord thread portion.

6. A screening device according to any of claims 1 to 5, wherein said first cord thread portion substantially has the configuration of a conical helix.
7. A screening device according to any of claims 1 to 6, further comprising a guiding device for providing said guiding of said cord from said second cord thread portion to said first cord thread portion.
8. A screening device according to any of claims 1 to 7, connected to a cap, said cap having a form and position such that an outer contour of said cap follows an outer contour of said cord thread in order to ensure that said cord does not exit from said cord thread of said winding reel.
9. A screening device according to any of claims 1 to 8 comprising at least one other winding reel with the same features.
10. A screening device according to claim 9, wherein said winding reels are configured such that the respective second cord thread portions of said winding reels face each other.
11. A screening device according to any one of the previous claims, wherein the screening device is a roller shutter.
12. A screening device according to any of the previous claims, wherein said radial depth of said second cord thread portion corresponds to at least about 1.6 x the diameter of said cord.

Patentansprüche

1. Abschirmungsvorrichtung für die Abschirmung eines Fensters (30), aufweisend

einen Abschirmungskörper (2), der in einer Längsrichtung des Fensters (30) parallel zu der Ebene des Fensters (30) zwischen einer ersten Endposition, in der er eine aufgerollte, in Falten gelegte oder gefaltete Position an einem von den oberen und unteren Rahmen- oder Flügelbauteilen des Fensters (30) einnimmt und einer zweiten, aktiven Endposition, in der er sich zur Abschirmung des Fensters (30) zwischen den oberen und unteren Rahmen- oder Flügelbauteilen erstreckt, bewegbar ist, wobei die Bewegung des Abschirmungskörpers (2) von der ersten zur zweiten Endposition durch eine Schnurführung erzielt wird, die wenigstens eine Schnur (8, 9) aufweist, die an einem Ende mit einer Wickelspule (1a, 1b) an einem von den Rahmen- oder Flügelbauteilen verbunden ist, und die am anderen Ende mit einem unteren

Stab (5) oder ähnlichem verbunden ist, wobei die wenigstens eine Schnur (8, 9) an ihrem anderen Ende federbelastet ist, wobei die Schnur (8, 9) der Schnurführung dazu angepasst ist, bei einer Wickelbedienung um eine Achse der Wickelspule (1a, 1b) aufgewickelt zu werden, wobei die Wickelspule (1a, 1b) eine radiale Richtung normal zur Achse aufweist, wobei die Wickelspule (1a, 1b) ein Schnurgewinde (7) mit einer Weite aufweist, die in einer Richtung der Achse im Wesentlichen dem Durchmesser der Schnur entspricht, wobei das Schnurgewinde (7) einen ersten Schnurgewindeabschnitt (7a) aufweist, der im Wesentlichen die Konfiguration einer aufsteigenden Helix aufweist, so dass der erste Schnurgewindeabschnitt (7a) bei jeder Umdrehung einen anderen Umfang aufweist, **dadurch gekennzeichnet, dass** das Schnurgewinde (7) ferner einen zweiten Schnurgewindeabschnitt (7b) von im Wesentlichen kreisförmiger Konfiguration aufweist, wobei der zweite Schnurgewindeabschnitt (7b) in einer axialen Verlängerung des ersten Schnurgewindeabschnitts (7a) vorgesehen ist und eine Schnurgewindetiefe derart in der radialen Richtung aufweist, dass er in der Lage ist, wenigstens zwei Windungen der Schnur (8, 9) aufzunehmen, wobei die Abschirmungsvorrichtung derart angeordnet ist, dass der zweite Schnurgewindeabschnitt (7b) wenigstens zwei Windungen der Schnur (8, 9) aufnimmt, wenn die Schnur (8, 9) auf der Wickelspule (1a, 1b) aufgewickelt ist.

