



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.06.2020 Bulletin 2020/26

(51) Int Cl.:
E04F 10/06 (2006.01) **E06B 9/08** (2006.01)
E06B 9/68 (2006.01) **E06B 9/72** (2006.01)
F21V 33/00 (2006.01) **G05B 15/02** (2006.01)

(21) Application number: **19216902.7**

(22) Date of filing: **17.12.2019**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(72) Inventors:
• **BORSOI, Luigi**
31012 CAPPELLA MAGGIORE (TV) (IT)
• **COLLOVINI, Roberto**
31100 TREVISO (IT)

(74) Representative: **Piovesana, Paolo**
c/o Praxi Intellectual Property S.p.A. - Venezia
Via Francesco Baracca, 5/A
30173 Venezia-Mestre (IT)

(30) Priority: **20.12.2018 IT 201800020488**

(71) Applicant: **Teleco Automation S.R.L.**
31100 Treviso (IT)

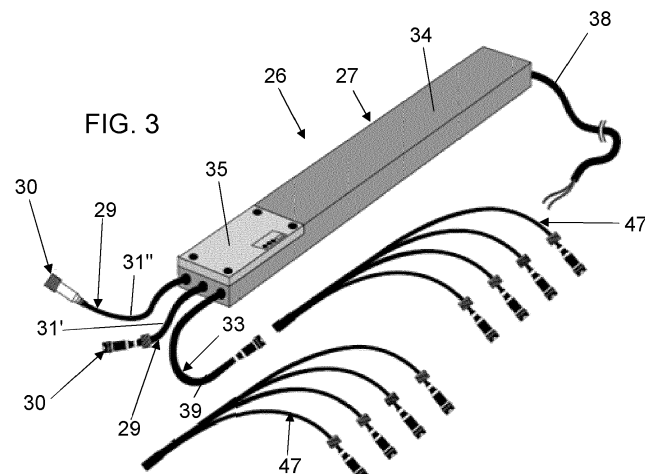
(54) **A DEVICE FOR CONTROLLING A ROLL-UP COVER INSTALLATION**

(57) A device (26) for controlling both a motorization unit (20) of a roll-up cover installation (1) and a plurality of lighting elements (18) applied to at least one component (2,4,6,8,10) of said roll-up cover installation (1), characterized in that it comprises a casing (27) which can be inserted into a component of said installation (1) or its support structure and/or can be associated externally to said installation (1) or to its support structure, or in its vicinity, inside said casing (27) being arranged and housed:

- at least one power supply unit (34) for said motorization unit (20) and for said lighting elements (18),
- at least one unit (35) for monitoring and control connectable with said motorization unit and said lighting el-

ements (18) of said roller cover installation (1),
- a receiver or transceiver (36) connected and/or incorporated in said control and command unit (35) to receive from the outside control signals for controlling, based on these, said motorization unit (20) and said lighting elements (18),

and also characterized in that said control unit (35) is configured so that, if an activation command of the motorization unit (20) is received while the lighting elements (18) are supplied, the power for the supply of the lighting elements (18) is automatically reduced, thus also reducing the brightness generated by these elements, to be used to supply the motorization unit (20).



Description

[0001] The present invention relates to an improved device for controlling a roll-up roof installation, preferably of a motorized roller blind.

[0002] Rolling curtains of the type comprising a sheet are known which, in the condition of a retracted curtain, is wound on a tubular shaft and in the unfolded curtain condition is unwound from said shaft and is kept extended by its constraint with one side to said tubular shaft and with the opposite side to a rigid crosspiece that can be approached and moved away from the tubular shaft itself. Moreover, suitably, the tubular shaft is supported at both ends in a traditional manner by the fixed external structure.

[0003] In the case of a protruding curtain, the rigid crosspiece is connected to the support structure of the tubular shaft through a pair of articulated arms, while in the case of sliding curtain 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 curtain.

[0004] In the case of protruding curtains it is also provided that the rigid crosspiece may have a conformation such as to cover the awning, when it is wrapped around the tubular shaft, and in this way to constitute a sort of protective box thereof, which in this case is called a boxed tent.

[0005] Independently of the type of curtain, its motorization which leads to the winding of the cloth on the tubular shaft and its unwinding from the tubular shaft is obtained with a traditional electric tubular motor inserted inside the winding shaft and can be controlled, preferably via radio, directly by the user or by 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 motor is controlled by a control unit which is generally positioned externally with respect to the tubular shaft and the tent structure and, in particular, is housed within a casing fixed to the fixed external structure.

[0007] These known solutions have proved to be valid and effective but all entail a difficulty of installation, both due to the need to find the suitable position for the assembly of the control unit, and to the need to carry out the necessary electrical connections between it and the motor it is driving. rotation of the tubular winding and unwinding shaft of the awning fabric.

[0008] Furthermore, the current market requirement is to equip the curtains with lights that can be used to illuminate the surface below the curtain and/or to create courtesy lights and/or to create lighting effects, in particular RGB effects. In particular, to date this requirement is satisfied in the articulated arm awnings 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 curtain, and in the sliding curtains by ap-

plying these lights to the guides and/or to the uprights supporting the guides and/or to the other parts of the tent supporting structure.

[0009] However, all this entails the need to create a lighting system with dedicated components which, together with the lights themselves, must be able to be applied to the tent support structure. In particular, a light supply and control unit must be provided, which in the known solutions is external or is inserted in one of the uprights supporting the curtain, if provided. However, these are solutions complex to install, certainly unsatisfactory in particular in the case of curtains with articulated arms and therefore without uprights.

[0010] Tubular motors have also been proposed provided with an output for powering the lights and therefore motors in which the light supply unit is integrated in the motor itself. This is a solution that in practice has at least partially eliminated the difficulty of installing the lighting system but has highlighted some limitations, given that the lights are powered at low voltage (12 or 24V DC) and the power that can be supplied by the lights output of the engine can only power a small amount/number of lights.

[0011] EP2199484 already describes a solution in which the motor and the lights are controlled and also powered by the same control unit, which is connected to a current-voltage power source.

[0012] The object of the invention is to propose a device for controlling a roll-up roof installation, in particular a roller blind, which eliminates the drawbacks encountered in traditional solutions.

