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(54) **CONTROL DEVICE FOR LIGHTING ELEMENTS TO BE MOUNTED ON A ROLL-UP COVER
INSTALLATION**

(57) Control device (1) for lighting elements (2) to be mounted on a roll-up roofing installation (3), in particular of the type intended to be installed in correspondence with windows, doors, glazing or similar passages, and comprising a tubular shaft (4) rotating around its longitudinal development axis (X) and a cover (6), preferably a sheet, to be wound on said tubular shaft (4) and to be unwound therefrom, said device being characterized by the fact that understand:

- a head (30) which is configured to idly support the tubular shaft (4) by itself,
- a casing (28) which is removably mounted on said head

(30) and which is configured to be inserted and housed in said tubular shaft (4), said casing (28) contains control means for said lighting elements (2).

- means (40) for fixing the head (30) to a lateral bracket (16) of a support structure (7) for fixing said roofing installation (3) to an external fixed structure and characterized in that said means fixing means (40) comprise at least two elements (41', 41'') which clamp laterally an external portion (35), which is intended to always remain outside the tubular shaft (4), of the head (30).

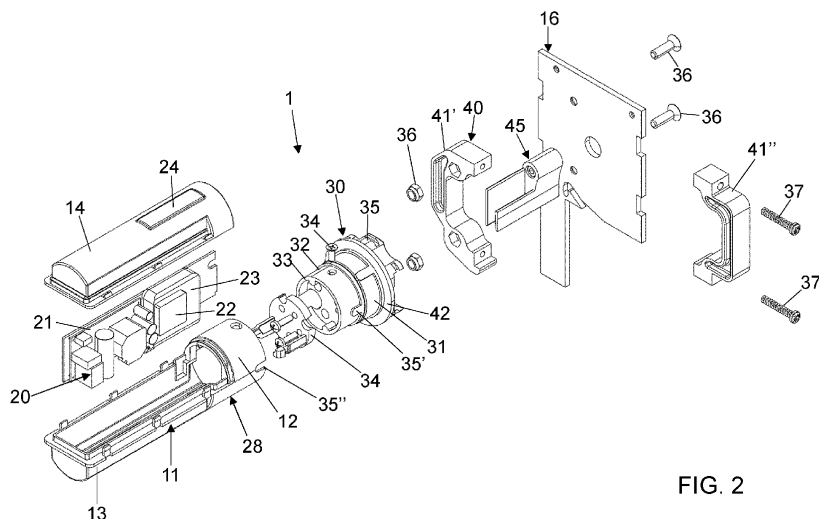


FIG. 2

Description

FIELD OF THE TECHNIQUE

[0001] The present invention relates to a device for controlling the lighting elements of a roll-up roofing installation, in particular of a roller blind for windows, doors, glazing and the like, preferably but not necessarily motorized.

BACKGROUND OF THE INVENTION

[0002] In outdoor installations, roller blinds of the type comprising a sheet are known, which in the condition of retracted awning is wound on a tubular shaft and in the condition of the unfolded awning is unwound by said shaft and is kept stretched by its connection with a flap to said tubular shaft and with the opposite flap to a rigid crosspiece which can be approached and removed from the tubular shaft itself.

[0003] In the case of a cantilevered awning, the rigid crosspiece is connected to the support structure of the tubular shaft by means of a pair of articulated arms, while in the case of a sliding awning the rigid crosspiece is made to slide with ends along two fixed parallel guides placed on the sides of the surface that must be able to be covered by the unfolded tent.

[0004] In the case of cantilevered awnings, it is also envisaged that the rigid crosspiece can have such a conformation as to cover the awning, when it is wrapped around the tubular shaft, and in this way to constitute a sort of protection box for the latter, which in this case is called cassette awning.

[0005] Independently from the type of awning, its motorization which leads to the winding of the sheet on the tubular shaft and its unwinding from the tubular shaft is obtained with a traditional tubular electric motor inserted inside the winding shaft and can be controlled, preferably via radio, directly from the user or from light and/or wind sensors. This solution is for example described in the winding covers described in AU 2014 200269, US2015/362896 and US2017/101820.

[0006] The current market need is to equip the roller blinds with lights that can be used to illuminate the surface below the awning and/or to constitute courtesy lights and/or to create lighting effects, in particular RGB effects.

[0007] Up to now this need has been satisfied in awnings with articulated arms by applying these lights, preferably LED lights, to the arms themselves and/or to the rigid crosspiece and/or to the support structure of the awning, and in sliding awnings by applying these lights to the guides and/or to the support uprights of the guides and/or to the other parts of the awning support structure.

[0008] Moreover, all this involves the need to create a lighting system with dedicated components which, together with the lights themselves, must be able to be applied to the support structure of the awning. In particular, a power supply and control unit for the lights must

be provided, which in the known solutions is external or inserted in one of the supporting uprights of the awning, if provided. However, these are solutions of a certain installation complexity, which are certainly unsatisfactory in particular in the case of awnings with articulated arms and therefore without uprights.

[0009] In this regard, for example KR20110114944 describes a motorized roller blind which has a cover sheet having one edge associated with a winding roller while the other edge is associated with a rigid crosspiece; furthermore, guide arms are provided interposed between a bar with a rectangular section and said rigid crosspiece. Lighting elements are mounted on the bottom of the rectangular section bar, the guide arms and the rigid crosspiece. A first bracket is also provided for fixing the winding roller to the rectangular section bar and a second bracket for fixing the latter to the wall. Furthermore, both the rectangular section bar and the winding roller - together with a battery, an inverter and the control unit, which are fixed to the external end of said winding roller - are all housed inside a profile of containment which is substantially "C" shaped and which, in particular, is open towards the outside to allow the unwinding of the sheet and the translational movements of the guide arms. Photovoltaic cells are mounted on the upper external surface of the containment profile to generate electrical energy to be stored in a corresponding battery (always housed in said profile, at one of its ends) and to then be used to power the lighting elements.