2. Abschirmungsvorrichtung nach Anspruch 1, wobei der zweite Schnurgewindeabschnitt (7b) eine Schnurgewindetiefe in der radialen Richtung aufweist, die wenigstens dreimal der Weite des Schnurgewindes (7) entspricht, womit es einer Schnur (8, 9) mit einem Durchmesser, der im Wesentlichen einem Durchmesser des Schnurgewindes (7) entspricht, ermöglicht ist, in wenigstens drei Schichten in dieser Tiefe auf dem zweiten Schnurgewindeabschnitt (7b) aufgewickelt zu werden.
3. Abschirmungsvorrichtung nach Anspruch 1 oder 2, wobei die Wickelspule so konfiguriert ist, dass es der Schnur gestattet ist, in einem ersten Teil des Wickelvorgangs auf dem ersten Schnurgewindeabschnitt aufgewickelt zu werden und in einem zweiten, nachfolgenden Teil des Wickelvorgangs von dem ersten Schnurgewindeabschnitt zu dem zweiten Schnurgewindeabschnitt geführt zu werden, um in wenigstens drei Schichten in der Tiefe auf dem zweiten Schnurgewindeabschnitt aufgewickelt zu werden.
4. Abschirmungsvorrichtung nach einem der Ansprü-

che 1 bis 3, wobei sich der erste Abschnitt um wenigstens zwei vollständige Umdrehungen, vorzugsweise um wenigstens drei Umdrehungen, um die Achse der Wickelspule erstreckt.

5. Abschirmungsvorrichtung nach einem der Ansprüche 1 bis 4, wobei der zweite Schnurgewindeabschnitt einen Umfang aufweist, der kleiner ist als der kleinste Umfang des ersten Schnurgewindeabschnitts. 5
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6. Abschirmungsvorrichtung nach einem der Ansprüche 1 bis 5, wobei der erste Schnurgewindeabschnitt im Wesentlichen die Konfiguration einer kegelförmigen Helix aufweist. 15
7. Abschirmungsvorrichtung nach einem der Ansprüche 1 bis 6, ferner aufweisend eine Führungsvorrichtung zum Bereitstellen der Führung der Schnur vom zweiten Schnurgewindeabschnitt zum ersten Schnurgewindeabschnitt. 20
8. Abschirmungsvorrichtung nach einem der Ansprüche 1 bis 7, verbunden mit einer Kappe, wobei die Kappe derart geformt und positioniert ist, dass eine äußere Kontur der Kappe einer äußeren Kontur des Schnurgewindes folgt, um sicherzustellen, dass die Schnur das Schnurgewinde der Wickelspule nicht verlässt. 25
30
9. Abschirmungsvorrichtung nach einem der Ansprüche 1 bis 8, aufweisend wenigstens eine andere Wickelspule mit den gleichen Merkmalen.
10. Abschirmungsvorrichtung nach Anspruch 9, wobei die Wickelspulen derart konfiguriert sind, dass die entsprechenden zweiten Schnurgewindeabschnitte der Wickelspulen einander zugewandt sind. 35
11. Abschirmungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei die Abschirmungsvorrichtung ein Rollladen ist. 40
12. Abschirmungsvorrichtung nach einem der vorhergehenden Ansprüche, wobei die radiale Tiefe des zweiten Schnurgewindeabschnitts wenigstens ungefähr dem 1,6-fachen des Durchmessers der Schnur entspricht. 45

Revendications

1. Dispositif d'occultation pour l'occultation d'une fenêtre (30), comprenant
un corps d'occultation (2) mobile dans une direction longitudinale de la fenêtre (30) parallèle au plan de la fenêtre (30) entre une première

position d'extrémité dans laquelle il occupe une position enroulée, plissée ou pliée au niveau de l'un des organes de cadre ou châssis supérieur et inférieur de la fenêtre (30) et une seconde position d'extrémité active dans laquelle, pour l'occultation de la fenêtre (30), il est étendu entre lesdits organes de cadre ou de châssis supérieur et inférieur, dans lequel le déplacement du corps d'occultation (2) de ladite première à ladite seconde position d'extrémité est obtenu par un guidage par cordon comprenant au moins un cordon (8, 9) qui, à une extrémité, est raccordé à un enrouleur (1a, 1b) au niveau de l'un desdits organes de cadre ou de châssis, et à l'autre extrémité est raccordé à une barre inférieure (5) ou similaire, l'au moins un cordon (8, 9) étant à ressort au niveau de son autre extrémité respective, ledit cordon (8, 9) dudit guidage par cordon étant adapté, dans une opération d'enroulement, pour être enroulé autour d'un axe dudit enrouleur (1a, 1b), ledit enrouleur (1a, 1b) ayant une direction radiale normale audit axe, ledit enrouleur (1a, 1b) comprenant un filet de cordon (7) avec une largeur dans une direction dudit axe correspondant sensiblement à un diamètre dudit cordon, ledit filet de cordon (7) comprenant une première portion de filet de cordon (7a) ayant sensiblement la configuration d'une spirale ascendante de sorte que chaque rotation de ladite première portion de filet de cordon (7a) ait une circonférence différente, **caractérisé en ce que** ledit filet de cordon (7) comprend en outre une seconde portion de filet de cordon (7b) de configuration sensiblement circulaire, ladite seconde portion de filet de cordon (7b) étant prévue dans le prolongement axial de ladite première portion de filet de cordon (7a) et ayant une profondeur de filet de cordon dans ladite direction radiale de nature à être capable de tendre au moins deux enroulements dudit cordon (8, 9), ledit dispositif d'occultation étant agencé de sorte que lorsque ledit cordon (8, 9) est enroulé sur ledit enrouleur (1a, 1b), ladite seconde portion de filet de cordon (7b) tende au moins deux enroulements dudit cordon (8, 9).

