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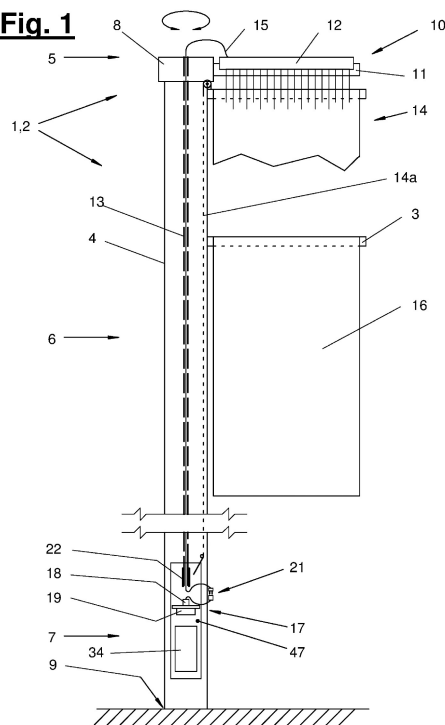
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(54) Title: **Lighting for a flagpole and power supply device**



(57) Main claim: Power supply device for a rotatable pole light (10) with a rotatable support body (8) supported at the head region (5) of a pole (1) for supporting a pole light (10) and a cable holder (13) insertable into the pole (1), wherein the cable holder (13) is connected to the support body (8) in a rotationally fixed manner and carries a power supply cable (15).

DESCRIPTION

[0001] The invention relates to a flagpole with a lighting device for illuminating a hoisted flag that can be rotated in the wind. In order for the flag lighting to always achieve the desired effect, viz., illuminating the flag, the lighting must be able to rotate with the flag. In practice, there are no fully satisfactory flag lighting systems. In particular, the power supplies of previously known pole lights exhibit poor maintainability and high manufacturing costs.

5 [0002] From DE 296 18 542, a flagpole with lighting is known, which can be attached to a rotatable arm. A sliding contact is provided at the pole head to transfer energy from the rotationally fixed pole to the rotatable boom. Contact is made in the sliding contact only when the flag boom is hoisted, i.e., when the flag boom is in its uppermost position and in contact with the pole head.

15 The sliding contact is not accessible from the ground.

[0003] From DE 103 23 306 A1, a self-illuminating flag is known, i.e., a flag body that glows from the inside out. According to a first exemplary embodiment, the self-illuminating flag body is inserted into a receiving slot in the upper part of a flagpole. The overall upper part is mounted to rotate relative to a middle part. Sliding contacts are provided between the middle part and the upper part for the power supply. A battery or accumulator module is integrated into the middle part. This flag shall be small and easy to handle, and could serve, for example, as a corner flag for a football field. According to a second embodiment, the self-illuminating flag can be routed in retaining strips on the outside of a flagpole. In this case, the flag is connected to the pole in a rotationally fixed manner.

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[0004] From DE 20 2007 001 082 U1, another design of a flagpole is known in which a flag light is attached to a flag boom. In this case, a power supply for the rotatable light is fed in via a sliding contact that is arranged on the pole head. The sliding contact is not accessible there when the pole is in an erected

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state. Alternatively, a solar unit can be attached to a lighting apparatus that is fastened to the boom, to ensure an independent power supply.

5 [0005] From DE 20 2010 011 983 U1, a pole light fastened to a flag boom is known, which is supplied with power by an externally arranged solar module. In this case as well, a sliding contact for transmitting the power is located at the pole head.

10 [0006] DE 295 19 098 U1, DE 20 2011 106 901 U1, DE 20 2011 102 886 U1, DE 20 2005 021 297 U1 and JP 2000010515A each disclose flag lights which have a solar power supply arranged at the pole head or on a flag boom as the sole power source.

15 [0007] The arrangement of a sliding contact at the pole head has proven to be disadvantageous. Due to constant exposure to the elements, the sliding contacts tend to age more quickly. Replacement is usually only possible with complete dismantling of the pole and by technical personnel from the pole manufacturer, so that considerable maintenance costs and maintenance times result.

20 [0008] The object of the present invention is to present an improved lighting and power supply system for flagpoles, as well as a pole that is equipped with such a system. The invention achieves the object with the features in the characterizing part of the independent claims.

25 [0009] According to a first independent aspect of the present disclosure, a power supply device for a rotatable pole light is provided. The power supply device has a support body to support the pole light. The rotatable support body is supported at the head region of the pole, in particular a flagpole. For
30 example, it can be supported on a pole tube via a pivot bearing. Alternatively, it can be connected to a rotatable part of the pole tube.

[0010] The power supply device also has a torsionally rigid cable holder that can be inserted into the pole. The cable holder is connected to the support body in a rotationally fixed manner and serves as a guide means for the power supply cable, by means of which the pole light is supplied with electricity. That is, the cable holder carries the power supply cable in the pole.

[0011] The entire power supply device, including the power supply cable, can rotate around the vertical axis of the flagpole. The power supply cable can be routed as a continuous cable from the pole head and the light arranged there to the pole base via the cable support. The power supply cable does not need to be interrupted along the entire route between the lighting and the pole base. The cable support can serve as a guide channel for the power supply cable so that the cable can simply be inserted from the pole base to the pole head. Accordingly, if necessary, the cable can be easily pulled out to one side and replaced with a new cable.

[0012] Sliding contacts do not need to be provided in the region of the pole head or in the middle region of the pole. This makes the power supply device considerably more durable and also easier to maintain. The continuous line is generally maintenance-free for several years. All parts possibly subject to wear or aging can be arranged in an easily accessible location in the pole base. This applies in particular to an electrical rotary coupling. If there should be a malfunction or failure of an electrical or electronic component, all maintenance-relevant parts are immediately accessible through just one opening in the pole base.

[0013] According to a second independent aspect of the present disclosure, a power supply device for a hoistable pole light is provided. A hoistable light can be raised or lowered on the pole. The proposed power supply device has a storage device that accommodates a length of the power supply cable, released when hoisting the pole light, in the form of at least one cable loop.

The storage device is arranged in the pole, i.e., in particular inside the pole tube. It can preferably be routed along or within a cable support.

5 [0014] The pole light can be raised and lowered using a separate hoisting device on the pole. Alternatively, the pole light can be attached to a holder provided for hoisting a flag and raised or lowered together therewith. By storing the freed-up cable length in a cable loop, the supply cable does not need to be interrupted between the head region and base region of the pole. Furthermore, no coiling or elastic deformation of the power supply cable is necessary,
10 resulting in particularly low mechanical stress. The excess cable length is always neatly stored inside the pole.

[0015] A stationary electrical connection for the power supply cable can be provided at the pole base. Accordingly, even with the hoistable pole light, all
15 energy-carrying components that are arranged above the pole base can be operated maintenance-free. Furthermore, the pole light can be easily lowered, e.g., to replace a lighting means, without having to disconnect the power supply cable or remove it from the pole to do this.

20 [0016] The aforementioned aspects can each be used separately or combined with each other. That is, in the context of the present disclosure, a rotatable and hoistable pole light is also provided, which is connected to a correspondingly rotatable power supply device which supports the hoisting and rotating of the pole light.

25 [0017] According to another aspect of the present disclosure, a pole, in particular a flagpole, is provided with a power supply device of the aforementioned type.

30 [0018] Further advantageous embodiments of the invention are specified in the dependent claims, the following description, as well as the accompanying drawings.

[0019] The invention is illustrated by way of example and schematically in the drawings, in which:

5 [0020] **Fig. 1** is a flagpole with a power supply device according to a first embodiment variant with a rotatable pole light;

[0021] **Fig. 2** and **Fig. 3** are applications of a power supply device for a rotatable pole light for a pole with a fixed as well as rotatably mounted pole tube;

10 [0022] **Fig. 4** is an isolated representation of a power supply device according to a preferred embodiment;

[0023] **Fig. 5** and **Fig. 6** are preferred embodiments of a support body with a rotational coupling device for producing a desired target rotational position between the support body and a carrier sleeve;

15 [0024] **Fig. 7** is a power supply device for a hoistable pole light with a storage device for a cable loop according to a preferred embodiment;

[0025] **Fig. 8** is an example of a power supply cable with a plurality of electrical wires and two support wires to absorb tensile forces;

[0026] **Fig. 9** is a guide rail for a hoistable carrier slide with additional seats for lighting means of a flag light;

20 [0027] **Fig. 10** is a preferred embodiment of a pole base with a swivel joint and a central feedthrough for a power supply cable;

[0028] **Fig. 11** to **Fig. 13** are another exemplary embodiment of a flagpole with a power supply device for a hoistable pole light and a storage device.