[0010] This known solution is not completely satisfactory as it requires the use of a specially shaped and oversized profile only to be able to house all the components inside it and, in particular, to contain the assembly - including battery, inverter and control unit - protruding from the outer end of the take-up roller.

[0011] Tubular motors have also been proposed provided with an output for powering the lights and therefore motors in which the powering unit for the lights is integrated into the motor itself. This is a solution that in practice has eliminated at least in part the difficulty of installing the lighting system but which has highlighted some limitations, given that the lights are powered in low voltage (12 or 24Vdc) and the power that can be supplied by the light output of the motor can only power a small amount/number of lights.

[0012] In some installations, both indoors and outdoors - for example for the curtains covering windows, doors, glazing or other openings in general - the spaces in length are particularly limited. More in detail, blinds of this type are, for example, the "screen" type roller blinds. In addition, in such installations, the power required for the lighting elements is usually small.

[0013] EP3219898 describes a device for the motorization of a tubular shaft for winding a curtain, and in which said device comprises a head for supporting the tubular shaft and a casing removably mounted on the head and containing the power supply batteries for the motor.

OBJECTIVES OF THE INVENTION

[0014] The object of the invention is to propose a device for controlling the lighting elements of a roll-up roofing installation, preferably of a roller blind for windows, doors, glazing or the like, which eliminates all the drawbacks encountered in the known solutions and which, in particular, can be installed in conditions in which the available spaces, particularly in length, are reduced.

[0015] Another object of the invention is to propose a device with a particularly reduced overall dimensions.

[0016] Another object of the invention is to propose a device which is suitable for use in cases where the power of the light to be controlled is not particularly high, for example in the order of 50W.

[0017] Another object of the invention is to propose a device that is easy to install, even by non-specialized personnel.

[0018] Another object of the invention is to propose a device that is easy to program and manage.

[0019] Another object of the invention is to propose a device which is independent, autonomous and/or additional to the drive unit of the roll-up roofing installation.

[0020] Another object of the invention is to propose a device which can also be controlled remotely from a mobile phone both to command the operation of the control device itself and to verify the correct execution of the commands received.

[0021] Another object of the invention is to propose a device which is an improvement and/or alternative to the traditional ones.

[0022] Another object of the invention is to propose a device which can be obtained simply, quickly and with low costs.

[0023] Another object of the invention is to propose an installation of a roll-up roof, in particular a roller blind, which is equipped with a device for controlling the lighting elements of said roof which has a particularly small footprint, which is simple and quick to assemble and install, easy to program and manage, as well as obtainable simply, quickly and with low costs.

SUMMARY OF THE INVENTION

[0024] All these objects, considered individually or in any combination thereof, and others that will result from the following description are achieved, according to the invention with a device for controlling the lights of a roll-up roof installation, in particular of a roller blind preferably for windows, doors, glazing or similar passages, as defined in claim 1, as well as a roller blind installation, preferably a roller blind for windows, doors, glazing or similar passages, according to claim 14.

DESCRIPTION OF THE FIGURES

[0025] The present invention is further clarified hereinafter in some of its preferred embodiments reported for

purely illustrative and non-limiting purposes with reference to the attached drawing table, in which:

- Figure 1 shows a schematic view of an installation of the roller blind type with a control device of the elements of the lighting according to the invention,
- Figure 2 shows in an exploded perspective view the control device of the lighting elements according to the invention,
- Figure 3 shows it in assembled condition,
- Figure 4 shows it in side view, and
- Figure 5 it shows in side view without the tubular assembly.

DETAILED DESCRIPTION OF THE INVENTION AND OF SOME OF ITS PREFERRED EMBODIMENTS

[0026] As can be seen from the figures, the device according to the invention, globally indicated with the reference number 1, for controlling lighting elements 2 is applied/mounted, in the illustrated example, to a roll-up roofing installation, in particular a roller blind 3 which can be mounted in correspondence with a window, door, glazing or any opening.

[0027] Conveniently, the installation of the roller blind 3 is of the traditional type. Preferably, the roller blind is of the roller type.

[0028] Conveniently, the roller blind 3 is motorized and comprises a tubular shaft 4, which is motorized in rotation around its longitudinal development axis, and a sheet 5 which has a flap fixed to the tubular shaft and which, following the rotation of the tubular shaft, can be wrapped around said shaft and unwound from it.

[0029] Conveniently, the winding/unwinding of the sheet 5 around the tubular shaft 4 can take place both along a substantially vertical direction and along a direction more or less inclined with respect to the vertical. Conveniently, the winding/unwinding of the sheet 5 around the tubular shaft 4 can take place along lateral guides for the sheet itself.

[0030] The tubular shaft 4 can be for example a shaft which, suitably, can have any cross section. Preferably, the tubular shaft 4 can have a circular or polygonal section, for example hexagonal, octagonal or the like.

[0031] Preferably, the installation of the roller blind 3 can comprise a rigid crosspiece 6 which is associated with the sheet 5 at the opposite edge to that associated with the tubular shaft 4. Conveniently, the rigid crosspiece 6 can be constituted by a metallic or plastic section and can have any section.

[0032] Conveniently, the installation of the roller blind 3 can also comprise a support structure 7 for the tubular shaft 4 and configured to be mounted to a fixed structure (not shown), for example to a wall surrounding the opening (window, door, window, etc.) to be covered. Preferably, this support structure 7 can comprise at least a pair of lateral brackets 16 which suitably support the tubular

shaft 4 at the ends and are associated directly, or through other components, to a fixed structure, for example to a wall that surrounds the passage (window, door, glass, etc.) to be covered. Preferably, the support structure 7 can also comprise a rigid band (not shown), which adheres appropriately to the fixed structure, for example to the wall, and which is fixed directly or by means of a further pair of fixing brackets to the fixed structure.