[0013] Another object of the invention is to propose a device that optimally combines the motorization functionality of the roll-up cover with that for lighting the underlying area and/or around said covering, or for creating lighting effects.

[0014] Another object of the invention is to propose a device that can be easily installed even by unskilled personnel.

[0015] Another object of the invention is to propose a device that is easy to program and manage.

[0016] Another object of the invention is to propose a device that is independent, autonomous and/or additional with respect to the motorization unit of the roll-up roof installation.

[0017] Another object of the invention is to propose a device that is perfectly in line with the safety requirements imposed by the legislation of the sector.

[0018] Another object of the invention is to propose a device that allows greater integration of the components.

[0019] Another object of the invention is to propose a device that allows the installation of a roll-up cover, in particular of a roller blind, even in places where mounting of the control unit to the external support structure is not possible or is difficult.

[0020] Another object of the invention is to propose a device that can be remotely controlled even from a mobile phone.

[0021] Another object of the invention is to propose a

device which is both improved and/or alternative to the traditional ones.

[0022] Another object of the invention is to propose a device which entails low installation costs.

[0023] Another object of the invention is to propose a device that can be obtained in a simple, rapid manner and with low costs.

[0024] Another object of the invention is to propose a roll-up covering installation, in particular a sectional roller blind, which is provided with a control device which is simple to install, easy to program and to manage, and obtainable in a simple, rapid manner, with low costs.

[0025] All these objects and others which will become apparent from the following description, either individually or in any combination thereof, are achieved, according to the invention with a device as defined in claim 1, as well as by a roll-up covering installation according to claim 12.

[0026] The present invention is further clarified hereinafter in some of its preferred embodiments, given by way of a non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 shows a motorized roller blind in a perspective view from below provided with a control device according to the invention,

Figure 2 shows a perspective view from above and partially in transparency,

Figure 3 shows a perspective view of the control device according to the invention,

Figure 4 shows it in longitudinal section schematic within the tubular shaft of a roll-up cover.

[0027] As can be seen from the figures, the control device according to the invention, generally designated by the reference number 26, is applied/mounted, in the example shown, to a roll-up roof installation, in particular a roller blind, indicated as a whole with the reference number 1.

[0028] Preferably, the roller blind 1 is of the traditional type. Preferably, the roller blind 1 is motorized but could also be moved manually. In particular, the roller blind 1 is of the type with articulated arms, i.e. it is of the type which comprises a tubular shaft 2, a support structure 4 of the tubular shaft 2, a sheet 6 which can be wound around the tubular shaft 2 and unwound by this and a supporting structure of said sheet 6. Preferably, the supporting structure of said sheet 6 comprises a rigid crosspiece 8, to which is applied the edge of the sheet 6 opposite to that bound to the tubular shaft 2, and two pairs of articulated arms 10, which connect the rigid crosspiece 8 to the support structure 4 and guide it in its translational movements with respect to it.

[0029] Conveniently, the winding/unwinding of the sheet 6 can take place both along a substantially vertical direction, and along a more or less inclined direction with respect to the vertical.

[0030] The tubular shaft 2 can be for example a metal

shaft which, suitably, can have any cross-section. Preferably, the tubular shaft 2 can have a circular or polygonal section, for example hexagonal, octagonal or similar. Conveniently, the tubular shaft 2 is of the type traditionally usable for curtains and/or for rolling shutters.

[0031] Preferably, the support structure 4 can comprise:

- a rigid metal band, which appropriately adheres to a fixed external structure (not shown), for example to a wall of a building,
- a first pair of brackets 14 for fixing the rigid band to the fixed external structure, and
- a second pair of brackets 16, 16', preferably shaped like wings, which extend from said rigid band towards the outside and which suitably support at the ends the tubular shaft 2 which is advantageously provided with all the necessary components for its proper functioning, as will be described further below.

[0032] Suitably, the sheet 6 can be of any traditional type and does not require further explanation.

[0033] Conveniently, the rigid crosspiece 8 can be constituted by a piece of metal or plastic profile and can have any section. Preferably, the rigid crosspiece 8 is shaped so that when the curtain is in a wound condition, it adheres to the support structure 4 and forms with it a sort of container or "box", which houses inside it the tubular shaft 2, the sheet 6 wound on it and the articulated arms 10, which are in the folded condition.

[0034] Conveniently, lighting elements 18 are mounted on the roller blind 1. Advantageously, the lighting elements 18 can be mounted on any component of the roller blind 1 and in any position thereof. More particularly, the lighting elements 18 can be mounted on the support structure 4 and/or on the articulated arms 10 and/or on the rigid crosspiece 8 and/or on the tubular shaft 2 and/or also on the sheet 6. Preferably, the lighting elements 18 are to be mounted on the rigid elements of the roller blind 1, such as the support structure 4 and/or the articulated arms 10 and/or the tubular shaft 2 and/or the rigid crosspiece 8

[0035] Advantageously, as described in more detail in detail subsequently, the lighting elements 18 are connected - preferably by means of cables/wires connecting to an electrical connection - to the control device 26 housed in the tubular shaft 2. Preferably, the electrically connecting conductor cables run inside the components of the roller blind 1 and, therefore, they are hidden from view from the outside.

[0036] Advantageously, the lighting elements 18 are light sources and, preferably, are strips of LEDs that define monochromatic and/or RGB light sources. Preferably, the lighting elements are supplied with direct current, for example at 12V, 24V, 36V or 48V.

[0037] In particular, the lighting elements 18 consist of at least one strip of LEDs which comprises a set of LED diodes, i.e. electronic components which emit light when

supplied with electricity. Conveniently, the LED diodes are fixed - preferably by welding - on a printed circuit (PCB), preferably flexible, 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 can be of the RGB type.

[0038] Advantageously, in the example shown in the figures, at the lower edge of the support structure 4, at the lower edge of the articulated arms 10 and at the lower edge of the rigid cross-piece 8 are applied strips of LED 18 which globally form diffuse sources of monochromatic light or RGB light and are connected to the control device 26 housed in the tubular shaft 2 by means of electrical connecting conducting cables running inside the rigid crosspiece 8 and the articulated arms 10, and/or the other rigid components of the roller blind 1.