- 50 2. Dispositif d'occultation selon la revendication 1, ladite seconde portion de filet de cordon (7b) ayant une profondeur de filet de cordon dans ladite direction radiale correspondant à au moins trois fois ladite largeur dudit filet de cordon (7), permettant ainsi d'enrouler un cordon (8, 9) avec un diamètre correspondant sensiblement à un diamètre dudit filet de cordon (7) en au moins trois couches dans ladite profondeur sur ladite seconde portion de filet de cor-

- don (7b).
3. Dispositif d'occultation selon la revendication 1 ou 2, dans lequel ledit enrouleur est configuré de façon à permettre, dans une première partie de ladite opération d'enroulement, d'enrouler ledit cordon sur ladite première portion de filet de cordon, et dans une seconde partie ultérieure de ladite opération d'enroulement, de le guider de ladite première portion de filet de cordon à ladite seconde portion de filet de cordon de façon à l'enrouler en au moins trois couches dans ladite profondeur sur ladite dernière portion. 5 10
 4. Dispositif d'occultation selon l'une quelconque des revendications 1 à 3, dans lequel ladite première portion s'étend sur au moins deux rotations complètes, de préférence au moins trois rotations, autour dudit axe de l'enrouleur. 15 20
 5. Dispositif d'occultation selon l'une quelconque des revendications 1 à 4, dans lequel ladite seconde portion de filet de cordon a une circonférence qui est plus petite que la circonférence la plus petite de ladite première portion de filet de cordon. 25
 6. Dispositif d'occultation selon l'une quelconque des revendications 1 à 5, dans lequel ladite première portion de filet de cordon a sensiblement la configuration d'une spirale conique. 30
 7. Dispositif d'occultation selon l'une quelconque des revendications 1 à 6, comprenant en outre un dispositif de guidage pour fournir ledit guidage dudit cordon de ladite seconde portion de filet de cordon à ladite première portion de filet de cordon. 35
 8. Dispositif d'occultation selon l'une quelconque des revendications 1 à 7, raccordé à un bouchon, ledit bouchon ayant une forme et une position telles qu'un contour extérieur dudit bouchon suive un contour extérieur dudit filet de cordon afin de garantir que ledit cordon ne sorte pas dudit filet de cordon dudit enrouleur. 40 45
 9. Dispositif d'occultation selon l'une quelconque des revendications 1 à 8, comprenant au moins un autre enrouleur avec les mêmes particularités.
 10. Dispositif d'occultation selon la revendication 9, dans lequel lesdits enrouleurs sont configurés de sorte que les secondes portions de filet de cordon respectives desdits enrouleurs soient en regard l'une de l'autre. 50 55
 11. Dispositif d'occultation selon l'une quelconque des revendications précédentes, dans lequel le dispositif d'occultation est un volet roulant.
 12. Dispositif d'occultation selon l'une quelconque des revendications précédentes, dans lequel ladite profondeur radiale de ladite seconde portion de filet de cordon correspond à au moins 1,6 fois le diamètre dudit cordon.