[0033] Preferably, for example, the sheet 5 is made of a darkening and/or filtering fabric. Preferably, the sheet 5 uses a "screen" type fabric, ie with a fabric having a perforated weft that allows you to see outside and not vice versa.

[0034] Conveniently, lighting elements 2 are mounted on the installation of the roller blind 3 and/or on the external and surrounding fixed structure. Advantageously, the lighting elements 2 can be mounted on any component of the roller blind 3 and in any position of these. More specifically, the lighting elements 2 can be mounted on the support structure 7 and/or on the rigid crosspiece 6 and/or on the tubular shaft 4 and/or also on the sheet 5. Preferably, the lighting elements 2 can be mounted on the rigid elements of the roller blind 3, such as the support structure 7 and/or the tubular shaft 4 and/or the rigid crosspiece 6.

[0035] Advantageously, the lighting elements 2 are light sources and, preferably, are LED strips which define monochromatic and/or RGB light sources.

[0036] In particular, the lighting elements 2 consist of at least one LED strip which comprises a set of LED diodes, ie electronic components which, if powered by electrical energy, emit light. Conveniently, the LED diodes are fixed - preferably by welding - on a preferably flexible printed circuit (PCB), which performs the function of support and electrical connection. Advantageously, the led diodes of the led strip can be configured to emit monochromatic light or they can be of the RGB type.

[0037] Advantageously, as described in more detail below, the lighting elements 2 are connected - preferably by means of electrical connection cables/wires (not shown) - to the control device 1 housed in the tubular shaft 4. Preferably, the conductive cables of electrical connection run inside the components of the roller blind and, therefore, are hidden from view from the outside.

[0038] Conveniently, the roller blind 3 also comprises means configured to cause rotation in the two directions of the tubular shaft, thus allowing the sheet having a flap fixed to said shaft to be wound and unwound. Advantageously, a drive unit 8 can be inserted in the tubular shaft 4 to cause rotation in both directions of the shaft itself. Preferably, this drive unit 8 is inserted inside the tubular shaft 4 at a first end thereof. Preferably, the drive unit 8 comprises a traditional tubular electric drive/towing motor, preferably of the single-phase asynchronous type, inserted into the tubular shaft 4. Preferably, said drive unit 8 also comprises power supply means (for example a battery) of said electric motor and a command and control unit of said motor. More in detail, suitably, the motor

is provided with a motor head which is suitably fixed with any known system to the support structure, preferably fixed to the lateral bracket 16 of the latter. The tubular motor is also provided with an output pinion to which a towing adapter (pulley) 8' of the tubular shaft 4 is coupled, cooperating in a traditional way with a similar non-towed adapter, which is mounted near said head.

[0039] Alternatively, means can be provided - which can be manually operated and actuated - configured to cause rotation in both directions of the tubular shaft 4. Conveniently, these means configured to cause rotation in both directions of the tubular shaft 4 can be consisting of a traditional hand-operated chain or winch.

[0040] Inside the tubular shaft 4 there is also inserted the device 1 for controlling the lighting elements 2. Preferably, this device 1 is inserted at the other end of the tubular shaft 4. Preferably, at one end of the tubular shaft 4 is inserted and housed in the drive unit 8 of the shaft itself, while the device 1 for controlling the lighting elements 2 is inserted and housed in correspondence with the other end of the tubular shaft.

[0041] Advantageously the control device 1 of the lighting elements 2 is substantially independent and autonomous - both from a construction and positioning point of view and from an operational operating point of view - with respect to the possible drive unit 8 of the roller blind installation 3.

[0042] Advantageously, the control device 1 comprises a head 30 which alone supports the tubular shaft 4 so that the latter can rotate with respect to said head. Furthermore, the device 1 comprises a casing 28, preferably tubular, which is removably inserted inside the tubular shaft 4 and which is removably mounted on said head 30. In particular, said tubular casing 28 is mounted on said head 30 so as to be supported exclusively by the head itself. More in detail, no support adapter for the tubular shaft 4 is provided or mounted on the tubular casing 28.

[0043] Preferably, the casing 28 is made of plastic.

[0044] Conveniently, on the head 30 a rotating element 31 idly mounted which is intended to be integral in rotation with the tubular shaft 4. In particular, the element 31 rotates with respect to the remaining fixed part of the head and supports, by means of an adapter 8", the tubular shaft 4 at one end thereof. More in detail, the head 30 comprises a body 32 which is fixed (ie does not rotate) and a rotating element 31, preferably annular in shape, which is made integral in rotation with the tubular shaft 4 and which rotates with respect to the fixed body 32.

[0045] Advantageously, an adapter 8" is then mounted on the rotating element 31 for mounting the tubular shaft 4. In particular, an adapter 8' supporting the shaft itself is interposed between the rotating element 31 mounted on the head 30 and the tubular shaft 4. Conveniently, the rotating element 31 supports the adapter 8" which thus allows coupling with the various shapes of the cross section of the shaft 4. Conveniently, the rotating element 31 is the only element of the device 1 which, for by means

of the adapter 8", it supports the tubular shaft 4.

[0046] The casing 28 detachably engages the head 30, in particular to an internal portion 33 of the head 30. Preferably, said tubular casing 28 is hooked, preferably by means of clip attachment means to the head 30. Advantageously, the head 30 also comprises a cap, preferably of a discoidal shape, which can be fixed to the fixed body 32 of the head 30 and which is provided with hooking flaps for the casing 28.

[0047] Advantageously moreover, the internal portion 33 (ie the one intended to be inserted into the tubular shaft 4) of the head 30 is inserted into the casing 28 and these are then fixed together by means of a traditional first mechanical locking member 34 (for example a screw or a grain). Preferably, in more detail, the casing 28 and the internal portion 33 of the head 30 are provided with mutual engagement means, defined for example by protruding portions 35' and recessed/perforated counter-
portions 35", to thus prevent movement of the casing 38 with respect to the body 32 of the head 30, while the engagement defined by said first locking member 34 prevents the longitudinal extraction/movement of the casing 28 with respect to the head 30.