[0039] Suitably, the roller blind 1 comprises means configured to cause rotation in the two directions of the tubular shaft 2, thus allowing to cover and unwind the covering sheet 6 having a flap fixed to said shaft.

[0040] Advantageously, a motorization unit 20 is inserted in the tubular shaft 2 to cause rotation of the shaft itself in both directions. Preferably, this motorization unit 20 is inserted into the tubular shaft 2 at a first end 19 thereof. Conveniently, the motorization unit 20 comprises at least one electric drive/drive motor inserted within the tubular shaft itself. Preferably, said at least one electric motor is tubular.

[0041] Conveniently, the motorization unit 20 can comprise one or two electric motors in direct current. Conveniently, the motorization unit 20 can comprise one or two electric motors in alternating current. Conveniently, the motorization unit 20 can comprise an electric motor in direct current and an electric motor in alternating current. Preferably, said direct current electric motors are fed for example with direct current at 12V, 24V, 36V or 48V. Preferably, said or said electric motors in alternating current are of the single-phase asynchronous type.

[0042] Conveniently, the motorization unit 20 is provided with a head 22 which is suitably fixed with any known system to the support structure 4, preferably it is fixed to the wing bracket 16 of the latter. Preferably, the motorization unit 20 is also provided with an output pinion to which an adapter 24 (pulley) for towing the tubular shaft 2 is coupled, cooperating in a conventional manner with an analogous, untowed adapter which is mounted in the vicinity of said head 22.

[0043] Alternatively, means can be provided - which can be manually operated and actuated - configured to cause rotation in both directions of the tubular shaft 2. Suitably, these means are configured to cause rotation in both directions of the tubular shaft 2 can be constituted by a traditional winch that can be operated manually or with an electric motor applied to it.

[0044] The device 26 for controlling the motorization unit 20 and/or the lighting elements 18 comprises a casing 27 which, advantageously, has a box-like shape and is preferably long and narrow.

[0045] Preferably, the casing 27 has a base with dimensions of a few centimetres (for example of about 2.5 cm x 3 cm) and a longitudinal extension much greater than about 10 cm, for example is about 60 cm.

[0046] Conveniently, therefore, the control device 26 is substantially independent and autonomous from a constructive and positioning point of view both with respect to the motorization unit 20 of the roll-up cover installation and with respect to the lighting elements 18.

[0047] Advantageously, the casing 27 of the device 26 thus shaped can potentially be associated externally with any rigid element of the roller blind 1, such as the support structure 4 and/or the articulated arms 10 and/or the tubular shaft 2 and/or the rigid crosspiece 8, or it can be fixed to the fixed external structure to which the roller blind 1 is applied, or it can be fixed in an adjacent area with respect to said roller blind 1 or to said fixed external structure.

[0048] Advantageously, the casing 27 of the device 26 thus shaped can be potentially inserted and housed inside a support bar 50 with a square or rectangular section (see fig. 1) which is fixed to the fixed external structure to which the roller blind is applied.

[0049] Advantageously, the casing 27 of the device 26 thus shaped can be potentially inserted and housed alone inside any rigid element of the roller blind 1, such as the support structure 4 and/or the articulated arms 10 and/or the tubular shaft 2 and/or the rigid crosspiece 8.

[0050] Advantageously, the casing 27 of the device 26 can be inserted inside a second casing 28 (see fig. 2 and 4), preferably tubular, which is removably inserted inside of the tubular shaft 2 or in any rigid element of the roller blind 1, such as the support structure 4 and/or the articulated arms 10 and/or the rigid crosspiece 8. Conveniently, it is understood that the shape of the casing 27 is not connected to that of the second casing 28 although obviously having to be compatible with this. In particular, the casing 27 has a shape and dimensions suitable for allowing its insertion and housing inside the second casing 28. Suitably, the stability of the positioning of the casing 27 inside the second casing 28 is obtained by means of suitable adapters (not represented).

[0051] Advantageously, the casing 27 is inserted, preferably inside the second casing 28, at the other end 21 of the tubular shaft 2. Preferably, at one end 19 of the tubular shaft 2 is inserted and housed the motor motorization unit 20 of the shaft itself while at the other end 21 of the tubular shaft 2 can be inserted and housed the control device 26 of the lighting elements 18 mounted on at least one component of the roll-up cover installation 1.

[0052] Advantageously, in the embodiment in which the casing 27 is inserted inside the second casing 28, the following can be provided:

- means 30 for connecting said second casing 28 to the external fixed support structure (not shown), and
- means 24', 24" which are interposed between said second casing 28 and the tubular shaft 2 and which

are configured to allow said second casing 28 to idly support said tubular shaft 2, i.e. so as to decouple the rotation of the tubular shaft 2 from the second casing 28, thus allowing said tubular shaft 2 to rotate about its longitudinal development axis while the second casing 28 remains fixed/stationary.

[0053] Conveniently, the means for fixing the second casing 28 to said external support structure comprise a head 30 which is applied to said second casing 28 so as to fix it to the other wing bracket 16' of the support structure 4. In particular, the head 30 integrates the second casing 28 to the fixed external support structure, thus supporting the tubular shaft 2 at its end 21.

[0054] Advantageously, said means which are interposed between said second casing 28 and the tubular shaft 2 comprise adapters 24', 24" configured to allow the second casing 28 to idly support the tubular shaft 2. Advantageously, the adapters 24', 24" are positioned around the second casing 28 and rotate, together with the tubular shaft 2, around said casing, which instead remains fixed (i.e. does not rotate).

[0055] Preferably, a pair of support adapters 24' and 24" are provided which are interposed between the opposite sides of the second casing 28 and the tubular shaft 2. In particular, an adapter 24' is provided on the inner side of the second casing 28 and an adapter 24" on the external side of said casing.

[0056] Preferably, both the head 30 and the adapters 24', 24" have a shape similar to that of the head 22 and the adapters of the motorization unit 20, respectively, but unlike the latter they have the sole function of idle support of the tubular shaft 2 at its end 21 which is opposite to the insertion end 19 of said motorization unit 20.