25 [0029] A power supply device (**2**) and a flagpole (**1**) with a power supply device (**2**) according to a first embodiment are shown in **Fig. 1**.

[0030] The present invention is suitable for poles (**1**) for various applications. The poles (**1**) can preferably comprise flagpoles and a hoisting device (**14**) for raising and lowering a flag (**16**). Alternatively, the poles can be used to hoist
30 similar objects such as advertising signs or display boards. For the sake of simplicity, it is assumed in the following that the pole (**1**) is a flagpole.

[0031] The pole (1) has a base region (7), i.e., a lower end, via which it is fixed immovably and, if necessary, detachably to a foundation (9) or a ground mount. The term pole base (7) serves below as a spatial reference point and refers to
5 at least a lower portion of the pole (1). The pole (1) can be designed as desired. It can have a one-piece pole tube (4, 4a). In this case, at least the lowest portion of the pole tube (4) is designated as the pole base (7). Alternatively, a multi-part, especially two-part, pole tube (4) can be provided. In this case, the lowest immovably mounted part can be designated as the pole base (7). Such
10 a pole base (7) can, for example, support a pivot bearing (35b) by which the upper part of the pole tube (4b) is rotatably attached. The following exemplary embodiments describe different embodiments for a pole (1) in more detail.

[0032] In the example shown in **Fig. 1**, the pole tube (4) is a single piece, and
15 it extends from the base region (7) to the head region (5) of the pole (1), i.e., up to an upper end. It cannot rotate along its entire length. An alternative design of a pole (1) with at least a partially rotatable pole tube (4, 4b) is discussed further below.

[0033] A support body (8) arranged in the head region (5) of the pole (1) from
20 **Fig. 1**. The support body (8) can, for example, be fastened to the pole head via any pivot bearing (not shown). It can support the weight forces of the pole light (10) in any desired manner. In the shown example, a lighting means holder (11) is fastened to the support body (8) and in turn holds one or more
25 lighting means (12). Alternatively, the lighting means (12) can be arranged directly on the support body (8) or in any other way.

[0034] The lighting means holder (11) and the one or more lighting means (12)
can be oriented perpendicularly to the vertical axis of the pole (1), as in the
30 shown example, i.e., substantially horizontally aligned, and protrude in the radial direction from the support body (8). Alternatively, a different orientation

is possible, e.g., aligned horizontally but running tangentially to the support body (8). Furthermore, a plurality of lighting means holders (11) are provided.

[0035] Arranged on the pole (1) is a flag (16) which via a hoisting device (14) can be raised and lowered. The hoisting device (14) can be designed in any way. In the shown example, it has a flag holder (3) which can be hoisted via a hoisting cable (14a). The flag holder (3) is preferably axially displaceable and rotatable mounted on the pole (1). A holder of any design can be provided for this purpose. Further below, various embodiments are shown of a carrier (24, 37) slidably mounted on the pole.

[0036] A flag (16) can be fastened to the movable flag boom (3) and raised or lowered therewith on the pole. The flag (16) can additionally be connected to the pole tube (4), using any fastening means (not shown), at the vertical edge, lying against the pole, of the flag (16). For this purpose, fastening loops are suitable, for example.

[0037] A cable holder (13) is fixed non-rotatably on the support body (8). The cable holder (13) can be inserted into the pole (1) and runs inside the pole tube (4) from the head region (5) to the base region (7). The cable holder (13) is preferably designed to be torsionally rigid and can have any shape. In particular, it can be formed by a hollow body with any cross-sectional profile, e.g., a tube, a C-profile, a U-profile, a square profile, or a solid circular profile (not hollow). For the sake of simplicity, it will be assumed in the following that the cable holder (13) is formed by a hollow profile, in particular a circular tube, into which a power supply cable (15) can be introduced.

[0038] The power supply cable (15) can be routed within the cable holder (13) or on the outside of the cable holder (13). For example, on the one hand, in the base region (7) of the pole (1), routed out of the base end of the cable holder (13), and on the other, at the head region (5) of the pole (1), directly or indirectly connectible to a pole light (10). In or on the support body (8), further

routing means can be provided that route a power supply cable (15) to an exit opening. From there, the cable (15) can, for example, be routed freely suspended to pole light (10). Alternatively, routing means can also be provided outside the support body (8), e.g., empty pipes or empty hoses, which guide the cable into a housing of the pole light (10). Accordingly, the power supply cable (15) between the two connection points in the pole base (7) and on a lighting means (11) can be completely enclosed by routing means. The routing means, the support body (8), the cable holder (13) and all intermediate contact points can be made waterproof if necessary. This enables a power supply particularly well protected from environmental influences.

[0039] As in the example shown in **Fig. 1**, only the flag (16) is hoistable by the flag boom (3). The pole light (10) is arranged fixedly on the pole head in the axial direction (5), but is rotatably mounted around the vertical axis of the pole (1). In the shown design, preferably LED's are used as the lighting means (12) that have a particularly long lifespan, especially several tens of thousands of hours of operating time. All other electronic components of the power supply device are preferably arranged in the region of the pole base (7) and more preferably within the pole tube (4). They can be made accessible through a cutout in the pole tube, which forms an opening (47). The pole base (7) can preferably have a height of less than 1.80 m. The opening (47) can preferably be arranged at a maximum height of 1.50 meters above the ground to allow for the most convenient maintenance of the components arranged in the pole base (7) without ladders or the like needing to be used.

[0040] The power supply cable (15) is preferably routed between the pole light (10) and the pole base (7) without interruption and decoupled from external rotational forces via the support body (8), the cable holder (13) as well as, if applicable, the other guide means mentioned above. A rotational movement of the pole light (10) is associated with a rotation of the support body (8) and a rotation of the cable holder (13) so that the part of the power supply device (2)

lying fully in the middle region (6) and in the head region (5) can rotate as a single piece.

5 [0041] Preferably an electric rotary coupling (17) is arranged in the base region (7). This has a rotor part (18) and a stator part (19) between which an electrical energy transfer takes place. The energy transfer can occur, for example, through a sliding contact, a rolling contact, a fluid contact, or in any other way. The rotary coupling (17) is preferably a separate and replaceable component. In the event of maintenance, it can be attached or removed from the outside
10 through the opening (47), wherein it is electrically disconnected from the power supply cable (15). It is therefore possible to individually replace the electrical rotary coupling without having to remove the power supply cable (15). Furthermore, no parts of the pole tube (4) or the hoisting device (14) need to be dismantled or replaced to exchange the rotary coupling (17).

15 [0042] On the rotor part (18), a connecting cable can preferably be provided which can be connected via a plug connection (21) to the end of the power supply cable (15) exiting at the base end of the cable holder (13). This allows for particularly easy and quick installation. Furthermore, excess cable lengths
20 can be provided that also allow the replacement of the connector (21). The plug connection (21) as well as the excess lengths can be fastened after connection, e.g., with cable ties at the base end of the cable holder (22) or on the rotor part (18).

25 [0043] On the stator part (18), another connection line can be provided (not shown in **Fig. 1**) which, for example, can be connected to a grid power line or an intermediate power converter (34). Correspondingly, excess cable lengths and plug-in contacts can also be provided here.

30 [0044] The base end of the cable holder (13) is preferably non-rotatably connected via a connecting element (22) to the rotor part (18) of the electric rotary coupling (17). The connecting element (22) can be designed in any way.

In the example shown in **Fig. 1**, the connecting element (**22**) consists of a sliding sleeve that is placed on the base end of the cable holder (**13**) and can be pushed downwards over the rotor part (**18**). Alternatively, any other connecting element (**22**) can be used.

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[0045] **Fig. 2** shows a second variant of a flagpole (**1**) with a power supply device (**2**) in cross-section. Here again, the support body (**8**) is mounted via a swivel joint (**35a**) at the pole head (**5**) and equipped with a transversely protruding pole light (**10**). On the outside of the pole, a sliding sleeve (**25**) is guided on which a carrier sleeve (**24**) with a flag boom (**3**) is placed. The sliding sleeve (**25**) and the carrier sleeve (**24**) can be part of a hoisting device (**14**). The sliding sleeve (**25**) can be raised or lowered using a hoisting cable (not shown). It is preferably mounted rotationally fixed and axially displaceable on the stationary pole tube (**4a**). The carrier sleeve (**24**) is entrained by the sliding sleeve (**25**) and is rotatably mounted thereon so that the flag boom (**3**) with a flag can rotate freely in the wind around the stationary pole tube (**4a**).

[0046] At the base end (**7**), another rotary coupling with a rotor part (**18**) and a stator part (**19**) is arranged inside the pole base (**17**); these can be connected to the power supply cable (**15**) in the aforementioned manner and a power cord (**20**).