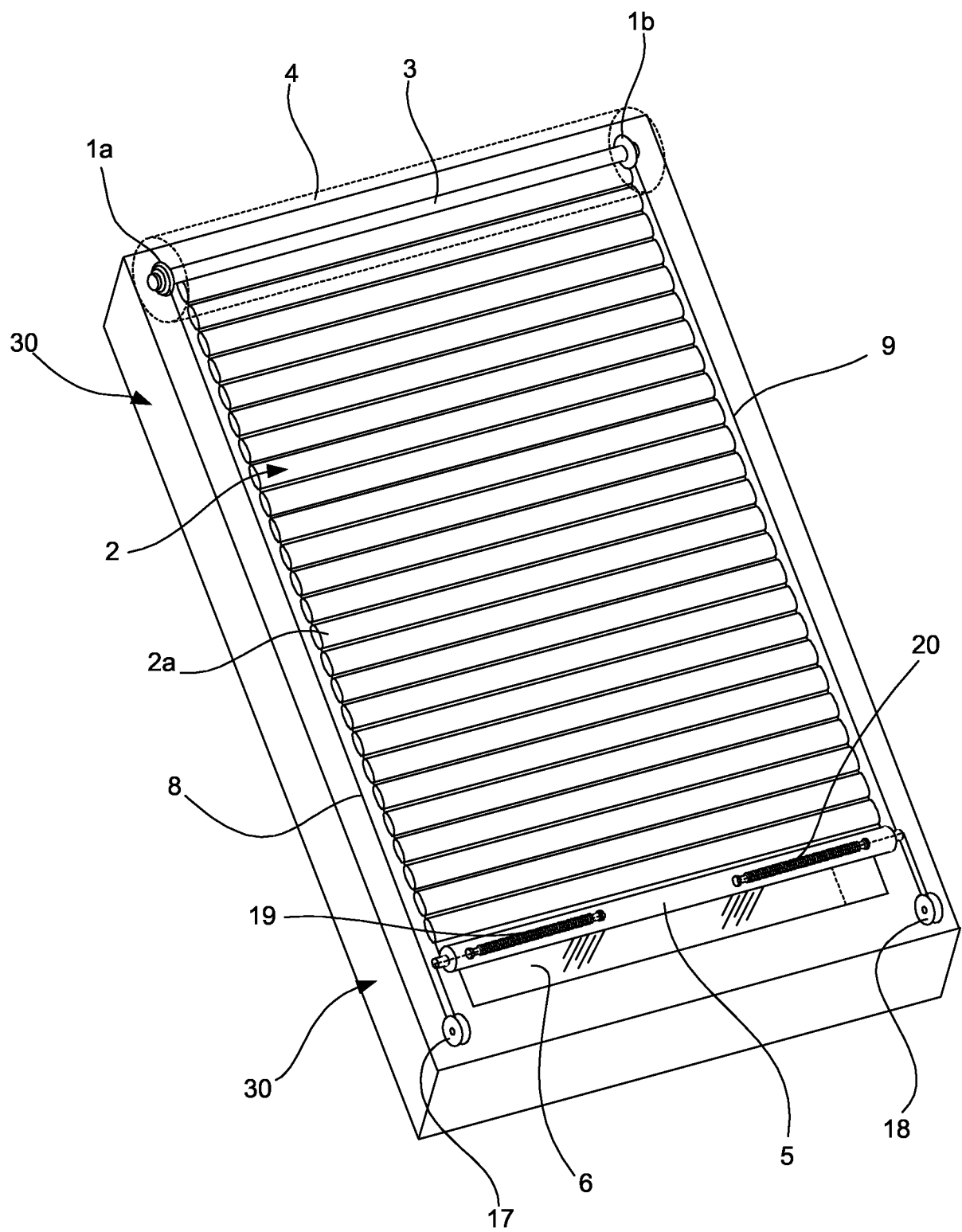


Fig. 1

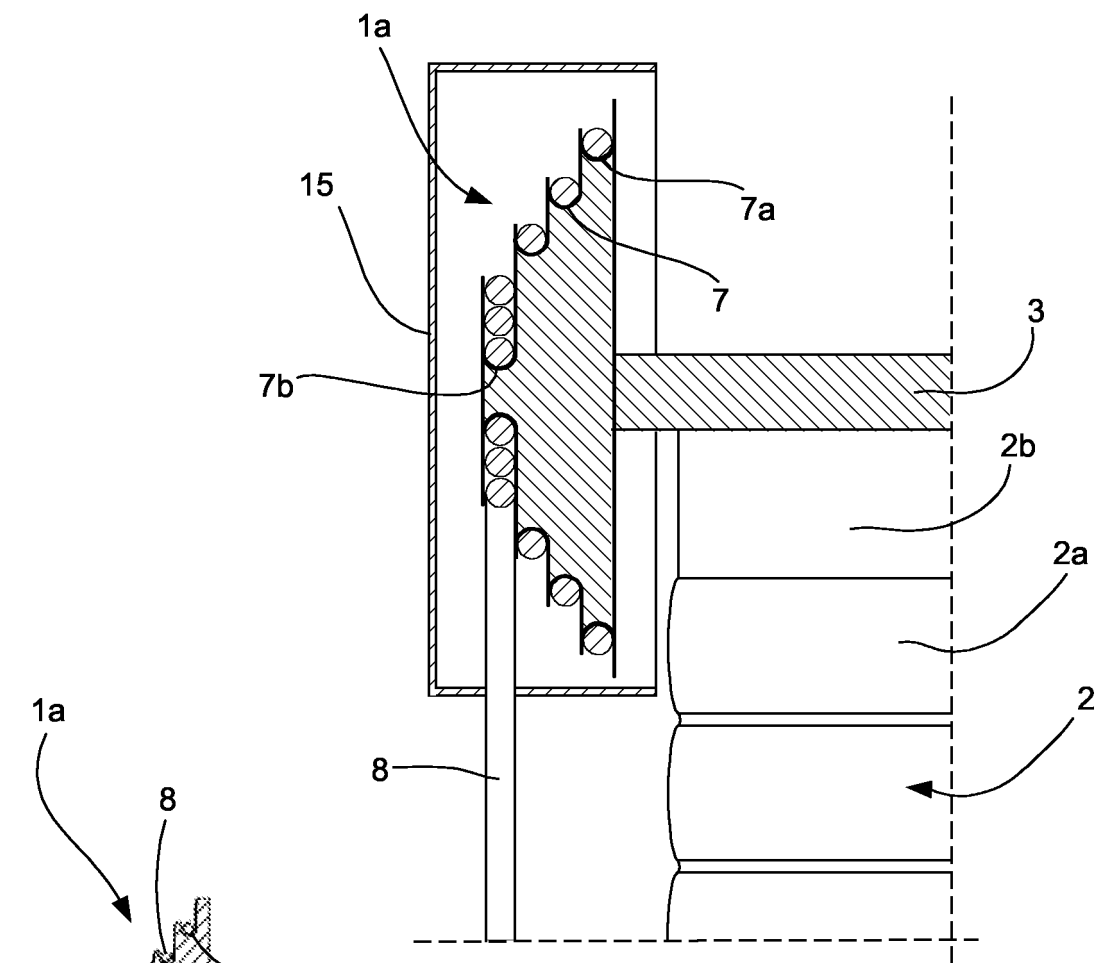


Fig. 2