[0057] Basically, suitably, the second casing 28 supports the tubular shaft 2 at the end 21 of the latter, end which is opposite to the one (end 19) in which the motorization unit 20 is inserted. Furthermore, appropriately, the second casing 28 is fixed by the head 30 to the fixed external support structure and, therefore, supports the tubular shaft 2 without rotating with the latter, which is in fact set in rotation, by the motorization unit 20, around an axis that crosses it longitudinally.

[0058] Conveniently, it is understood that the shape and the dimensions of the second casing 28 are not linked to those of the tubular shaft 2 although obviously they must be compatible with those. In particular, the second casing 28 has a shape and dimensions suitable for allowing its insertion and housing inside the tubular shaft 2. Suitably, the stability of the positioning of the second casing 28 inside the tubular shaft 2 is obtained by means of the adapters 24' and 24".

[0059] Conveniently, the control device 26 according to the invention comprises a power supply unit 34, a control unit 35 and a receiver 36 which is connected or incorporated in said unit.

[0060] Advantageously, inside the casing 27 is housed the power supply 34 which is configured to supply at the

output the electric power supply suitable for the motorization unit and/or for the lighting elements 18.

[0061] Advantageously, the power supply 34 housed in the casing 27 can receive in input the electric power supply from the outside, preferably it is fed directly through a cable 38 connected to an external electric source (not shown), preferably it is connected to the network.

[0062] It is also envisaged that, alternatively, the power supply 34 housed in the casing 27 may receive in input the electric power supply from one or more batteries 42 which, preferably, can be recharged with one or more external photovoltaic panels 44 which, suitably, can be mounted on the roller blind 1 and/or can be external and independent from the latter.

[0063] In a variant not shown, the rechargeable battery 42 can advantageously be housed inside the casing 27 or the second casing 28.

[0064] Advantageously, on the side wall of the casing 27 or of the second casing 28 a first door can be provided to access the external to the inside of the casing itself, for example in order to access - if provided - the rechargeable battery 42. Advantageously, a second door (not shown) may also be provided in the tubular shaft 2 to access the first door formed in the casing. Conveniently, it is understood that the first door of the casing 27 or of the second casing 28 and the second door of the tubular shaft 2 face each other. Obviously, this accessibility requires that the device 26 is correctly inserted into the tubular shaft 2 and that the curtain is unfolded, i.e. that the sheet 6 is unwound from the tubular shaft 2 and does not cover the second the flap.

[0065] Advantageously, the same rechargeable battery 42 can also supply the motorization unit 20, preferably by means of an inverter, also housed inside the casing 27 or the second casing 28. Suitably, in this case, the entire roller blind 1 can be also installed in places where mains power is not available. Advantageously, it is in any case provided that the motorization unit 20 can be supplied through an external low voltage supply, again by means of an inverter.

[0066] Advantageously, the power supply 34 comprises a transformer 37 configured to provide at its output a power lower than or equal to about 240W and which, suitably, is substantially sufficient to supply either only the motorization unit 20 or only the lighting elements 18. In particular, the transformer 37 is configured to provide a power output of about 60W-240W, preferably of about 150W-240W.

[0067] Advantageously, inside the casing 27 is also housed the control unit 35 (for example a processor) of the motorization unit 20 and/or of the lighting elements 18. Conveniently, the control unit 35 is electrically connected with the power supply 34 and, preferably, the output of the power supply 34 is connected to the input of the control unit 35.

[0068] Conveniently, the control device 26 also comprises means which electrically connect the control unit

35 (housed in the casing 27) with the motorization unit 20 externally with respect to the tubular winding shaft 2, i.e. it does not cross the shaft internally and longitudinally. In particular, the control unit 35 is connected to the motors of the motorization unit 20 by means of first wiring 29 which protrudes from the casing 27. Preferably, the first wiring 29 comprises conducting cables for connecting and transmitting electrical signals. Conveniently, the wiring 29 comprise a first cable 31' for connection to a direct current electric motor of the motorization unit 20 and a second cable 31" for connection to an electric motor in alternating current of the motorization unit 20.

[0069] Preferably, the electrical connections between the control device 26 and the motorization unit 20 are external to the tubular shaft 2 and are advantageously carried out at the place of production, so that this may leave a finished product.

[0070] In particular, the control unit 35 (housed in the casing 27) is connected by means of the first wiring 29 with a first output interface 30 provided outside the casing 27 (and of the possible second casing 28) and, suitably, said first interface 30 is in turn connected by means of a suitable wiring (not shown), which runs externally with respect to the tubular shaft 2, to the motors of the motorization unit 20 which is positioned inside the tubular shaft 2 at the first end 19.

[0071] Preferably, the command/communication drivers are implemented in the control unit 35 with said first output interface 30 connected to the motors of the motorization unit 20.

[0072] Conveniently, the control device 26 comprises also means which electrically connect the control unit 35 (housed in the casing 28) with the lighting elements 18. In particular, the control unit 35 is connected to the lighting elements 18 by means of second wiring 33 which protrude from the casing 27 and, advantageously, run inside the rigid elements of the covering installation 1. Preferably, the second wiring 33 comprises conductor cables 39 for connecting and transmitting signals electric. Conveniently, the control unit 35 housed in the casing 27 is also connected, by means of the second wiring 33, to a second output interface 40 which is provided outside of the casing 27 (and of the possible second casing 28) and which in turn is connected to the lighting elements 18 by means of suitable conducting cables 47 which, advantageously, run inside the rigid elements of the covering installation 1.

[0073] Preferably, in the control unit 35 are implemented the control/communication drivers with the output interface 40 connected to the lighting elements 18.

[0074] Advantageously, the control unit 35 housed in the casing 27 can also be connected to further output interfaces (not shown), in turn connected - by means of suitable wiring external to the tubular shaft 2 - to external elements (safety devices, wired controls, possible acoustic diffusion system).

[0075] Preferably, the receiver 36 is also provided inside the casing 27 and is connected, via wireless and/or

wire, to the outside of said roller blind 1 to receive control signals from the outside to control, based on these, said motorization unit 20 and said lighting elements 18.