[0047] In the example shown in **Fig. 2**, the electrical rotary coupling (**17**) is movably arranged in the axial direction of the pole (**1**). The movable arrangement can be achieved in any way, in particular by fastening to a rail (**38**) (cf. **Fig. 4**). The rotor part (**18**) the rotary coupling (**17**) can be moved upwards so that it fits into the opening of the cable holder (**13**) located at the base end. A rotationally fixed connection can be easily achieved here using a connecting element (**22**) in the form of a clamping screw that is screwed into the base end of the cable holder (**13**). The connecting cables of the rotor part (**18**) can be reconnected to the power supply cable (**15**) via a plug connection

(21). For this purpose, the respective cable ends can be led out through a side opening in the base end of the cable holder (13).

5 [0048] In **Fig. 3**, an alternative embodiment of a flagpole (1) and a power supply device (2) is shown. In this case, the pole is made of several parts. It has a stationary pole base (7) and a rotatable upper part (4b) which is mounted via swivel joint (35b) to the pole base (7).

10 [0049] A support body (8) in this case is non-rotatably connected to the rotatably mounted pole tube (4b) and is fastened at its head end (5). A pole light (10) is in turn arranged on the support body (8), and a cable holder (13) extends from the support body (8) from downwards towards the pole base (7).

15 [0050] The pivot joint (35b) at the pole base can be designed in any way. It preferably has a central opening for the passage of the cable holder (13). In the example from **Fig. 3**, the pole base (7), in the lower region, consists of a base tube (50), to which a slightly thinner support tube (53) connects to accommodate the outer bearing rings of the swivel joint (35b). The inner bearing rings are connected via a connecting tube (48) to a sleeve (49) on
20 which the rotatable pole tube (4b) is placed on the outside. The base end of the cable holder (13) can be routed through the connecting pipe (48). Accordingly, the inner part of the pivot joint (35), the pole tube (4b), the support body (8), the cable holder (13) as well as the pole light (10) can rotate as one piece. They are all rotatably mounted via the pivot joint (35b) relative to the
25 pole base (7). In this case, the rotatable pole tube (4b) transmit the torsional forces so that the cable holder (13) can be designed to be weaker - for example, as a thin-walled pipe or hose.

30 [0051] A guide rail (36) for a carrier slide (37) is arranged on the outside of the rotating pole tube (4b). A flag boom (3) is attached to the carrier slide (37), by which a flag (16) on the pole (1) can be raised or lowered. A standard hoisting cable (not shown) can be used for this purpose.

[0052] As a variant to **Fig. 3**, a pole (1) can have the described pole base (7) with the swivel joint (35b) and the pole tube (4b) rotatably mounted thereon, wherein, however, a cable holder (13) is omitted. A power supply cable (15) can in this case
5 be connected to the rotor part (18) of the rotary coupling (17) arranged in the pole base (7) and then routed through the pivot joint (35b) into the rotatable pole tube (4b). In this case, the rotor part (18) can be directly non-rotatably connected to the connecting pipe (48) instead of to the cable holder (13). The power supply cable (15) can then be routed in the pole tube (4b) to the head region (5) and
10 connected there to the pole light (10). In this case too, the power supply cable (15) is relieved of torsional forces, and the entire upper pole part can rotate as one piece. Also alternatively, a flexible cable holder (13), e.g., in the form of a hose, can be provided which forms a guide channel for the power supply cable (15) between the pivot joint (35b) and the pole head (5).

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[0053] **Fig. 4** separately shows a power supply device (2). From the comparison of **Fig. 2** and **Fig. 3**, it is evident that the power supply device (2) can be adapted merely by adapting the support body (8) to the two applications with the stationary pole tube (4a) or with the rotating pole tube (4b). This
20 enables a modular construction, and the manufacturing costs can be kept low even with a wide variety of pole lengths and pole shapes.

[0054] The electric rotary coupling (17), preferably together with any existing power converter (34), is fastened to a rail (38) which is mounted in the pole
25 base (7) in an axially displaceable manner. The rail (38) with the rotary coupling (17) and the power converter (34) forms a modular assembly that can be prefabricated depending on the type of lighting means to be used.

[0055] The power supply cable (15) can preferably be multi-wired. It can be
30 designed as a standard cable with 3-5 wires and can be used for various types of lighting means such as LED's, fluorescent tubes, UV tubes and the like. This further expands the modular concept. The power supply device (2) can be

premounted on a pole (1). The selection of a desired lighting means (LED, fluorescent tubes, etc.) and the appropriate module assembly and equipment for the pole base (with transformer for 12V or 24V/with 230V supply/with dimmer/with timer, etc.) can be made independently of the power supply device
5 (2) since this can be equally suitable for all types. This allows for particularly fast final assembly with a simultaneously wider variety of variants with many identical parts.

[0056] The LED-based pole light (10) can preferably be designed as a low-
10 voltage system with a 12V or 24V supply voltage. A power converter (34) in the form of a transformer can transform from the usual grid voltage to the supply voltage of the lighting means. It can be arranged to be easily accessible in the pole base (7) and protected from environmental influences. The opening (47) in the pole base (7) can be closed by a flap which, if applicable, can be
15 designed to be waterproof and lockable. A power cord (20) is preferably introduced through the foundation (9) from below into the pole base (7). This allows all electrical components to be securely accommodated in the pole interior protected from vandalism. Furthermore, the electric rotary coupling (17) in the pole base (7) can be protected from a variety of environmental
20 influences so that corrosion of the contact elements is prevented, and a very long service life is achieved.

[0057] Should a defect nevertheless occur, all components subject to wear or maintenance, in particular the electric rotary coupling (17) and a power
25 converter (34), are easily accessible through the opening (47) in the pole base (7). They can be replaced on-site by an electrician or the owner of the pole themselves, which means particularly great user-friendliness for the customer, since no technician from the pole manufacturer needs to be called, and the pole can remain in place during maintenance work. It may be provided that an
30 additional rotary coupling (17) or other spare parts be kept in the pole base (7).

[0058] **Fig. 5** and **Fig. 6** shows two examples of a rotary coupling apparatus (23) which can be provided on a support body (8) to connect the rotational movement of the support body (8) to a rotational movement of a flag carrier - here, a carrier sleeve (24). Such rotary coupling apparatuses (23) can be provided on flagpoles (1) which have an immovably mounted (non-rotatable) pole tube (4a). In contrast to the pole tube (4a), on the one hand the carrier sleeve (24) with a flag boom (3), and on the other the support body (8) with the pole light (10), are each rotatably mounted per se. So that the pole light (10) can correctly illuminate the flag (16), the flag boom (3) and the pole light (10) must, however, be arranged as snugly as possible one over the other (cf. **Fig. 2**). Furthermore, the flag boom (3) and the pole light (10) should rotate together, i.e., with the same rotational speed and a fixed relative position to each other, around the pole (1) when the flag (16) is hoisted. This flush alignment is a desired rotational position. For other lighting means and other objects to be illuminated, corresponding target rotation positions can be defined.

[0059] **Fig. 5** shows a first variant of a guide device that, when hoisting the carrier sleeve (24), produces a common alignment as the desired target rotational position between the support body (8) and the carrier sleeve (24). The guide device is designed here as an inclined guide (23a) which widens downwards. The flag boom (3) arranged on the carrier sleeve (24) can engage in the inclined guide (23a) during hoisting and, at the uppermost position, is brought to a final rotation position in which the flag boom (3) is aligned flush under the flag lighting (10).

[0060] Between the carrier sleeve (24) and the support body (8), a clamping contact (39) can also be provided in order to transfer energy from the power supply cable (15) on a consumer fastened to the carrier sleeve (24). In the example shown in **Fig. 5**, the clamping contact can be formed by contact pins that engage in contact sockets on the other part. As a consumer, additional lighting means can for example be provided on the carrier sleeve (24) for

illuminating a flag (16) or any other consumer. Furthermore, the pole light (10) shown in Fig. 2 and Fig. 3 can also be fastened to the flag boom (3) instead of on the lighting means holder (11) and raised and lowered together therewith on the flagpole. It then forms a hoistable pole light. Further examples of a
5 hoistable pole light are discussed below.