[0048] Furthermore, the device 1 comprises means 40 for the fixing of the head 30 to a lateral bracket 16, preferably defined by a side plate, of the support structure 7.

[0049] Conveniently, the fixing means 40 comprise at least two elements - respectively 41' and 41" - which clamp laterally an external portion 35 (ie the one destined to always remain outside the tubular shaft 4) of the head 30. Conveniently, at least a first clamping element 41' can be configured in such a way that they fixed to the lateral bracket 16, preferably by means of second mechanical locking members 36 (for example screws or bolts with corresponding nuts), while the other (second) clamping member 41" is configured to be fixed to the first clamping element 41', to thus externally wrap - at least in part - the external portion 35 of the head 30.

[0050] Conveniently, said elements 41', 41" clamp the external portion 35 of the head 30 so as to prevent the latter (with the corresponding casing 28 associated with it) - once clamped - can translate longitudinally (i.e. along an X axis which is substantially corresponding to or parallel to the longitudinal axis of the casing 28 or shaft 4) or laterally (i.e. along a direction perpendicular to the axis X), or rotate around the X axis. Therefore, by binding the clamping elements 41', 41" to the lateral bracket 16, the head 30 is also fixed to said bracket 16.

[0051] Conveniently, said clamping elements 41' and 41", once arranged in sequence around the external portion 35 of the head 30, are fixed to each other by means of third fastening members 37 (for example screws).

[0052] Preferably, the external portion 35 of the head 30 defines a substantially complementary, or at least partially complementary, profile to that delimited internally by the internal surfaces of the clamping elements 41' and 41". Preferably, the external portion 35 of the head 30 defines a shaped profile/section which engages by inter-

locking with a profile/section defined on the internal surfaces of the clamping elements 41' and 41".

[0053] Conveniently, the head 30 comprises a circumferential flange 42 which separates the external portion 35 from the remaining part of the head itself and, in particular, from the internal portion 33. Advantageously, the circumferential flange 42 is designed to rest frontally on the clamping elements 41' and 41", once the external portion 35 of the head 30 has been appropriately enclosed/embraced.

[0054] Advantageously, the external portion 35 of the head 30 is also shaped so that it can be inserted from the front (ie along an insertion direction substantially corresponding or parallel to the X axis), in order to make the flange rest on the first clamping element 41', once this has been fixed to the lateral bracket 16.

[0055] Conveniently, two clamping elements 41' and 41" are provided which, in combination, laterally envelop the external portion 35 of the head 30, preferably along the entire lateral extension of said one portion 35.

[0056] Preferably, a guide element 45 for the fabric of the roller blind 3 can be mounted on the lateral bracket 16.

[0057] Conveniently, both the head 30 and the clamping elements 41' and 41" are provided with through openings 50 for the passage of the cables from the electronic components, contained in the tubular casing 28, towards the outside of the device 1.

[0058] Conveniently, it is understood that the shape and dimensions of the tubular casing 28 are not related to those of the tubular shaft 4, although obviously are compatible with those and, in particular, the tubular casing 28 has a shape and dimensions suitable for allowing its insertion and housing inside the tubular shaft 4. Conveniently, the stability of the positioning of the tubular casing 28 inside the tubular shaft 4 is obtained by coupling said casing to the head 30.

[0059] Conveniently, the tubular casing 28 can be made in a single piece or in several pieces that are joined together also by mutual mechanical interlocking with shape and/or snap coupling. More in detail, the tubular casing 28 can comprise:

- a base piece 11 which is defined, in a single body, by a tubular section 12, within which the internal portion of the head is inserted, and by a base 13 having a substantially semi-cylindrical shape,
- a cover piece 14 which is defined by a substantially semi-cylindrical shaped cover intended to snap into place with said base 13.

[0060] The installation of the device 1 according to the invention is particularly quick and simple. In particular, first a first clamping element 41' is fixed to the lateral bracket 16, then the external portion 35 of the head 30 of the assembly formed by the head itself is positioned/inserted with the tubular casing 28, suitably hooked and/or fixed prior to the head, so that said external portion 35 is embraced laterally by said first clamping element 41' ;

finally, the other clamping element 41" is positioned around the remaining external portion 35 of the head 30, the two clamping elements 41' and 41" are then fixed to each other, thus locking the formed assembly to the lateral bracket 16 from the head 30 and from the tubular casing 28.

[0061] Conveniently, the electronic components for powering and controlling the lighting elements 2 are contained within the casing

[0062] Advantageously the control device 1 according to the invention comprises a power supply 20, a control unit 21 and a receiver 22 which is connected or incorporated in said unit.

[0063] Advantageously, inside the tubular casing 28 is housed the power supply 20 for the lighting elements 2.

[0064] Advantageously, inside the tubular casing 28 is also housed the control unit (for example a processor) 21 which is connected to an output interface provided outside the tubular casing and in turn connected to the lighting elements 2. Conveniently, the connection between the control unit 21 (housed inside the casing 28, and therefore to the interior of the tubular shaft 4) and the output interface (positioned outside the tubular shaft), as well as between the latter and the lighting elements 2, is obtained by means of conductive cables for connecting and transmitting electrical signals.

[0065] Preferably, the control/communication drivers are implemented in the control unit 21 with the output interface connected to the lighting elements 2.

[0066] Preferably, inside the tubular casing 28 there is also the receiver 22 which is connected, via wireless and/or via wire, with the outside of the roller blind installation 3 to receive command signals from the outside to control, on the basis of the latter, said lighting elements 2.

[0067] Advantageously, the receiver 22 is of the wireless type, preferably radio. Conveniently, through the receiver 22 the control unit 21 can receive from an external transmitter, and in particular from a remote control or even from a mobile phone or from other traditional wireless devices in general, control signals of the lighting elements 2. Conveniently, for this purpose, the receiver 22 is connected and/or incorporated to the electronic circuit of the control unit 21 to be operatively connected with the control/communication drivers of the output interface connected to the lighting elements 2.

