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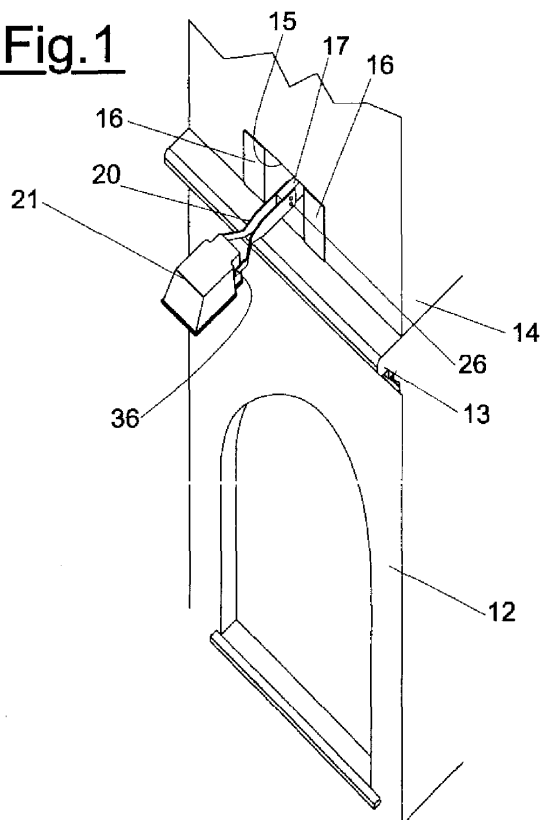
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(54) **Retractable lighting device**

(57) A retractable lighting device comprising at least one arm (20) bearing at least one lamp holder (21) and at least one light bulb (22) and positioned above a structure to be illuminated (12, 13) wherein said arm (20) is linked to a mobile support element (17) by means of an alternative actuator (24, 31) that controls the movement between a rest position, wherein the complete lighting device is contained in a plane support (14) within said structure (12, 13) and a working position external to said structure (12, 13) when the light bulb is lit up. Therefore movement can be made on either a horizontal or vertical plane, as well as on the exterior of the structure or in an internal position covered of the said structure.

Fig.1



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Description

[0001] The present invention refers to a retractable lighting device.

[0002] Providing illumination on certain buildings of prestige, or in cases where the visibility of the lighting devices when not in use does not present a particularly pleasant appearance can create considerable problems.

[0003] In fact, as an initial possible solution the lighting devices can be located at ground level so that the light beam is directed towards the structure to be illuminated.

[0004] On the other hand, this type of lighting presents certain disadvantages in that the device set on the ground must not be covered by the transit or the positioning of other elements, such as vehicles or other structures, that would interrupt the emitted light beams.

[0005] Alternatively, the positioning of lighting devices arranged on poles, involves the installation of these poles in the immediate proximity of the structure to be illuminated, and this is not always possible.

[0006] Lastly, the presence of lighting devices applied directly onto the structure to be illuminated is not particularly desirable since it affects the appearance, or, in any case, such devices cannot be applied because a suitable support surfaces is not available.

[0007] The aim of the present invention is therefore to realise a lighting device able to eliminate all these problems and disadvantages.

[0008] Another aim of the present invention is to realise a lighting device with limited dimensions so that the appearance of the structure on which it is applied does not suffer.

[0009] Yet another aim of the present invention is to realise a lighting device having an extremely simple structure and that is almost invisible or not very visible to those observing such structure.

[0010] These aims according to the present invention are achieved with the realisation of a retractable lighting device as described in claim 1.

[0011] The further claims define the additional characteristics of the present invention.

[0012] The characteristics and the advantages of a retractable lighting device according to the present invention will be made clearer in the following description, given as an example, and by no means limitative, with reference to the appended schematic drawings wherein:

Figure 1 is a perspective view of a retractable lighting device in working position according to a first example of the invention;

Figure 2 is a section along the line II-II of the device shown in figure 3,

Figures 3 and 4 are side elevation and plan top views of the device of the invention,

Figure 5 is a perspective view of a retractable lighting device in working position in a second example

of the invention,

Figure 6 is a side elevation view of the example of a device of figure 5,

Figure 7 is a top plan view of the device of figures 5 and 6 in its two working positions and retracted in horizontal position above the cornice,

Figure 8 is a perspective view of a retractable lighting device in working position in a third example of the invention,

Figure 9 is a side elevation view of the example of a device of figure 8 in its two working positions and retracted in vertical position above the cornice,

Figure 10 is a top plan view of the device of figure 8 in its working position external to the cornice.