[0076] Advantageously, the receiver 36 is of the wireless type, preferably radio. Conveniently, by means of the receiver 36 the control unit 35 can receive from an external transmitter, and in particular from a remote control or even from a mobile telephone (preferably a smartphone) or from other traditional wireless devices in general, control signals for the motorization unit 20 and lighting elements 18. Suitably, for this purpose, the receiver 36 is connected and/or incorporated to the electronic circuit of the control unit 35 to be operatively connected to the control/communication drivers of the first output interface 30 connected to the motorization unit 20 and the second output interface 40 connected to the lighting elements 18.

[0077] Advantageously, according to further development, the receiver can be connected to a centralized or distributed automated home, and to send it, preferably via Wi-Fi and via the Internet protocol, to an external portable device, or to a cloud storage accessible from the external portable device, in addition to monitoring its operation. Conveniently, the connection between the receiver 36 and the home automation unit can take place via cable or wireless, in particular by radio waves (for example wi-fi or according to the Bluetooth protocol).

[0078] Advantageously, the receiver 36 can be connected, via wireless and/or by wire, to light, wind and/or rain sensors.

[0079] The control unit 35 is configured so that, if and when an activation command of the motorization unit 20 is received while the lighting elements 18 are powered, the electrical energy for supplying the lighting elements 18 is automatically reduced, thus also reducing the brightness generated by these elements. Conveniently, the reduction of electrical energy for supplying the lighting elements 18 thus allows the use of all the power of the transformer 37 of the power supply 34 for the current source of the motorization unit 20.

[0080] Suitably, the control unit 35 is configured in such a way that, in a condition in which the lighting elements 18 are already supplied, the receipt of an activation command for the motorization unit 20 automatically causes the reduction of the electric power supply of said lighting elements 18, and then reducing the brightness generated by these.

[0081] Conveniently, the reduction of the electric power supply of the lighting elements 18 which occurs upon receipt of the activation command for the motorization unit 20 is such as to reach a minimum value of electric power supply for said lighting elements 18. Suitably, this reduction in the electric power supply of the lighting elements 18 is preset and, preferably, can be defined during the installation by the installer, acting through an external transmitter, in particular by means of a smartphone-type mobile telephone, as described more in detail below.

[0082] Conveniently, this reduction in the electric power

er supply of the lighting elements 18 which occurs upon receipt of the activation command for the motorization unit 20 is automatically defined by suitable algorithms which are implemented inside the control unit 35 and which advantageously, also take into consideration the external environmental conditions in which the aforementioned activation command was received.

[0083] Advantageously, this activation command is received by the control unit 35 through the receiver 36.

[0084] Conveniently, this activation command can be a command signal sent by an external transmitter, and in particular by a remote control or even a mobile telephone, preferably a smartphone, or from other traditional wireless devices in general.

[0085] Conveniently, this activation command can be a command signal sent by an external sensor, in particular by a light, wind and/or rain sensor.

[0086] Preferably, the control unit 35 is configured so that, in a condition in which the lighting elements 18 are already supplied, the reception of an activation command for the motorization unit 20 automatically causes:

- first the reduction of the electric power supply of said lighting elements 18, and
- only subsequently the power supply of said motorization unit 20 is started.

[0087] In this way, the electric power which the control unit 35 sends to the lighting elements 18 is reduced, so that at the output of the power supply 34 there is sufficient electricity to be sent to the motorization unit 20 for its activation/supply. In other words, a portion of the electric power used to power the lighting elements 18 is diverted to the motorization unit 20 so as to have sufficient power to enable it to be activated.

[0088] The receiver 36 can advantageously be replaced by a transceiver, preferably radio, which in addition to sending corresponding command signals to the motorization unit 20 and to the lighting elements 18 can remotely communicate their status and, preferably, also the operating parameters or any anomalies or malfunctions. In particular, for this purpose, in addition to controlling/communicating - by means of its receiver side - with the first output interface 30 connected to the motorization unit 20 and with the second output interface 40 connected to the lighting elements 18, can transmit - with its transmitter side - signals on the state of said motorization unit 20 and/or of said lighting elements 18. Basically, suitably, in this way the user can remotely control, for example by means of a mobile phone (preferably a smartphone), the switching on and off and adjustment of the lighting elements 18 and of the motorization unit 20 and can receive, again with the mobile phone (preferably a smartphone), information on their current status. Conveniently, the transceiver is connected and/or incorporated to the electronic circuit of the control unit 35 to be operatively connected to the control/communication drivers of the first output interface 30 connected to the mo-

torization unit 20 and the second output interface 40 connected to the lighting elements 18.

[0089] Advantageously, in the case of an external portable device such as a smartphone or tablet, a software module is loaded and executed in said device - which preferably consists of a native mobile software application, also known as APP - configured to connect wireless with the receiver 36 for managing and setting the control unit 35 as well as for controlling the switching on and off and adjustment of the motorization unit 20 or lighting elements 18.

[0090] Preferably, the software module is configured to allow the user to set the reduction in the control unit 35 of the brightness of the lighting elements 18, and therefore of the electrical energy required for their supply, which is carried out automatically by said control unit 35 (when said lighting elements 18 are already supplied) following the reception of a command for the activation of the motorization unit 20.

[0091] From the aforementioned it is clear that the control device according to the invention is somewhat advantageous and in particular:

- it is potentially suitable for being removably inserted and integrated within any component of the curtain-bearing structures of different types or within a suitable bar fixed to said supporting structure or to other adjacent external structures,
- thanks to its integration in the casing it makes its installation quite simple and rapid, since it requires only the insertion of the casing inside a component of the roof installation or its fixing to the exterior of said component or to an adjacent structure and the connection of the device to the motorization unit and to the lighting elements and, if provided, to the external mains supply,
- although having a small size enclosure, it also allows to manage the power supply of both the motorization unit and the lighting elements,
- it is easily controllable and can be controlled from the outside, and
- if it uses photovoltaic panels it makes the control device independent and more generally the entire roof installation from the external power grid.