[0068] Advantageously, the receiver 22 can be connected via radio to other traditional sensors present in the environment.

[0069] The receiver 22 can be advantageously replaced by a transceiver, preferably radio, which in addition to sending corresponding control signals to the lighting elements can remotely communicate the status of the elements themselves and, preferably, also the operating parameters or the possible presence of anomalies or malfunctions. In particular, for this purpose, the transceiver, in addition to controlling/communicating with its receiver side with the output interface connected to the lighting elements 2, can transmit signals with the trans-

mitter side about the status of the lighting elements themselves. Basically, suitably, in this way the user can remotely control, for example via a mobile phone (preferably via smartphone), the switching on, off and adjustment of the lighting elements and can receive, always with the mobile phone (preferably a smartphone), information on the current status of the latter. Conveniently, the transceiver is connected and/or incorporated into the electronic circuit of the control unit 21 to be operatively connected with the control/communication drivers of the output interface connected to the lighting elements 2.

[0070] Advantageously, the power supply 20 housed in the tubular casing 28 can be powered from the outside, preferably it is powered directly through a cable connected to an external electrical source (preferably to the mains). It is also envisaged that, alternatively, the power supply 20 housed in the tubular casing 28 can be powered by one or more batteries 23 which are advantageously housed inside the tubular casing 28.

[0071] Advantageously, on the side wall of the tubular casing 28 a first flap 24 is provided for accessing the inside of the tubular casing from the outside, for example to access - if provided - the rechargeable battery 23. Advantageously, a second flap can also be provided in the tubular shaft 4 to access to the first flap 24 obtained in the tubular casing 28. Conveniently, it is understood that the first flap 24 of the tubular casing 28 and the second flap of the tubular shaft 4 face each other.

[0072] The present invention also relates to a roll-up roofing installation, in particular of the type with a roller blind 3 intended to be installed in correspondence with windows, doors, glazing or similar passages, with lighting elements 2 which are mounted on a component of said installation or around said installation. In particular, the installation 3 comprises a tubular shaft 4 rotating around its longitudinal development axis X and a cover 6, preferably a sheet, to be wound on said tubular shaft 4 and to be unwound therefrom. The installation according to the invention is characterized in that it comprises a device 1, as described above, for controlling said lighting elements 2 which, preferably, are connected by cable to said device 1.

[0073] Advantageously, in correspondence with a first end of the tubular shaft 4 of the installation 3 a drive unit 8 is inserted to cause rotation in both directions of the shaft itself, while at the other end (opposite the first end) of the tubular shaft 4 is inserted and housing the control device 1 of the lighting elements 2.

[0074] From what has been said it is clear that the device according to the invention, for controlling the lighting elements mounted on a roofing installation, is quite advantageous in that:

- it can be used inside short tubular shafts where the length of the drive unit provided at the other end occupies a large part of the internal space of the shafts themselves,
- its rather simple and rapid installation, as it requires

only the insertion of the tubular casing 28 inside the tubular shaft, the constraint of the casing and head assembly to the side of the support structure 7 and the connection of the device to the sources,

- defines at the same time a mechanical connection element between the tubular shaft and the fixed support structure,
- allows the rechargeable battery 24 to be housed inside the tubular casing 28, further simplifying the installation of the device and eliminating in particular the fixed external batteries.

[0075] The device according to the present invention has been described here in particular with reference to its application in a roller blind 3, however it is intended that it can be applied in any installation of a roller shutter, both vertical and inclined, such as for example shutters, shutters.

[0076] The present invention has been illustrated and described in some of its preferred embodiments, but it is understood that executive variations may be applied to them in practice without however departing from the scope of protection of the present patent for industrial invention.

Claims

1. Control device (1) for lighting elements (2) to be mounted on a roll-up roofing installation (3), in particular of the type intended to be installed in correspondence with windows, doors, glazing or similar passages, and comprising a tubular shaft (4) rotating around its longitudinal development axis (X) and a cover (6), preferably a sheet, to be wound on said tubular shaft (4) and to be unwound therefrom, said device being **characterized by** the fact that understand:

- a head (30) which is configured to idly support the tubular shaft (4) by itself,
- a casing (28) which is removably mounted on said head (30) and which is configured to be inserted and housed in said tubular shaft (4), said casing (28) contains control means for said lighting elements (2),
- means (40) for fixing the head (30) to a lateral bracket (16) of a support structure (7) for fixing said roofing installation (3) to an external fixed structure

and **characterized in that** said means fixing means (40) comprise at least two elements (41', 41'') which clamp laterally an external portion (35), which is intended to always remain outside the tubular shaft (4), of the head (30).

2. Device according to claim 1, **characterized in that**

said head (30) comprises an internal portion (33), which is intended to be inserted inside the tubular shaft (4), and an external portion (35), which is destined to always remain outside the tubular shaft (4).

3. Device according to one or more of the preceding claims, **characterized in that** said head (30) comprises a rotating element (31) which is rotating with respect to the remaining fixed part of the head (30) and which is configured to support, through an adapter (8''), the tubular shaft (4) at one of its ends.

4. Device according to one or more of the preceding claims, **characterized in that** the head (30) comprises a body (32) which is fixed and a rotating element (31), preferably annular in shape, which is configured to be made integral in rotation with the tubular shaft (4) and which rotates with respect to said fixed body (32).

5. Device according to one or more of the preceding claims, **characterized in that** said clamping elements (41', 41'') externally clamp the external portion (35) of the head (30) so as to prevent longitudinal translation, the lateral translation and rotatable rotation of the head (30) with respect to said clamping elements (41', 41'').

6. Device according to one or more of the preceding claims, **characterized in that** at least a first clamping element (41') is configured so as to be fixed to the lateral bracket (16), while another/second clamping element (41'') is configured to be fixed to the first clamping element (41'), to thus externally wrap - at least in part - the external portion (35) of the head (30).