[0061] In Fig. 6, an alternative embodiment is shown of a rotary coupling apparatus (23). In this case, a latch mechanism (23b) is provided on the support body (8) or alternatively on the carrier sleeve (24). The latch mechanism (23b)
10 can have a plurality of movable latches, that each have a ramp edge running obliquely to the horizontal plane and a locking edge oriented substantially vertically. The latches can interact with a flag boom (3) or another suitable contact element on the carrier sleeve (24). A latch can be pushed away by the boom if said boom is rotated along the ramp edge. This happens, for example, when the
15 carrier sleeve (24) is moved by wind action and is rotated relative to the support body (8). A relative rotation is only possible in the direction that is directed towards the desired target rotational position between the support body (8) and the carrier sleeve (24). In the opposite direction, however, relative rotation is prevented by the locking edges on the pawls.

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[0062] In the example shown in Fig. 6, only two latches with a relatively large design are shown. Alternatively, a larger number of latches can be provided, and the latches can be designed significantly smaller. If the carrier sleeve (24) is hoisted and comes into contact with the support body (8) or the latch
25 mechanism (23b), initially, a relative position deviating from the target rotational position can exist. However, as soon as the flag (16) and therefore the carrier sleeve (24) are moved by the wind action, the support body (8) and the carrier sleeve (24) rotate relative to each other and gradually come into the desired target rotational position. In this target rotational position, they are then
30 held by the latch mechanism until the carrier (24) is lowered.

[0063] Between the support body (8) and the carrier sleeve (24), a clamping contact (39) can also be provided which in this case is formed, for example, by contact springs. One possible embodiment of such contact springs (39) is shown in **Fig. 6** in cross-section. Once the support body (8) and the carrier sleeve (24) have reached their target rotational position, the respective contact springs come into engagement with each other and are then held in this contact position. This is therefore a clamping contact in which the contact partners remain stationary relative to each other upon reaching the desired rotational position.

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[0064] In **Fig. 7**, a flagpole (1) and a power supply device (2) are shown in accordance with the second aspect of the present disclosure. The flagpole (1) has a fixed pole tube in the shown example (4), on which a flag boom (3) is guided. On the flag boom (3), a pole light (10) arranged which comprises at least one lighting means (12). The lighting means (12) is aligned substantially parallel to the boom (3) and therefore perpendicularly to the pole (1). The boom (3) and the pole light (10) can be hoisted by a common support. Alternatively or additionally, one or more lighting means can be arranged in a different orientation or at a different location. In particular, one or more elongated lighting means can be arranged parallel to the pole and, together with the flag boom (3), be stored so as to be hoistable.

[0065] The lighting device (10) can be hoisted using a separate hoisting cable (14a). Alternatively, it can be provided that the power supply cable (15) form part of the hoisting device (14). For this purpose, the power supply cable (15) can absorb the tensile forces that are required to raise and/or lower the hoistable elements partially or completely and transfer them to the support (14, 37) movable in the axial direction of the pole (1).

[0066] The power supply cable (15) can accordingly comprise a flexible and stretch-resistant tensile element, through which the tensile forces are absorbed. Preferably, the energy-carrying cable components are decoupled

from the tensile forces. **Fig. 8** shows an example of such a power supply cable (15). This is designed by way of example as a flat cable which has one or more electrical (or other types of energy-carrying) wires (30). These wires (30) can preferably be elastic. In addition, the power supply cable in the shown example
5 includes two stretch-resistant support wires (31) or cores.

[0067] Since the support wires (31) are stretch-resistant while the energy-carrying wires (30) are elastic, the tensile forces introduced by the hoisting process into the power supply cable (15) are predominantly or exclusively
10 absorbed by the support wires (31). In the shown example, all wires (30, 31) are enclosed in a common sleeve (32) which in this case is formed, for example, as a plastic coating made of a rubber material or of EPDM.

[0068] Alternatively, the energy-carrying wires can be embedded in a stretch-resistant sheath (32). Again alternatively, a tensile element can be formed by
15 a link chain into which a flexible power supply cable (15) is embedded. Alternatively, any other constructive embodiment can be chosen by which the energy-carrying wires (30) of the power supply cable (15) are decoupled from or partially or completely relieved of the tensile forces required for hoisting.

20
[0069] The power supply device (2) shown in **Fig. 7** has a storage device (26) which accommodates a released length of the power supply cable (15) in a cable loop (15a) while hoisting the pole light (10). In the shown example, a single cable loop (15a) is provided which is open upwards. The power supply
25 cable (15) runs from one base end of the cable holder (13) in an ascending direction to the head region (5) of the pole where it is preferably fixed by means of a clamping device or in a similar manner. If necessary, only the stretch-resistant wires or the elements of the power supply cable (15) provided in any other way that absorbs the tensile forces can be fixed to the pole head - for
30 example, by clamping.

[0070] Further along, the power supply cable (15), starting from the pole head (5), forms the downwards hanging cable loop (15a) in the pole (1), i.e., the line runs from the pole head initially downwards in a vertical direction and is routed back upwards in the region of a deflection device (27) where it then runs back to the pole head. There, via one or more pulleys (1), it is routed to the outside of the pole from where it runs as a substantially free-hanging line to the hoistable pole light (10). The power supply cable (15) is fixed to the hoistable pole light (10) to transfer the tensile forces to the boom (3), in particular by fixing the support wires (31) on the carrier (24, 37) by clamping.

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[0071] Between the fixing point in the head region of the pole and the fixing point on the hoistable parts, a movable cable section of the power supply cable (15) is therefore formed, the free part of which is stored in the cable loop (15a). If the pole light (10) is lowered, the cable loop (15a) shortens, wherein the deflection device (27) is also pulled upwards. From the cable loop (15a), a part of the power supply cable (15) released, which moves via the pulleys to the outside of the pole and runs down there.

[0072] In the example shown in **Fig. 7**, the deflection device (27) is axially movably routed via guide elements in the form of rings on the cable holder (13). Alternative or additionally, it can be routed on the pole tube (4) or hang freely.

[0073] The deflection device (27) is still coupled to a hoisting cable (14a) in the example according to **Fig. 7**. The hoisting cable (14a) is routed upwards from the base region (7) within the pole tube (4) to a pulley which is connected to the deflection device (27) in a tensile-resistant manner and substantially rigidly connected. From this pulley, the hoisting cable (14a) is routed back downwards and to the opening (47) in the pole base. Accordingly, the hoisting cable (14a) forms a cable pull, by means of which a pulling force to hoist the pole light (10) is transferred to the deflection device (27) and via this into the cable loop (15a).

[0074] According to a variation of **Fig. 7**, a separate hoisting device (**14**) can be provided for hoisting the pole light (**10**) and/or a supporting body for carrying a flag (**16**). This can be designed, for example, according to the variants shown in the **Fig. 1**, or **Fig. 11** to **Fig. 13**. Alternatively, it can be designed in any other way and in particular according to the disclosure in DE 10 2004 032 153 B3. It can therefore be a hoisting device that is at least partially arranged in a pole groove and comprises a slide guided in the pole groove. A pull cable of the hoisting device (**14**) is preferably routed downwards through the inner cavity of a pole tube (**4**) so that it is secured against external manipulation.

10

[0075] In the example shown in **Fig. 7**, the pole light (**10**) be arranged in a rotatable or stationary manner. Preferably, the power supply device (**2**) including the pole light (**10**), the storage device (**26**) and the cable holder (**13**) is rotatable and in particular rotatable as a single piece. In the base region (**7**) of the pole (**1**), the power supply device (**2**) according to **Fig. 7** can have substantially the same components that have already been described with reference to the preceding figures.

[0076] In **Fig. 9**, a guide rail (**36**) is shown for external attachment to a pole tube (**4**), in particular on a rotatably mounted pole tube (**4b**). The guide rail (**36**) comprises a slide groove (**40**), in which a carrier slide (**37**) for a flag carrier (**3**) can be guided. A cable pull of a hoisting device (**14**), in particular a pulley block, can also be guided in the slide groove (**40**).

[0077] Furthermore, as an integral element, at least one lighting means seat (**41**) in the form of an additional guide groove is introduced into the guide rail (**36**). This guide groove (**41**) can be designed for the direct or indirect accommodation of a lighting means. In particular, an LED strip can be inserted into the guide groove (**41**). Furthermore, a transparent protective cover can be attached or fastened to the guide groove (**41**) to protect a lighting means from environmental influences. One guide groove (**41**) is preferably provided on

each side of the slide groove (40) and is arranged parallel and at a constant distance from the slide groove (40).

[0078] Instead of an LED strip, other lighting means such as fluorescent tubes,
5 UV tubes and the like can also be fastened to the guide groove (41). Power
can be supplied to a lighting means attached to the guide groove (41) in any
way, in particular via the power supply cable (15) routed to the head region in
the cable holder (13). Alternatively, a separate connection cable can be routed
10 from the base region of the pole and, in particular, from the rotor part (18) of
the rotary coupling (17) through the pole tube (4) to a guide groove (41). A flag
light arranged or attached in the guide groove (41) can preferably be combined
with a pole light (10) arranged in the head region (5). Furthermore, a
combination with a hoistable pole light can be provided. The guide rail (36)
shown in **Fig. 9** can in particular be used on a pole (1) with a rotating pole tube
15 (4b) according to **Fig. 3**.