Claims

1. Improved device (26) for controlling a roll-up cover installation (1), in particular for controlling both the motorization unit (20) of said roll-up cover installation (1) and a plurality of lighting elements (18) applied to at least one component (2,4,6,8,10) of said roll-up cover installation (1), **characterized in that** it comprises a casing (27) which can be inserted into a component of said installation (1) or its support structure and/or can be associated externally to said installation (1) or to its support structure, or in its

vicinity, inside said casing (27) being arranged and housed:

- at least one power supply unit (34) for said motorization unit (20) and for said lighting elements (18),
- at least one unit (35) for monitoring and control connectable with said motorization unit and said lighting elements (18) of said roller cover installation (1),
- a receiver or transceiver (36) connected and/or incorporated in said control and command unit (35) to receive from the outside control signals for controlling, based on these, said motorization unit (20) and said lighting elements (18),

and also **characterized in that** said control unit (35) is configured so that, if an activation command of the motorization unit (20) is received while the lighting elements (18) are supplied, the power for the supply of the lighting elements (18) is automatically reduced, thus also reducing the brightness generated by these elements, to be used to supply the motorization unit (20).

2. Device according to claim 1, **characterized in that** the control unit (35) is configured so that, when said lighting elements (18) are already supplied, the reception of an activation command for the motorization unit (20) automatically creates:

- first the reduction of the electric power supply of said lighting elements (18), and
- subsequently the starting of the power supply of said motorization unit (20) and by the fact that the electric energy for supplying the lighting elements (18) is automatically reduced so as to have sufficient electric energy for the power supply and/or or activation of motorization unit (20).

3. Device according to one or more of the preceding claims, **characterized in that** the activation command of the motorization unit (20) is received by the control unit (35) via the receiver or transceiver (36) and is a command signal sent from an external transmitter.

4. Device according to one or more of the preceding claims, **characterized in that** the activation command of the motorization unit (20) is received by the control unit (35) and is a command signal sent by an external sensor, in particular from a light, wind and/or rain sensor.

5. Device according to one or more of the preceding claims, **characterized in that**, in said control unit (35), said reduction of the electric power supply of said lighting elements (18) is set by means of a ded-

icated software module (APP) loaded and executed in an external portable device.

6. Device according to one or more of the preceding claims, **characterized in that** said casing is of an elongated box-like shape to be inserted and housed inside a component of said covering installation (1) or of its supporting structure.

7. Device according to one or more of the preceding claims, **characterized in that** it comprises:

- at least a first wiring (29) which is connected to said control and command unit (35) and protrudes from the casing to be connected to the motorization unit (20),
- at least a second wiring (39) which is connected to said control and command unit (35) and which protrudes from the casing to be connected to said lighting elements (18).

8. Device according to one or more of the preceding claims, **characterized in that** said casing (27) is housed inside a second casing (28) which is configured to be removably and entirely inserted and housed inside and in correspondence with one end of the tubular shaft (2) of said roll-up cover installation (1) which is rotated by said motorization unit (20) and around which the covering of said installation is wound, said device being also **characterized in that** it comprises:

- a head (30) which is applied to the outer side of the second casing (28) to fix it to the external support structure (4), and/or
- at least one adapter (24') which is interposed between said second casing (28) and the tubular shaft (2) and which is configured to rotate with said tubular shaft (2) and to allow said second casing (28) to idly support the tubular shaft (2).

9. Device according to one or more of the preceding claims, **characterized in that** said power supply unit (34) housed in the tubular casing (27) is fed from the outside through a cable (38) which comes out from said casing (27) to be connected to an external electrical source.

10. Device according to one or more of the preceding claims, **characterized in that** said receiver or transceiver (36) is of the wireless type, preferably radio.

11. Device according to one or more of the preceding claims, **characterized in that** said power supply unit (34) comprises a transformer (37) configured to provide power output, preferably lower than or equal to about 240W, which is substantially sufficient to supply either the motorization unit (20) or the lighting

elements (18).

12. Roll-up cover installation (1) of the type comprising:

- a support structure (4) for the constraint of said cover installation (1) to a fixed external structure, 5
- a tubular shaft (2) supported by said structure (4),
- a motorization unit (20) to cause the rotation of said tubular shaft (2), said motorization unit (20) being inserted and housed inside the tubular shaft (2) of said installation at one end (19) of said shaft (2) 10
- a cover (6) to be wrapped on said tubular shaft (2) and to be carried by this, 15
- a bearing structure (8, 10) of said cover (6),
- a plurality of lighting elements (18) applied to at least one component (2,4,6,8,10) of said roll-up cover installation (1), 20

and **characterized in that** it comprises a device (26) according to one or more of the claims above, the casing (27) of said device (26) being inserted inside a component of said installation (1) or its supporting structure and/or being associated directly to said installation (1) or to its structure of support, or in its vicinity, said control unit (35) of said device (26) being electrically connected with said motorization unit (20) and with said lighting elements (18). 25