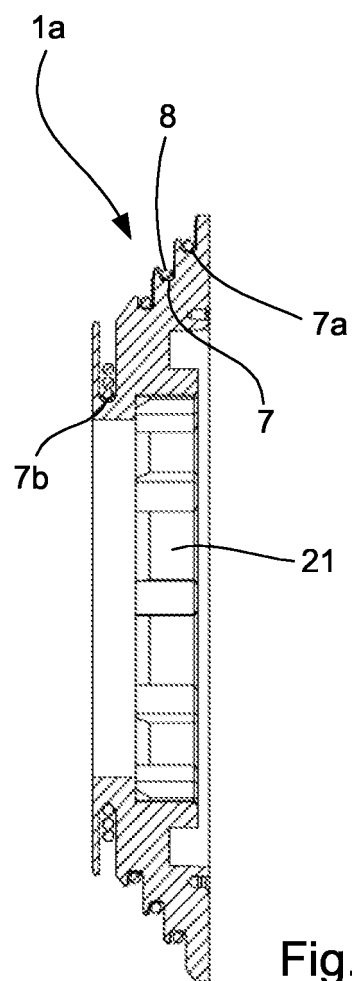


Fig. 3

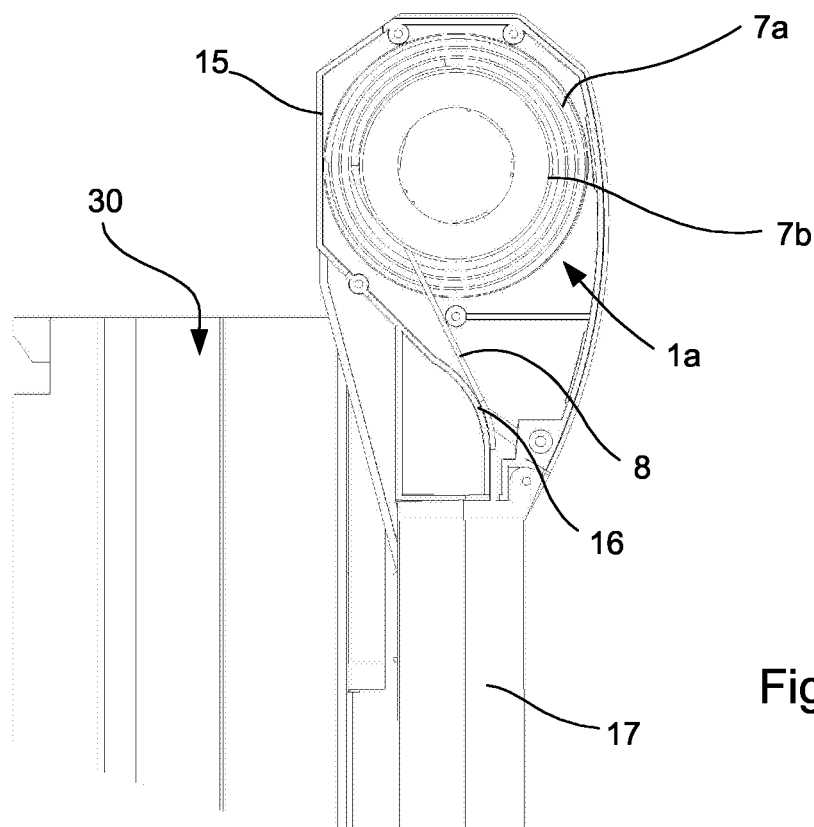


Fig. 4

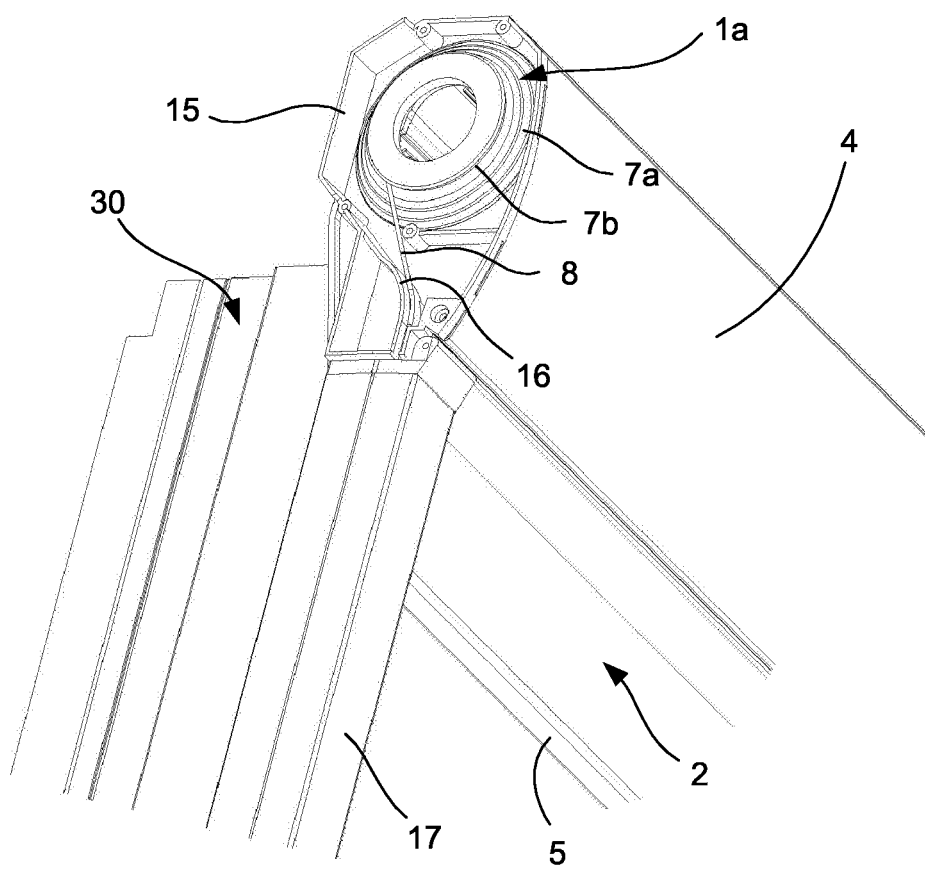