[0079] **Fig. 10** shows another preferred embodiment of a pole base (7) with a
pivot bearing (35b) for accommodating a rotatable pole tube (4b). The pole
base (7) comprises a base plate (51), by means of which it can be fastened to
20 a foundation (9) or another stationary stable element. A base tube (50), which
forms the outer contour of the pole base (7), is fastened to the base plate (51).
In the base tube (50), an inner space (61) is formed in which a rotary coupling
(17) can be accommodated according to the above description, as well as
other parts of the power supply device (2).

25
[0080] At the top end of the base tube (50), a support tube (53) is fixed via a
spacer ring (52). At the upper end of the support tube (53), there is a bearing
housing (54) which is provided as a separate component in the shown
example. Alternatively, the bearing housing can be attached to the support
30 tube (53) in one piece.

[0081] A ball bearing (55) is supported by the bearing housing (54) and forms a first part of the pivot bearing (35b) for the rotatable pole tube (4b). Further down on the outside of the support tube (53), a plain bearing bushing (56) is arranged which forms the second part of the pivot bearing (35b). The plain bearing bushing (56) works together with a bearing sleeve (57). The outer ring of the ball bearing (55) and the bearing sleeve (57) are fastened to a connecting pipe (58). The rotatable pole tube (4b) can be shoved onto this connecting pipe (58). The pole base according to Fig. 7 can be prefabricated including the pivot bearing (35b) and the connecting pipe (58) as a modular assembly and can be combined with different shapes and sizes of pole tubes (4b).

[0082] Inside the support tube (53), a feedthrough (60) is provided for the power supply cable (15) and the cable holder (13). Furthermore, a plain bearing bushing can be provided on the support tube (53) - here, at the lower end - through which, for example, a tubular cable holder (13) can be accommodated. An opening (47) can be provided at any point on the base tube (50) in order to make the inner space (61) and the parts of the power supply device (2) arranged there accessible from the outside. The opening (47) is preferably closable by a lockable flap. The pole tube (4b) can be fixed for example by screws (59) to the connecting pipe (58) and connected thereto in a rotationally fixed manner.

[0083] In Fig. 11 to Fig. 13, another variant of a flagpole (1) with a power supply device (2) is shown. In the shown example, the flagpole (1) has a stationary, i.e., non-rotatable, pole tube (4). A support body (8) is rotatably mounted in the head region. A cable holder (13) is connected to the support body (8) in a rotationally fixed manner and extends downwards in the axial direction of the pole towards the pole base. In the shown example, a storage device (26) with a cable loop (15a) is arranged within the cable holder (13). The cable loop (15a) is open downwards here and is accommodated via a movable deflection device (27). Arranged on the outside on the pole tube (4) is an axially displaceable sliding sleeve (25), which accommodates a carrier sleeve (24).

The carrier sleeve (24) is rotatably mounted opposite the sliding sleeve (24). The sliding sleeve (25) can be mounted in a rotationally fixed manner relative to the pole tube (4).

5 [0084] In the shown example, the sliding sleeve (25) is raised or lowered by a hoisting device (14) on the pole tube (4). The hoisting device (14) comprises a first cable section that is routed from the sliding sleeve (25) via a pulley arranged on the pole head (5) to a block (43). The block (43) is connected to a hoisting cable (14a) which can be pulled from the pole base (7) to the block
10 (43), then back down to a pulley and through an opening (47) to the outside. Via the hoisting cable (14a), the pulling force can be applied to raise and/or lower the sliding sleeve and all parts supported thereon.

[0085] In the shown example, the deflection device (27) is movably mounted
15 via an axial guide, e.g., a slot, in the cable holder (13). If the deflection device (27) is pulled upwards, a part of the power supply cable (15) is stored in the thereby lengthened cable loop (15a). If the deflection device (27) moves downwards, accordingly a part of the connecting cable (15) from the cable loop (15a) is released. This part can be routed via the additional pulleys at the base
20 end of the cable holder (13) and in the support body (8) outwards from the pole (1) and to a connection point on the pole light (10).

[0086] In the example shown in **Fig. 11** to **Fig. 13**, the pole light (10) is fastened
via a lighting means holder (11) on the carrier sleeve (24) and can be moved
25 together therewith in the axial direction of the pole as well as be freely rotated around the main axis of the pole (1). Between the support body (8) and the carrier sleeve (24), a rotary coupling apparatus (23) may be provided that, for example, can be designed according to **Fig. 5** or **Fig. 6**. Alternatively, any other rotary coupling device (23) can be provided. Alternatively, a rotary coupling
30 apparatus (23) can be dispensed with, and the power supply cable (15) can transmit the rotational forces between the carrier (24) and the support body (8).

[0087] In the embodiment variant according to **Fig. 11** to **Fig. 13**, the storage device (26) is also moved via the separately arranged hoisting device (14), wherein, however, the power supply cable (15) is decoupled from the tensile forces for raising or lowering the sliding sleeve (25). The movable deflection device (27) is coupled via a coupling cable pull (42) to the block (43) of the hoisting device (14). The up and down movement of the sliding sleeve (25) and accordingly the flag carrier (3) and the lighting device (10) will be explained with reference to a comparison of **Fig. 11** through **Fig. 13**.

10 [0088] In **Fig. 11**, the sliding sleeve (25) is arranged in the hoisted position on the pole head. The pulling load is borne via the hoisting device (14) and the hoisting cable (14a). Furthermore, the coupling cable pull (42) fastened to the block (43) holds, via the block (44), the movable deflection device (27) in the shown upper limit position in which the cable loop (15a) is fully formed.

15 [0089] In the state shown in **Fig. 12**, the hoisting cable (14a) released to such an extent that the sliding sleeve (25) has moved downwards by a distance (2L) from the upper limit position. In so doing, the block (43) has been moved upwards by the same distance (2L) inside the pole tube (4). Accordingly, a cable length (2L) of the coupling cable pull (42) is released so that the block (44) was able to lower by a distance (1L) (ratio of 1-to-2). By lowering the block (44), a downwards displacement of the deflection device (27) by the path length (1L) was accordingly enabled so that, from the cable loop (15a), a part of the power supply cable (15) stored there was released by the length (2L).
20 By means of the depicted coupling cable pull (42) and the movable deflection device (27), the upper end of the cable loop (15a) is moved so far that exactly the required length of the power supply cable (15) is released, and the end of the power supply cable (15) connected to the pole light (10) can be entrained load-free while lowering.

30 [0090] **Fig. 13** shows a state in which the sliding sleeve (25) and all components arranged therein are fully lowered. In this position, the cable loop

(15a) is also reduced to a minimum. It should be noted that the deflection pulley provided on the deflection device (27) can, in the lowest position, also be located at the same height as the deflection pulley arranged immovably at the base end of the cable holder (13). In the position shown in **Fig. 13**, the sliding sleeve (25) with the pole light (10) attached thereto, both ends of the power supply cable (15), and all moving components of the storage device (26) are arranged in the pole base. All of the aforementioned components can be serviced through the opening (47) in the pole tube (4). Should a malfunction or failure occur in a power-carrying component of the pole light or the power supply device, complete maintenance of the system can be carried out from the base in the shown position. The entire power supply cable (15) can, for example, be pulled through the deflection device (27) as well as the other deflection pulleys by drawing in a new line, and completely replaced. This does not require lowering the pole (1), and neither does any scaffolding need to be erected. Furthermore, the entire pole light (10) be serviced or replaced. The same applies to the electrical rotary coupling (17) as well as all other components of the power supply device arranged in the pole base (2).

[0091] In the example shown in **Fig. 11** to **Fig. 13**, the flag mount (3), the pole light (10), the support body (8), the cable holder (13), the rotor part (18) of the electric rotary coupling (17) and the slidably mounted deflection device (27) can rotate together. All components of the hoisting device as well as the power supply device (2) are arranged and guided inside the pole tube and only protrude to the outside at the head region or in the base region. Accordingly, the entire structure is protected from vandalism. Between the movable deflection device (27) and the block (44) of the coupling cable pull (42), a pivot bearing (45) can be provided. The block (44) can also optionally be mounted rotationally fixed and axially displaceable by an axial guide (46) relative to the pole tube (4).