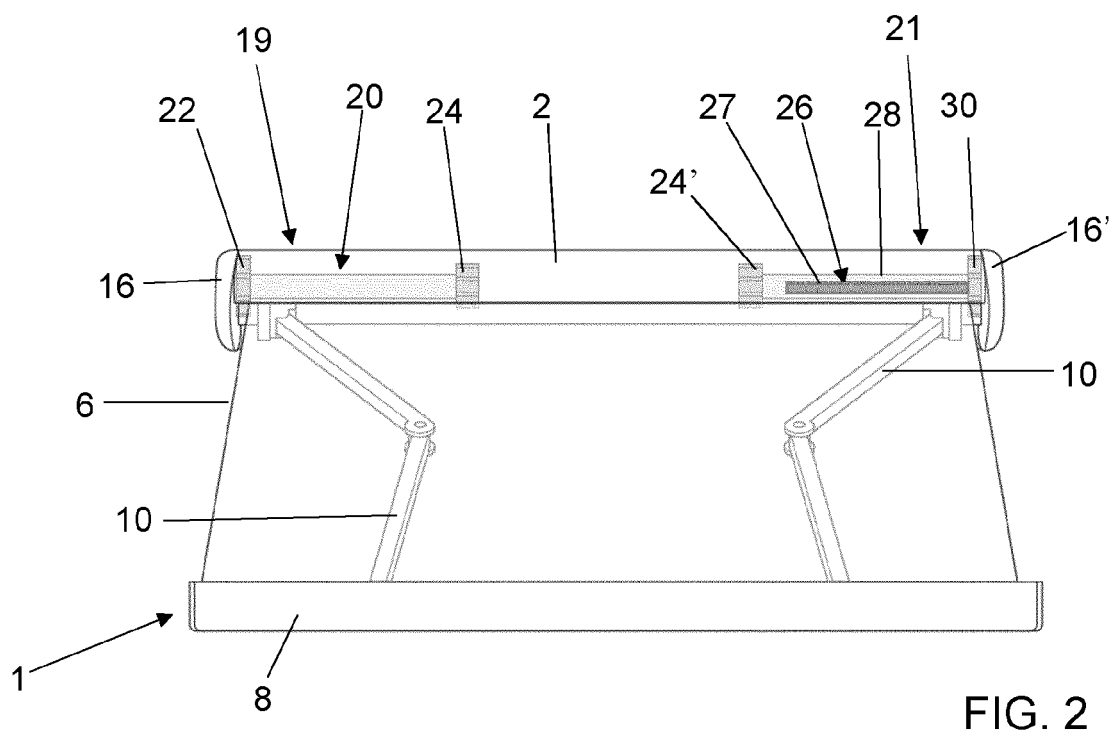
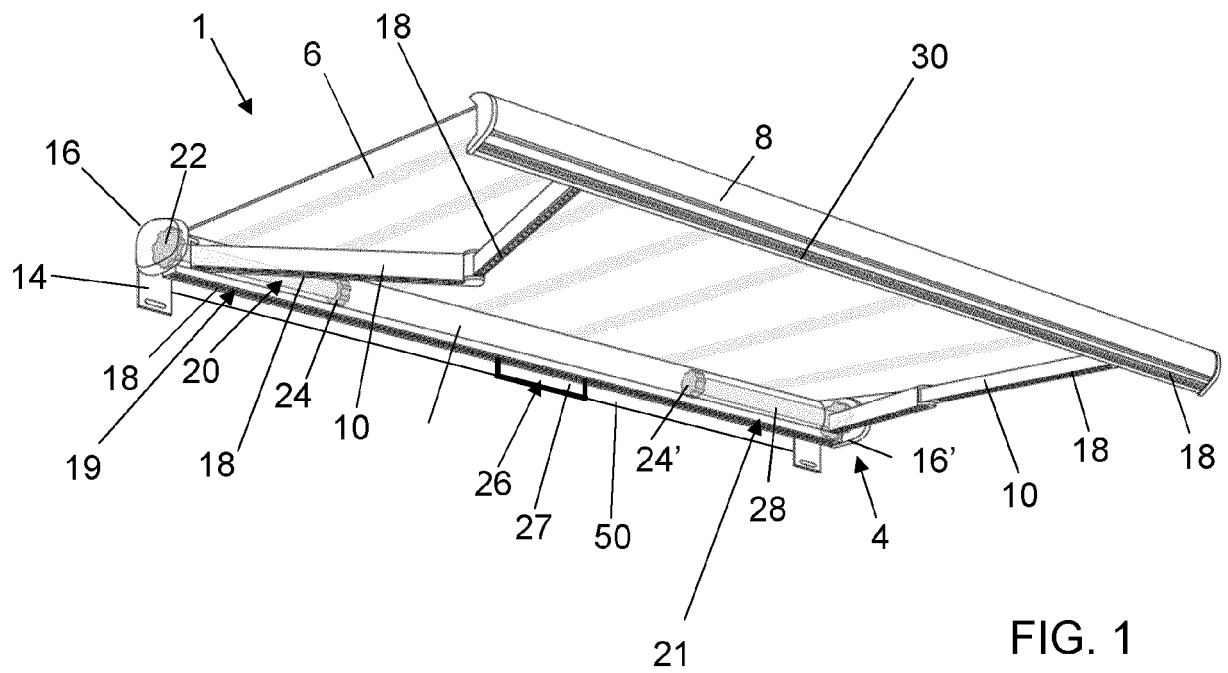
13. Installation according to the previous claim, **characterized in that** said motorization unit (20) comprises: 30