7. Device according to one or more of the preceding claims, **characterized in that** said tubular casing (28) has a shape and dimensions suitable for allowing its insertion and housing inside the tubular shaft (4) and by the fact that said tubular casing (28) is mounted on said head (30) so as to be supported exclusively by said head (30).

8. Device according to one or more of the preceding claims, **characterized in that** said tubular casing (28) is hooked, preferably by means of clip coupling means, to said head (30).

9. Device according to one or more of the preceding claims, **characterized in that** said tubular casing (28) is also fixed to said head (30) by means of a first mechanical locking member (34).

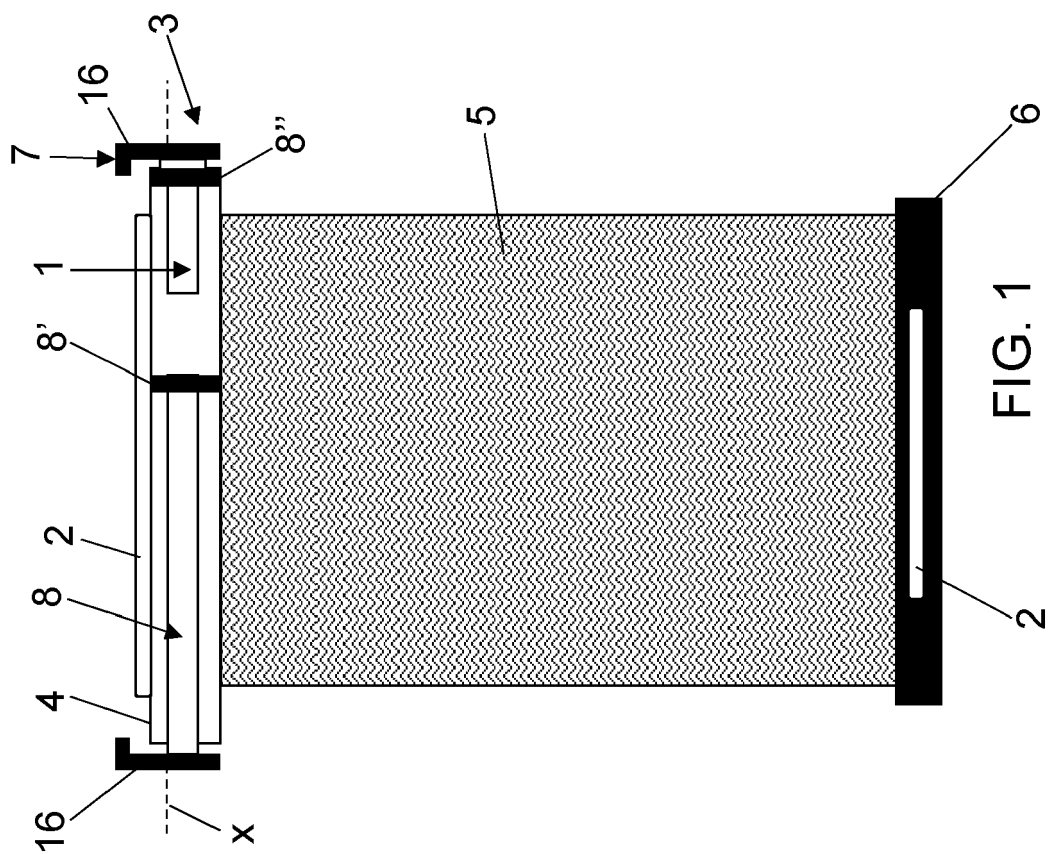
10. Device according to one or more of the preceding claims, **characterized in that** said head (30) and said clamping elements (41', 41'') are provided with

through openings (50) for the passage of cables from electronic components, contained in the tubular casing (28), towards the outside of the device (1).