[0092] Particularly large flagpoles for particularly large flags or other elements to be hoisted with a rotatable and hoistable pole light can also be equipped

with the hoisting and lighting system shown in **Fig. 11** to **Fig. 13**. The system has a long service life because all wear-prone parts are securely placed in the pole interior and accordingly protected from environmental influences.

5 [0093] Modifications of the invention are possible in various ways. All features disclosed with regard to the aforementioned exemplary embodiments shown in the drawings can be combined with each other, replaced, supplemented or omitted in any way. By appropriately combining the aforementioned features, rotatable as well as non-rotatable pole lights are possible for rotatable and non-rotatable carriers (**24, 37**). These can be arranged in any way on stationary (i.e., non-rotatable) pole tubes (**4, 4a**) or on rotatable pole tubes (**4, 4b**). A pole light (**10**) can be designed to be hoisted for any of the aforementioned combinations or arranged stationary on the pole head. A common hoisting system (cf. **Fig. 11** to **Fig. 13**) can be provided for an element to be hoisted, in particular a flag (**16**), and a hoistable light (**10**). Alternatively, separate hoisting systems can be provided, for example, with two sliding sleeves (**25**) and/or carrier slides (**37**) arranged one above the other. The pole light (**10**) can have any relative position to the pole (**1**) and a hoisted element. In particular, any combinations are possible of a lighting means that is arranged above or on a flag boom (**3**), a lighting means that is arranged on the pole (**1**) and directed towards the hoisted element, as well as possibly a lighting means arranged on the hoisted element itself. Furthermore, a hoisted element can itself be a lighting means - for example, a flag in the form of a luminous foil or an illuminated sign.

25 [0094] By means of a power supply cable (**15**), any other consumers or generators that are arranged in the head region of the pole (**1**) and/or on a hoistable carrier (**24, 37**) can be connected to the pole base as an alternative or in addition to a pole light (**10**). For example, solar elements for energy generation which are connected to accumulators arranged in the pole base or at any other location can be arranged on the support body (**8**) and/or via one of the support elements (**24, 37**). The accumulators can, for example, be

arranged on the rail (38). Furthermore, other consumers such as neon signs, LED lettering panels, bubble machines or additional lighting elements for illuminating the pole's surroundings can be arranged at the aforementioned position. These can also be connected via the power supply cable (15) to other
5 energy-carrying components in the pole base. Finally, a motor can be arranged on the pole (1) by means of which the pole light (10) and/or a rotatable part (4b) of the pole (1) can be brought into a desired position.

[0095] A power cord (20) is preferably routed through an opening in the base
10 plate (51) from the inner space (61) of the pole base (7) into a foundation (9) and from there underground to a power source (33) or a connection to the supply grid (cf. Fig. 7). Alternatively, a power cord (20) can be run above ground into the pole base (7).

15 [0096] In a modification of Fig. 7 or Fig. 11 to Fig. 13, a cable loop (15a) can be loaded by a weight (28) so that it is ensured that, when a pole light (10) is hoisted, a released length of the power supply cable (15) is stored in the cable loop (15a). In this regard, a separate hoisting device can be provided for the pole light (10) so that the power supply cable (15) can bear just its own weight
20 as well as the load of the weight (28).

List of reference signs

	1	Pole/flagpole
25	2	Power supply device
	3	Flag holder/boom
	4	Pole tube
	4a	Stationary pole tube
	4b	Rotatable pole tube
30	5	Pole head/head region
	6	Middle region
	7	Pole base/base region

	8	Support body/pole cap
	9	Foundation/ground mount
	10	Pole light
	11	Lighting means holder
5	12	Lighting means
	13	Cable holder
	14	Hoisting device
	14a	Hoisting cable
	15	Power supply cable/cable
10	15a	Cable loop
	16	Flag
	17	Electric rotary coupling
	18	Rotor part
	19	Stator part
15	20	Power cord
	21	Plug connection
	22	Connecting element
	23	Rotary coupling apparatus
	23a	Inclined guide
20	23b	Latch mechanism
	24	Carrier sleeve/carrier
	25	Sliding sleeve
	26	Storage device
	27	Movable deflection device
25	28	Weight
	29	Guide means/guide ring
	30	Electrical wire – elastic
	31	Support wire/core – stretch-resistant
	32	Sleeve/insulator
30	33	Power source/supply grid
	34	Power converter/power supply unit/transformer
	35a	Pivot joint at the pole head

	35b	Pivot joint at the pole base
	36	Guide rail
	37	Carrier slide/carrier
	38	Rail
5	39	Clamping contact
	40	Slide groove
	41	Lighting means seat/LED strip guide groove
	42	Coupling cable pull
	43	Block
10	44	Block
	45	Pivot bearing
	46	Axial guide
	47	Opening
	48	Connecting pipe
15	49	Sleeve
	50	Base tube
	51	Base plate
	52	Spacer ring
	53	Support tube
20	54	Bearing holder
	55	Ball bearings
	56	Plain bearing bushing
	57	Bearing sleeve
	58	Connecting pipe
25	59	Screw
	60	Feedthrough
	61	Inner space
	L	Lift length

30 CITATIONS IN THE DESCRIPTION

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Claims

1. A power supply device for a rotatable pole light (10) with a rotatable support body (8) supported at the head region (5) of a pole (1) for supporting a pole light (10) and a cable holder (13) insertable into the pole (1), wherein the cable holder (13) is connected to the support body (8) in a rotationally fixed manner and carries a power supply cable (15).
2. The power supply device according to claim 1, **characterized in that** the pole light (10) is designed to be hoistable, and the power supply device (2) has a storage device (26) which accommodates a released length of the power supply cable (15) in the form of at least one cable loop (15a) while hoisting the pole light (10).
3. The power supply device for a hoistable pole light (10), wherein the power supply device (2) has a storage device (26) which accommodates a released length of a power supply cable (15) in the form of at least one cable loop (15a) while hoisting the pole light (10).
4. The power supply device according to any of the preceding claims, **characterized in that** the power supply cable (15) is routed as an uninterrupted cable from the end (base end) of the cable holder (13) located at the base region (7) of the pole (1) to the support body (8).
5. The power supply device according to any of claims 1 or 2, **characterized in that** the power supply device (2) has an electric rotary coupling (17) connectible to the base end of the cable holder (13).
6. The power supply device according to any of the preceding claims, **characterized in that** the rotary coupling (17) is arranged in the pole base (7).

7. The power supply device according to any of the preceding claims,
characterized in that the rotary coupling (17) is movably arranged in the axial
direction of the pole (1).
- 5 8. The power supply device according to any of the preceding claims,
characterized in that the rotary coupling (17) is a separate and replaceable
component.
9. The power supply device according to any of the preceding claims,
10 **characterized in that** a rotor part (18) of the rotary coupling (17) is connectible
in a rotationally fixed manner to the base end of the cable holder (13), in
particular by a connecting element (22) in the form of a clamping connection
or a sliding sleeve.
- 15 10. The power supply device according to any of the preceding claims,
characterized in that the power supply cable (15) routed through the cable
holder (13) at the base end of the cable holder (13) is connectible via an
electrical plug connection (21) to the electric rotary coupling (17).
- 20 11. The power supply device according to any of the preceding claims,
characterized in that the support body (8) comprises a lighting means holder
(11), in particular a boom, for accommodating at least one lighting means (12).
12. The power supply device according to any of the preceding claims,
25 **characterized in that** a rotary coupling apparatus (23) is provided on the
support body (8) to connect the rotational movement of the support body (8) to
a rotational movement of a carrier sleeve (24), which is rotatably mounted and
axially displaceable on the pole (1).
- 30 13. The power supply device according to any of the preceding claims,
characterized in that the power supply device, in particular the rotary coupling

apparatus (23), has a guide device to establish a desired target rotational position between the support body (8) and the carrier sleeve (24).

14. The power supply device according to any of the preceding claims,
5 **characterized in that** the guide device is an inclined guide (23a) that the carrier sleeve (24) and the support body (8) bring into a predetermined relative position during an axial approach.

15. The power supply device according to any of the preceding claims,
10 **characterized in that** the guide device is a one-sided movement lock, in particular a latching mechanism (23a) which permits a relative rotation between the carrier sleeve (24) and the light holder (8) only towards a predetermined target position, and the support body (8) and the carrier sleeve (24) are fixed in the desired rotational position relative to each other once it is reached.

15
16. The power supply device according to any of the preceding claims,
characterized in that an electrical clamping contact (39) connected to the power supply cable (15) is arranged on the light holder (8).

20 17. The power supply device according to any of the preceding claims,
characterized in that the storage device (26) has a deflection device (27) that can be moved toward the pole to accommodate and guide at least one cable loop (15a).