[0013] With reference to the figures in the various examples, some retractable lighting devices are shown, that can be applied onto a structure to be illuminated, or for the illumination of a zone in proximity to such structure, all of which present the same innovative concept.

[0014] More precisely, each device presents a support element to which at least one supporting arm is connected, with at least one lamp holder and at least one light bulb. According to the present invention, the supporting arm is controlled to displace in an alternative manner between a rest position wherein the complete lighting device is contained within the external perimeter of the structure, and a working position exterior to said perimeter wherein the device is lit up, and vice versa.

[0015] The figures 1-4 show a first example of a retractable lighting device 11 according to the present invention, positioned in the upper part of a structure to be illuminated 12, such as the façade of a building. In particular, such device 11 is positioned above a cornice 13 which extends towards the interior in a support plane 14, such as a closed compartment for example, and equipped with an opening towards the exterior 15, that can be closed again by sliding hatches 16. Alternatively, such support plane 14 could be a solar panel or similar element.

[0016] The device 11 comprises a mobile support element 17, that is, in the exemplary embodiment, a carriage since it is equipped with wheels 18, that slide on pairs of guide tracks 19. Furthermore, extending from the support element 17 is a support arm 20 that foresees at least one light lamp holder 21 inside which is inserted at least one light bulb schematically shown by the dotted line 22.

[0017] The support element 17 equipped with wheels 18, is connected to an protruding rod 23, having a helical shape, and whose backward and forward movement is controlled by an actuator 24, possibly electrical and of rack type for example, arranged on a rear support structure 25.

[0018] The arm 20 is arranged in an articulated manner to the support element 17 by means of pins 26 and levering systems 26a that permit further variation of the working position adapting the emitted light beam direc-

tion. A pin 36 is also arranged between the arm 20 and the lamp holder 21 to allow a further mutual position adjustment. Furthermore, the pairs of guide tracks 19 are positioned on side uprights 37, fixed to the support surface 14 of the compartment for easier retractable lighting device 11 movement between its two positions: the external working position for the illumination of the external structure or facade of a building 12, and the retracted rest position invisible to the observer from below.

[0019] In the aforesaid figures, this exemplary embodiment also shows a protective barrier 27 which is preferably arranged around the retractable lighting device 11 according to the present invention, whenever the device is applied directly to the exterior in a position which differs from that described previously. In this case the retractable lighting device 11 must be protected from weather conditions, such as snow for example, or in any case, its mobile or sliding parts must not be freely accessible.

[0020] The figures 5-7 show a second example of the present invention wherein the movement can be realised between a rest position where the lighting device is retracted in a horizontal position within the external perimeter of the structure, in other words the cornice 13, and a working position rotated outside the cornice where the illumination is switched on.

[0021] In this second example, using the same or corresponding elements with the same reference numerals, the support element 17 protrudes from a case 28 equipped with a side opening 29. The opening 29 is made at one corner of the case 28 to facilitate the oscillating movement of the support element 17 bearing the arm 20 with its lamp holder 21 and light bulb 22.

[0022] A plate 30 is positioned inside the case 28, attached to the support element 17, which plate can be oscillated by an actuator 31, positioned underneath, such as an alternative electric motor. Wheels 33 are brought by vertical columns 32 facing downwards to guide the plate 30 during its oscillating movement as it runs along the edge of a fixed striker plate of base 34.

[0023] In this case as well, the arm 20 extends from the support element 17, and bears at least one lamp holder 21 together with its respective light bulb, shown with a dotted line with numeral 22. The arm 20 is attached in an articulated manner to the support element 17 by means of pins 26 and levering systems 26a that permit further variation of the working position.

[0024] The figures 8-10 show a third exemplary embodiment of the present invention wherein the movement can be realised between a rest position where the lighting device is retracted in a vertical position within the external perimeter of the structure, i.e. the cornice 13, and the external working position when the illumination is switched on.