11. Device according to one or more of the preceding claims, **characterized in that** said tubular casing (28) is made of several pieces which are joined together by mutual mechanical interlocking with shape and/or snap coupling. 5
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12. Device according to one or more of the preceding claims, **characterized by** the fact that said control means comprise a control unit (21) and by the fact that, inside said casing (28), a power supply (20) is also housed and also a receiver (22) which is connected or incorporated in said control unit (21), to receive command signals from the outside to control, on the basis of these, said lighting elements (2). 15
13. Device according to the previous claim, **characterized in that** said power supply (20) is configured to be powered directly from the outside through a cable connected to an external electrical source and/or is configured to be powered by at least one battery (23) which is housed inside the casing (28). 20
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14. Roll-up roofing installation (3), in particular of the roller blind type intended to be installed in correspondence of windows, doors, glazing or similar passages, with lighting elements (2) mounted on a component of said installation or around said installation, said installation comprising a tubular shaft (4) rotating around its longitudinal development axis (X) and a cover (6), preferably a sheet, to be wound on said tubular shaft (4) and to be unwound therefrom, **characterized by** comprising a device (1) for controlling said lighting elements (2) according to one or more of the preceding claims. 30
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15. Installation according to the preceding claim, **characterized in that** a motor drive unit is inserted in correspondence with a first end of the tubular shaft (4) to cause rotation in both directions of the shaft itself, while in correspondence with the other end of the tubular shaft (4) said control device (1) of the lighting elements (2) is inserted and housed. 40
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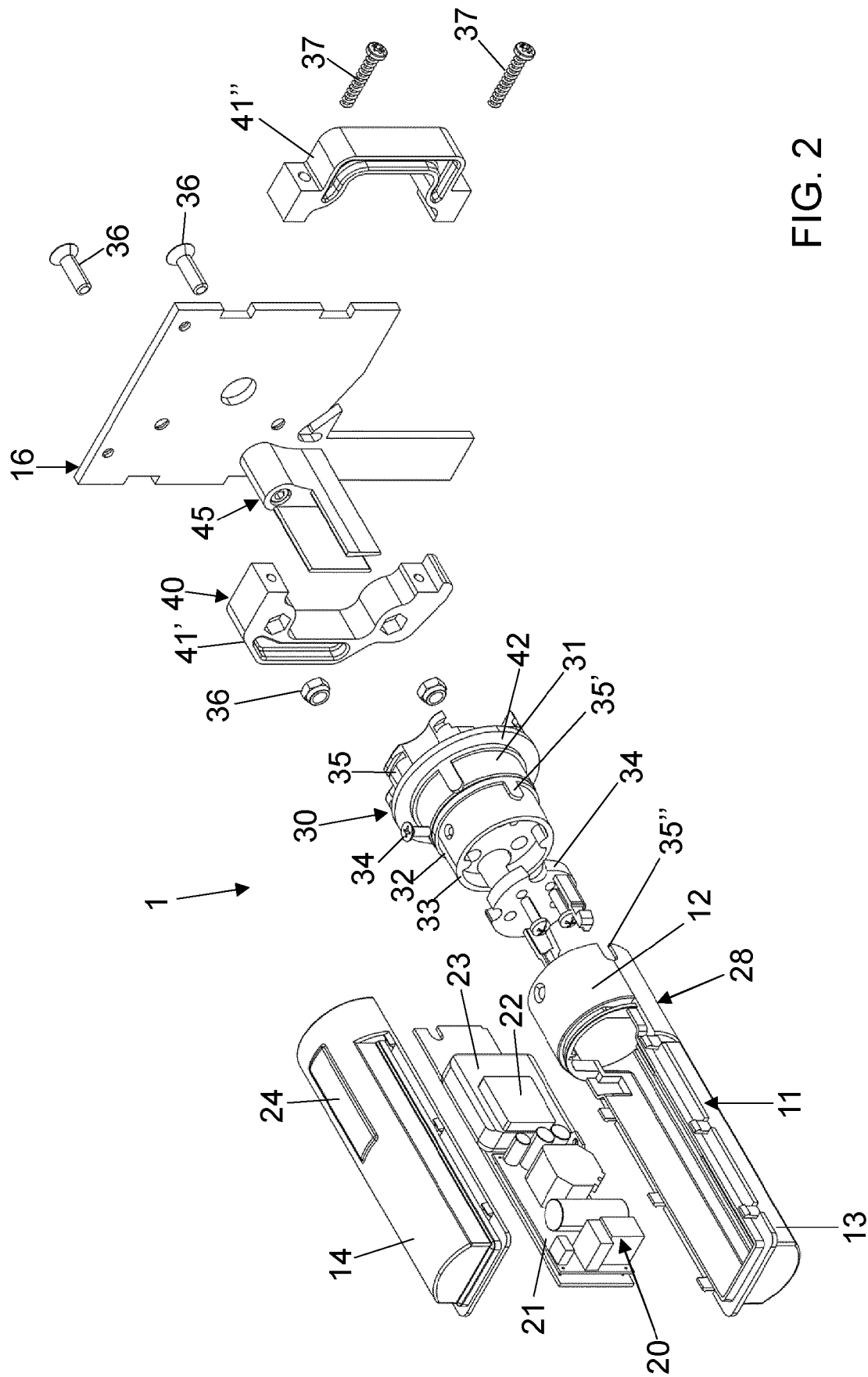
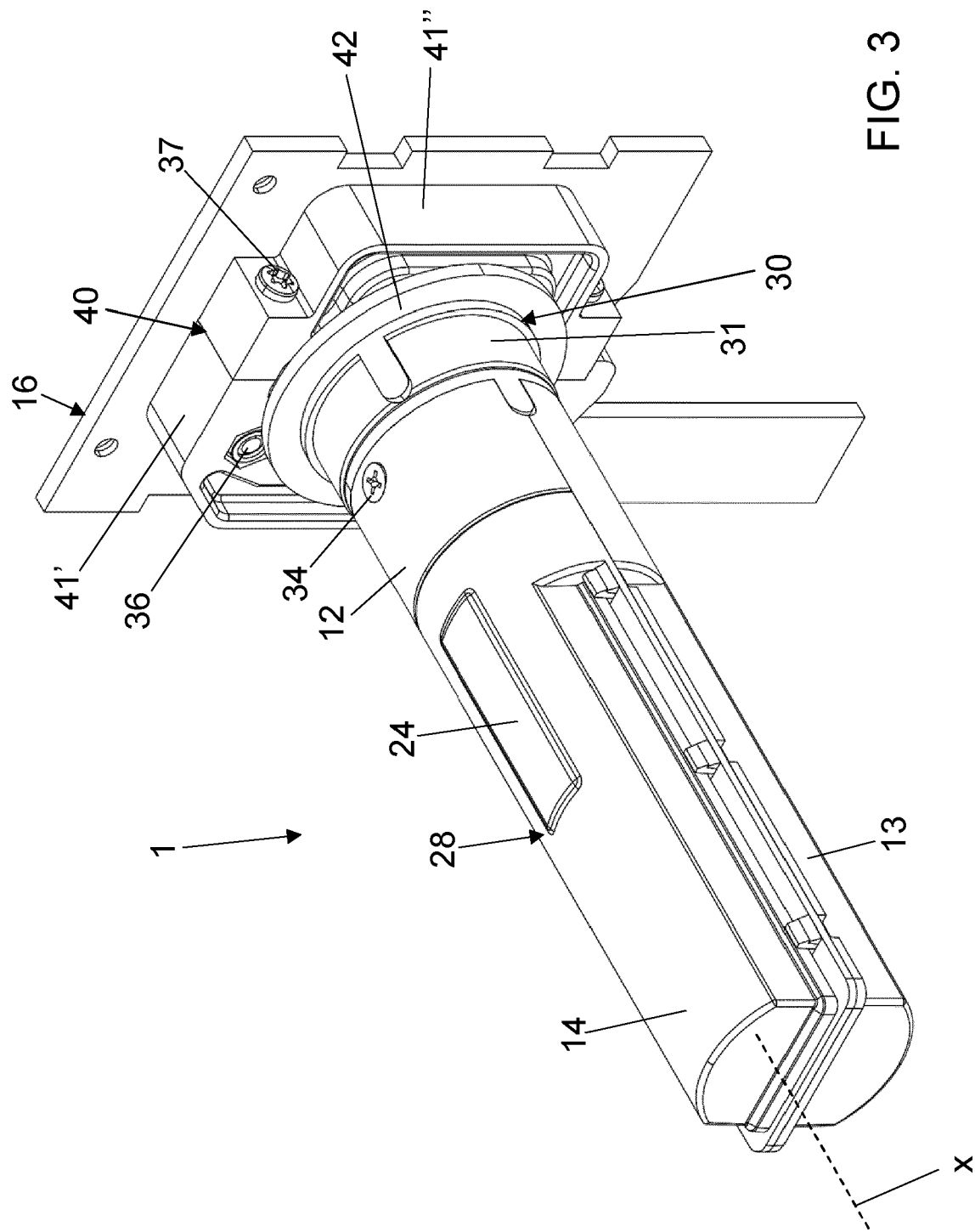