25 18. The power supply device according to any of the preceding claims,
characterized in that the deflection device (27) is guided on or in the cable carrier (13).

19. The power supply device according to any of the preceding claims,
30 **characterized in that** the cable loop (15a) is open upwards.

20. The power supply device according to any of the preceding claims,
characterized in that the cable loop (**15a**) is open downwards.
21. The power supply device according to any of the preceding claims,
5 **characterized in that** the deflection device (**27**) is loaded on one side by a weight (**28**) in order to tighten the cable loop (**15a**).
22. The power supply device according to any of the preceding claims,
characterized in that the deflection device (**27**) is coupled to a hoisting cable
10 (**14a**), in particular by a cable pull.
23. The power supply device according to any of the preceding claims,
characterized in that the hoisting cable (**14a**) transfers a tensile force required
for hoisting to the cable loop (**15a**), and a carrier sleeve (**24**) or a carrier slide
15 (**37**) is raised via the power supply cable (**15**) on the pole (**1**).
24. The power supply device according to any of the preceding claims,
characterized in that the power supply cable (**15**) comprises at least one flexible
and stretch-resistant tensile element, in particular a support wire (**31**).
20
25. The power supply device according to any of the preceding claims,
characterized in that the deflection device (**27**) is connected via a separate
coupling cable pull to a hoisting device (**14**) and driven thereby.
- 25 26. A pole, in particular a flagpole, with a hoisting device (**14**), an immovably
arranged pole base (**7**) and a pole tube (**4b**) rotatably mounted on the pole base
(**7**) via a swivel joint (**35b**), **characterized in that** the pole has an electric rotary
coupling (**17**) arranged in the pole base (**7**) and below the pivot joint (**35b**).
- 30 27. The pole according to claim 26, **characterized in that** a rotor part (**18**)
of the rotary coupling (**17**) is connected to an electrical supply cable (**15**) for a
pole light (**10**) on the inside routed through the pivot joint (**35b**).

28. The pole, in particular a flagpole, with a hoisting device (14) and a pole light (10), **characterized in that** the pole (1) has a power supply device (2) according to any of the preceding claims.
- 5
29. The pole according to the preceding claim, **characterized in that** the hoisting device (14) moves a carrier sleeve (24) or a carrier slide (37) guided on the outside of the pole tube (4), and to which preferably at least one flag holder (3) and possibly a flag (16) is fastened.
- 10
30. The pole according to any of the preceding claims, **characterized in that** a pole light (10) is hoistable with a carrier sleeve (24) or a carrier slide (37).
31. The pole according to any of the preceding claims, **characterized in**
15 **that** the pole is connected to a foundation in a rotationally fixed manner and has a rotatably mounted light holder (8) on the pole head (5).
32. The pole according to any of the preceding claims, **characterized in**
20 **that** the pole (1) is designed in multiple parts, wherein the pole base (7) is immovably arranged over a foundation (9) and is connected to an upper rotatable pole part via a pivot bearing.
33. The pole according to any of the preceding claims, **characterized in that**
25 a power cord (20) is routed through the foundation (9) into the pole base (7).
34. The pole according to any of the preceding claims, **characterized in**
that, in the pole base (7), an electrical rotary coupling (17) is arranged whose stator part (19) is mounted rotationally fixed relative to the pole base (7).
- 30 35. The pole according to any of the preceding claims, **characterized in**
that the electrical rotary coupling (17) is movably mounted in the axial direction of the pole base (7).

36. The pole according to any of the preceding claims, **characterized in that** a power converter (34) is arranged in the pole base (7), in particular a power supply unit for supplying the pole light (10).

5

37. The pole according to any of the preceding claims, **characterized in that** the pole has a guide rail (36) with a slide groove (40) for guiding a carrier slide (37), wherein the guide rail has at least one lighting means seat (41) running next to the slide groove (40), in particular a guide groove for
10 accommodating an LED strip.