Fig. 5

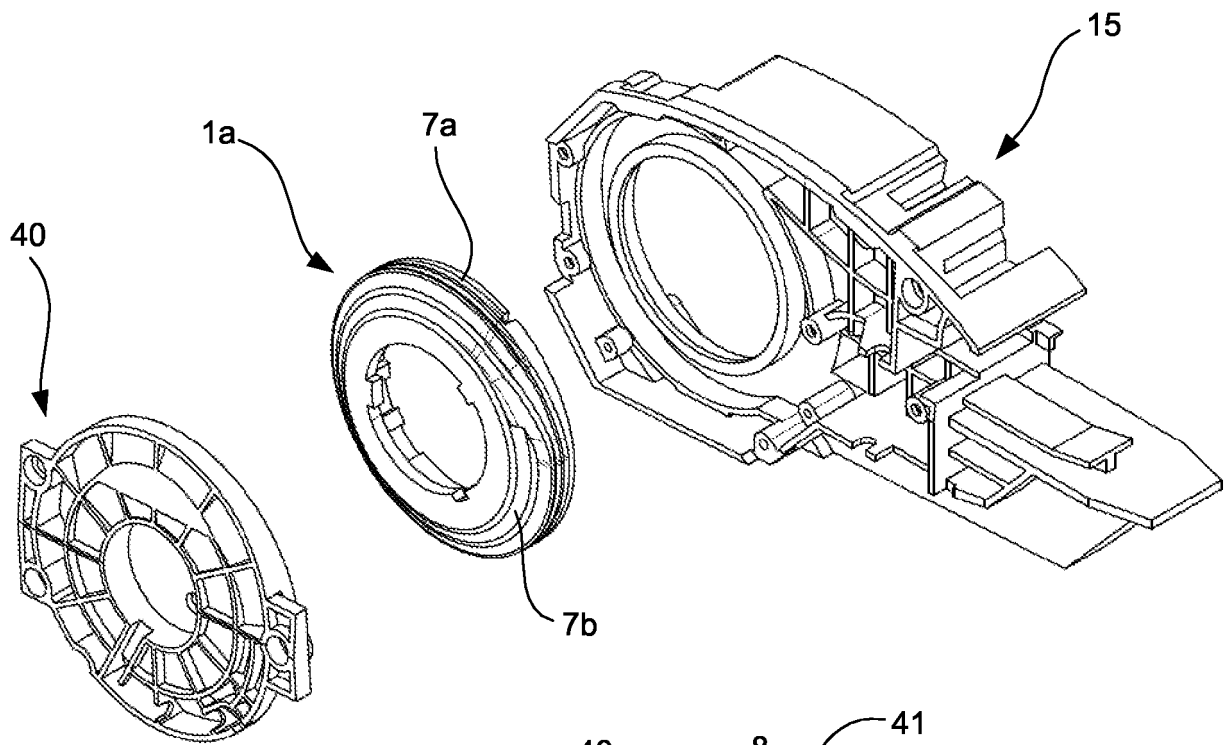


Fig. 6

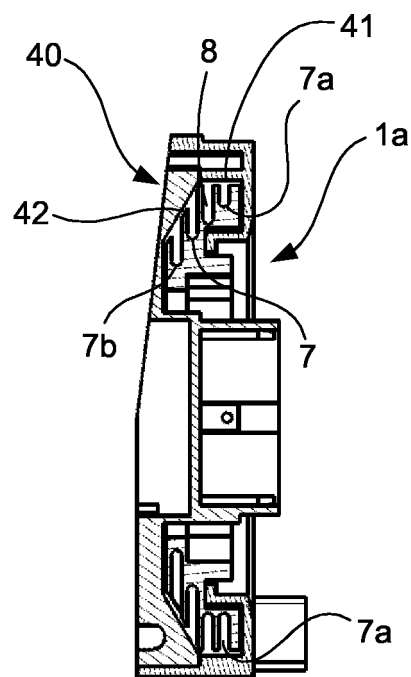


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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