FIG. 2



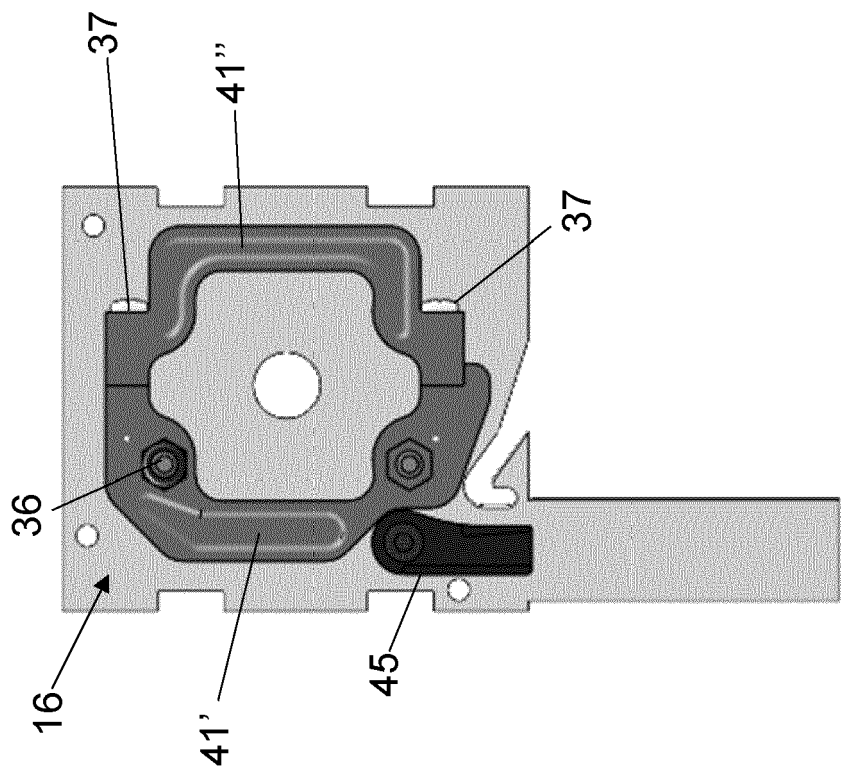


FIG. 5

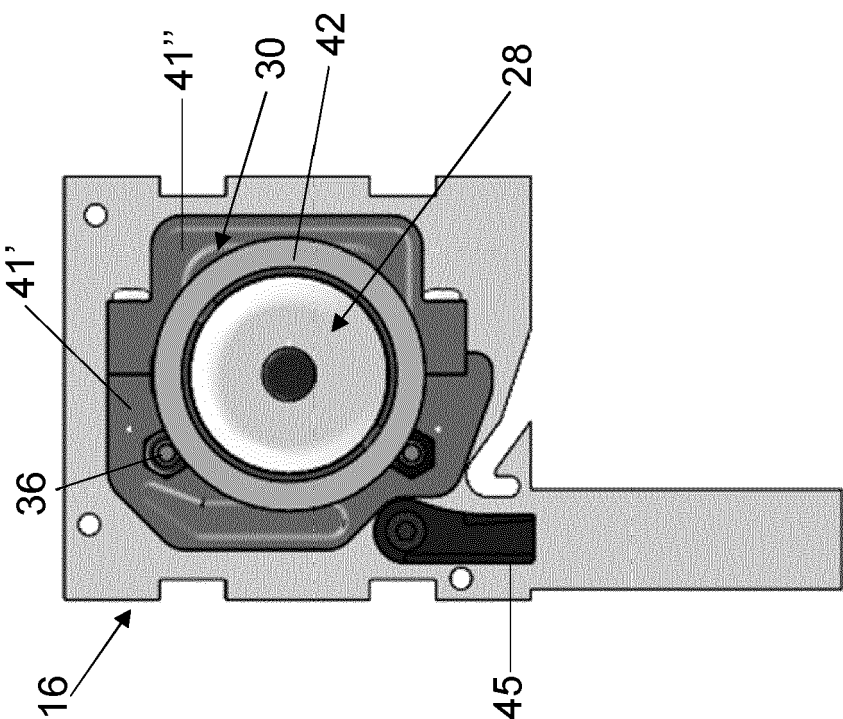


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

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EPO FORM 1503 03.82 (P04C01)

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Y	EP 3 219 898 A1 (VKR HOLDING AS [DK]) 20 September 2017 (2017-09-20) * paragraphs [0059], [0062], [0064], [0082], [0090]; figures 1-12 * -----	1-3, 7, 9	INV. E06B9/174 E06B9/50 E06B9/72
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			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 September 2022	Examiner Bourgoin, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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13-09-2022

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