Five pages of drawings follow

Fig. 1



Fig. 2

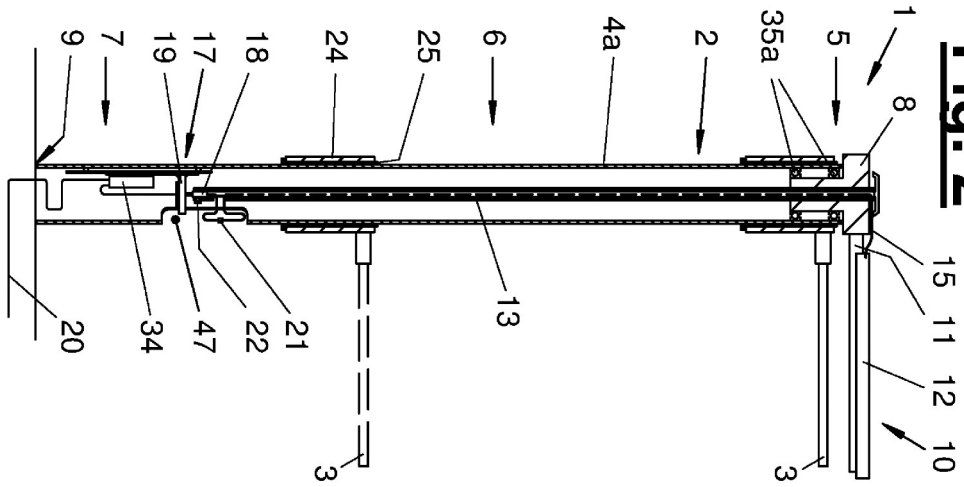


Fig. 3

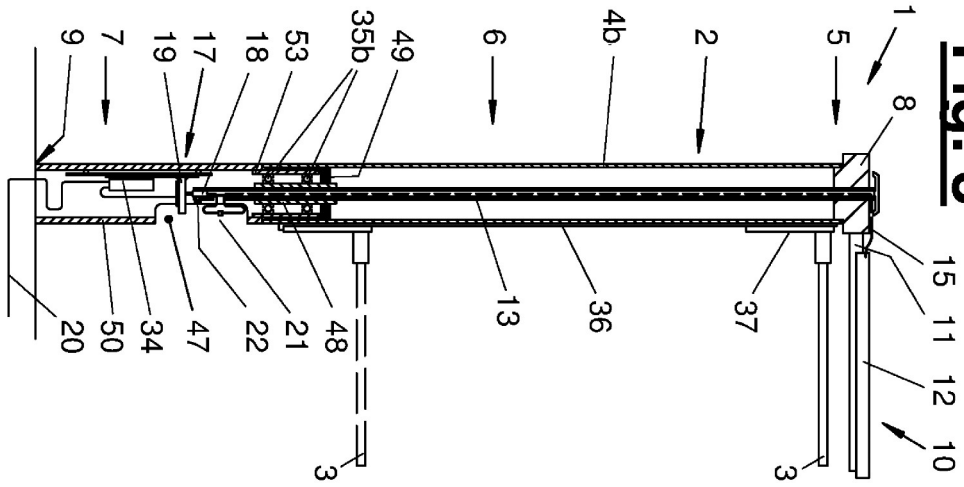


Fig. 4

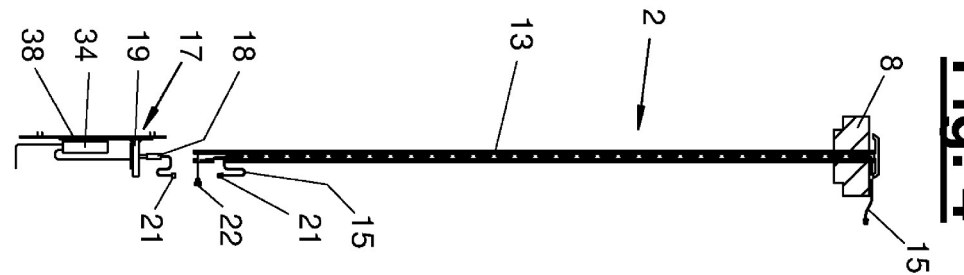


Fig. 5

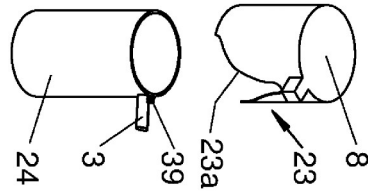


Fig. 6

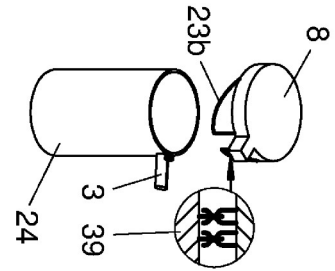


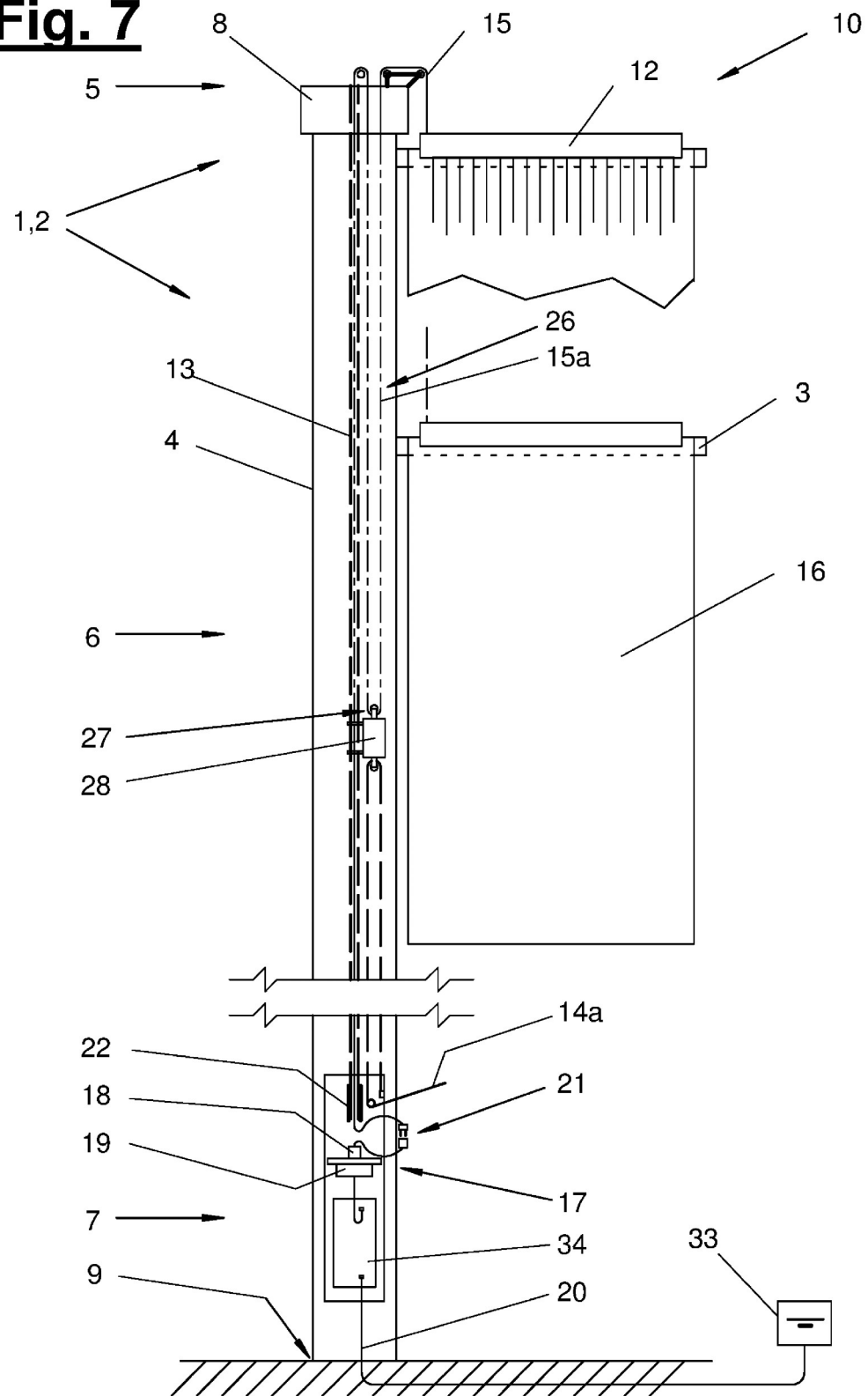
Fig. 7

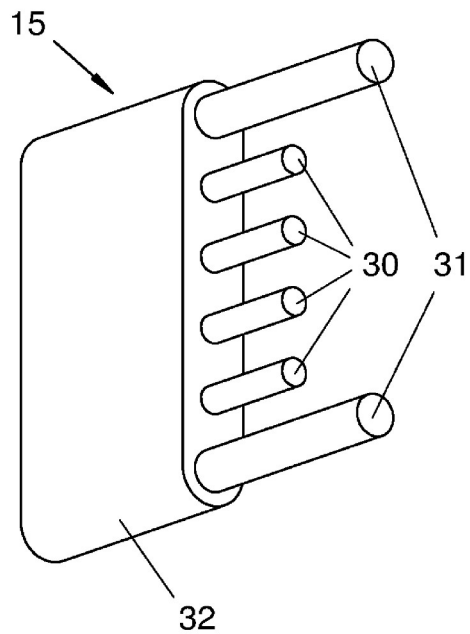
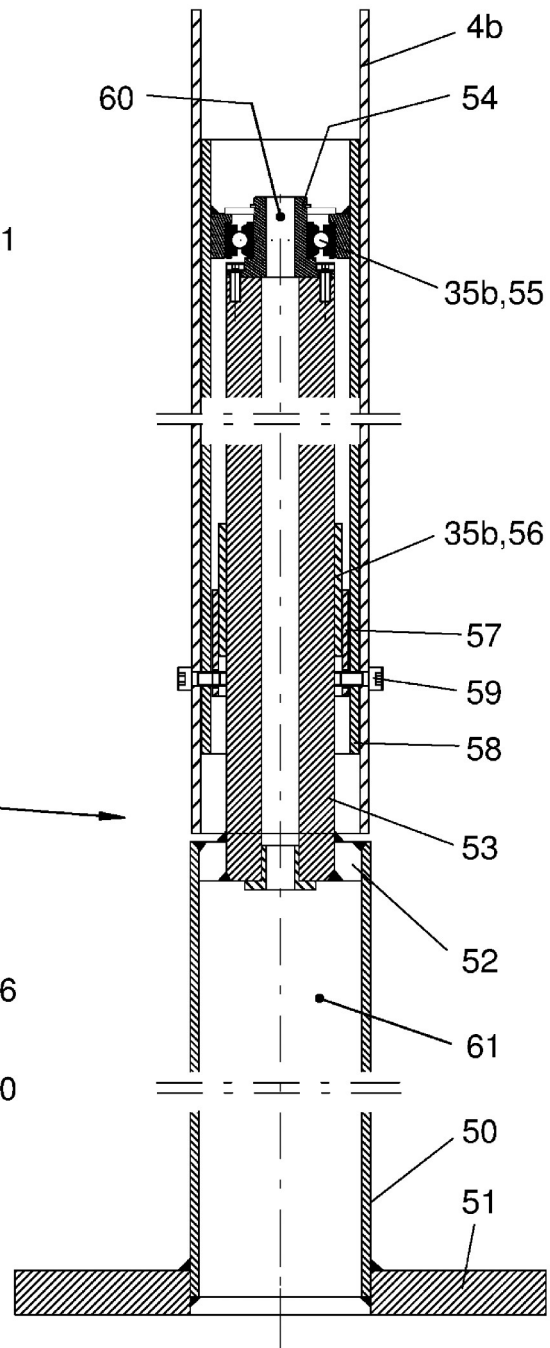
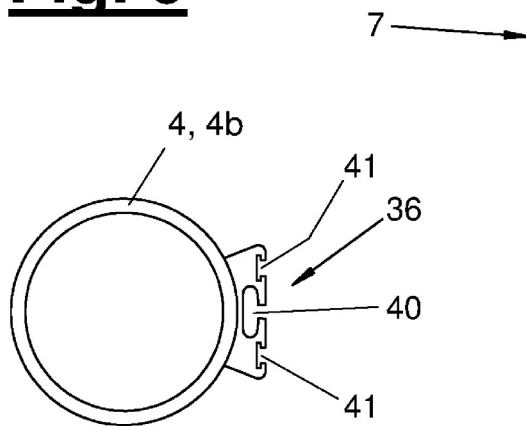
Fig. 8**Fig. 10****Fig. 9**

Fig. 11

Technical drawing of a mechanical assembly in cross-section. The drawing shows a long horizontal component with various internal parts and dimensions. Key features include:

- Dimensions:**
 - L : Length of the main body.
 - $2L$: Total length of the assembly.
- Components and Labels:**
 - 4**: A small component at the top right.
 - 42**: A component at the top right, possibly a hinge or joint.
 - 8**: A component at the bottom right, possibly a hinge or joint.
 - 15**: The main horizontal body.
 - 15a**: A component on the left side.
 - 17**: A component on the left side.
 - 24**: A component on the left side.
 - 25**: A component on the left side.
 - 27**: A component on the left side.
 - 44**: A component on the left side.