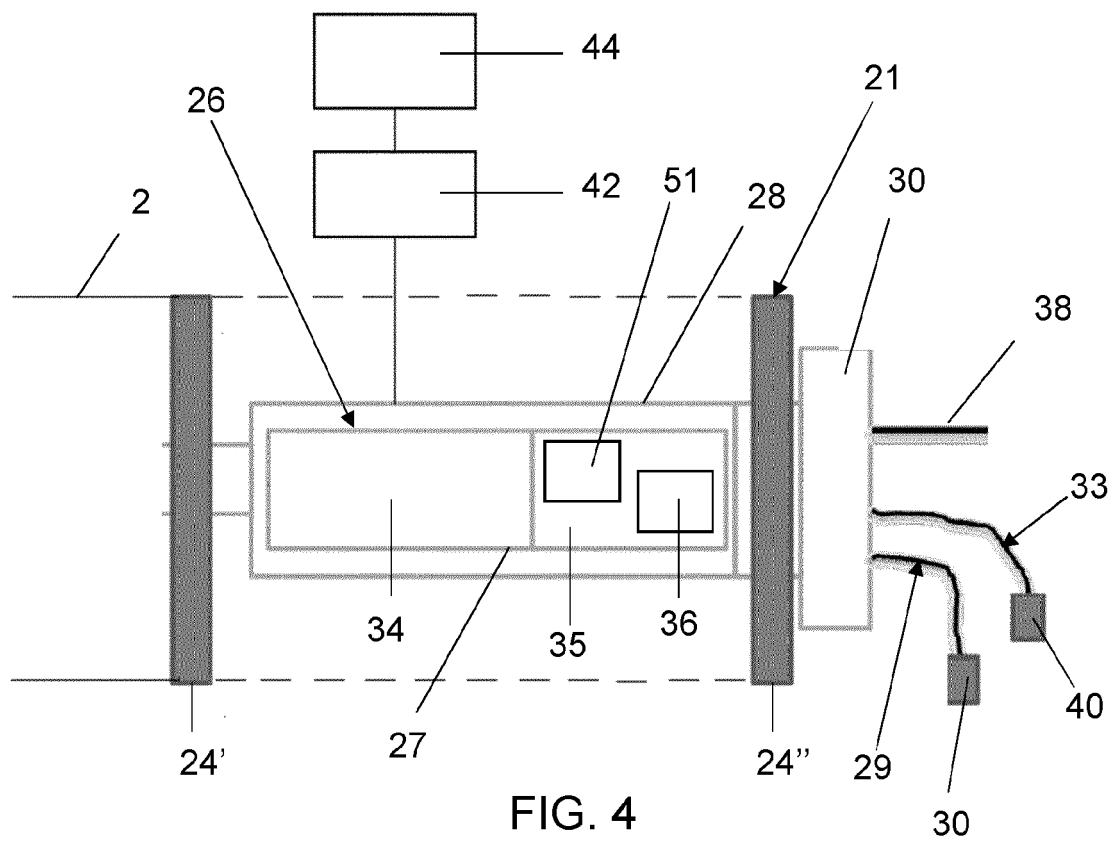
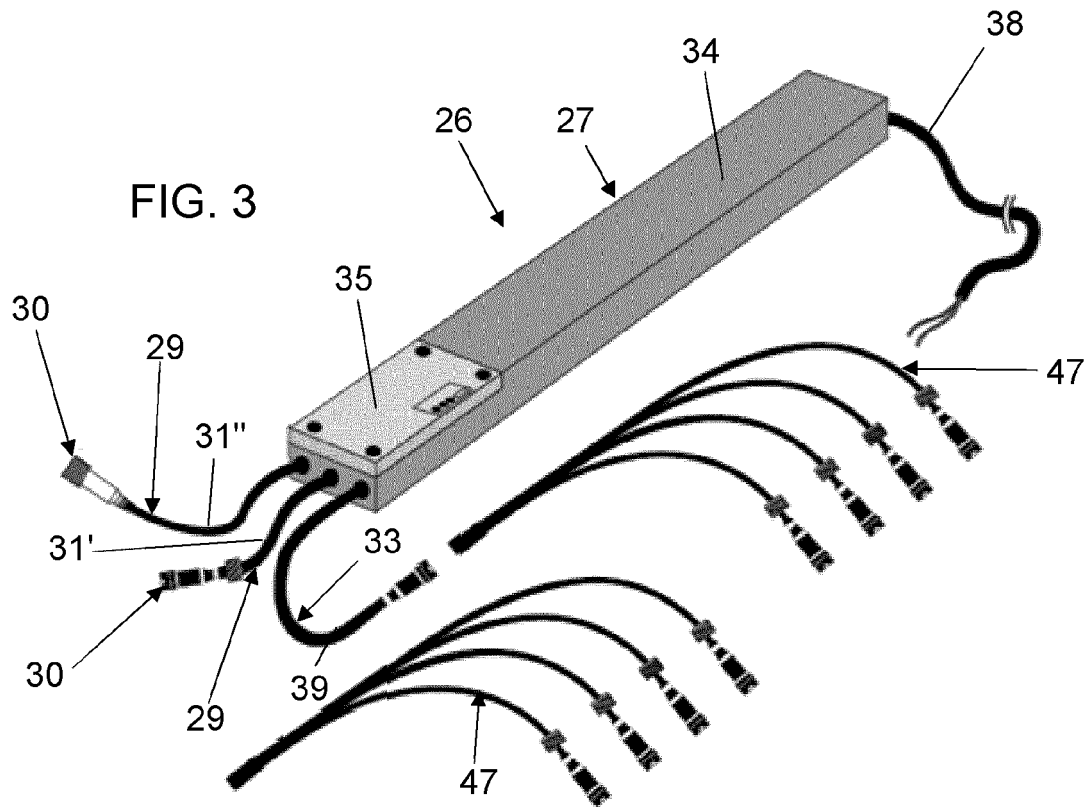
- at least an electric motor in direct current, or
- at least one electric motor in alternating current, 35
- or
- an electric motor in direct current and an electric motor in alternating current.

14. Installation according to claims 12 or 13, **characterized in that** said device (26) is inserted inside the tubular shaft at an opposite end with respect to the one in which said motorization unit (20) is inserted and housed . 40

15. Installation according to claims 12, 13 or 14, **characterized in that** said power supply (34) housed in the casing (27) of the device (26) is configured to receive in input the electric power supply from at least one battery (42) which, preferably, can be recharged with at least one external photovoltaic panel (44). 45 50

55







EUROPEAN SEARCH REPORT

Application Number
EP 19 21 6902

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 199 484 A2 (WEINOR GMBH & CO KG [DE]) 23 June 2010 (2010-06-23) * paragraphs [0001], [0006], [0008], [0011], [0012], [0014], [0019], [0036], [0038] *	1-15	INV. E04F10/06 E06B9/08 E06B9/68 E06B9/72 F21V33/00 G05B15/02
A	EP 2 631 386 A1 (WEINOR GMBH & CO KG [DE]) 28 August 2013 (2013-08-28) * paragraphs [0001], [0006], [0016], [0021], [0022], [0030], [0031], [0032], [0033] *	1	
A	US 2014/262056 A1 (BLAIR EDWARD J [US]) 18 September 2014 (2014-09-18) * figures 7,8 * * paragraph [0039] - paragraph [0049] *	1	
A	EP 0 916 781 A1 (CREAL HANDELSONDERNEMINGEN BES [NL]) 19 May 1999 (1999-05-19) * figures 1,4 * * paragraph [0041] - paragraph [0050] *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E06B G05B H05B F21V
Place of search		Date of completion of the search	Examiner
Munich		30 April 2020	Tänzler, Ansgar
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			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 21 6902

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-04-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2199484 A2	23-06-2010	DE 102008063766 A1 EP 2199484 A2	01-07-2010 23-06-2010
EP 2631386 A1	28-08-2013	DE 102012003350 A1 EP 2631386 A1	22-08-2013 28-08-2013
US 2014262056 A1	18-09-2014	NONE	
EP 0916781 A1	19-05-1999	AT 203081 T DE 69801087 T2 EP 0916781 A1 ES 2159915 T3 NL 1007549 C2	15-07-2001 31-10-2001 19-05-1999 16-10-2001 17-05-1999

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- AU 2014200269 [0005]
- US 2015362896 A [0005]
- US 2017101820 A [0005]
- EP 2199484 A [0011]