[0025] In this third example, using the same or corresponding elements with the same reference numerals, the support element 17 protrudes sideways from an actuator 31, such as an alternative electric motor enclosed

in a case 28. In particular, the support element 17 is integral to a shaft 35 that extends horizontally from the actuator 31. In this manner, the arm 20, the lamp holder 21 and the light bulb 22 mounted on the support element 17 are moved from a vertical rest position inside the cornice 13, or above the roof, to a horizontal working position protruding from the underlying structure in order to provide the illumination of such structure.

[0026] In this case also, a retractable lighting device is realised thus resolving all the aforesaid problems and disadvantages described in relation to the technical background that is known.

[0027] These retractable lighting devices are extremely practical in that when the building on which they are mounted does not require illumination, the devices are simply retracted inside the cornice or in any case inside the external perimeter of the illuminated structure. In this manner they are not visible from the exterior or from below. On the contrary, during the evening or at night, when they are moved to their external working position they provide excellent lighting for the building or monument in question in the best possible manner or with the possibility of directing the light beam in all directions.

[0028] The structure is extremely simple since in all three cases the same support element and the relative lighting device are used, and the actuator element is simply adapted to the preferred arrangement previously selected according to the specific needs required to move the lighting device on a horizontal plane by means of translation or rotation, or on a vertical plane by means of rotation.

[0029] A retractable lighting device conceived in this manner can be subject to numerous modifications and variants while remaining within the context of the present invention; furthermore, all elements can be replaced by other technically equivalent elements. Practically speaking, all materials and sizes can be of any type according to technical necessity.

[0030] The retractable lighting device conceived in this manner can be subject to numerous modifications and variants while remaining within the same innovative context.

[0031] Furthermore, practically speaking, all materials as well as their sizes and components can be of any type according to technical necessity.

Claims

1. A retractable lighting device comprising at least one arm (20) bearing at least one lamp holder (21) and at least one light bulb (22) and positioned above a structure to be illuminated (12, 13) **characterised in that** said arm (20) is linked to a mobile support element (17) by means of an actuator (24, 31) that controls the movement between a rest position, wherein the complete lighting device is contained in

a plane support (14) within said structure (12, 13) and a working position external to said structure (12, 13) when the light bulb is lit up.

2. A retractable lighting device according to claim 1 5
characterised in that said support element (17) is equipped with wheels (18) and is controlled by an actuator (24) to run backwards and forwards on a guide track (19) positioned horizontally on said plane support (14). 10

3. A retractable lighting device according to claim 2
characterised in that said support element (17) is connected to a rod (23) with a helical shape, which protrudes and is controlled by said actuator (24) 15
which is integral to a rear bearing structure (25) arranged on the said plane support (14).

4. A retractable lighting device according to claim 2
characterised in that said guide track (19) and said actuator (24) are positioned inside a protective 20

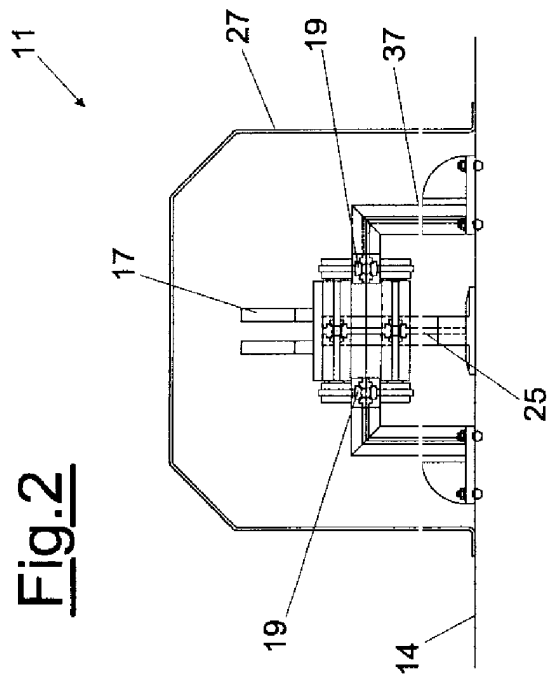
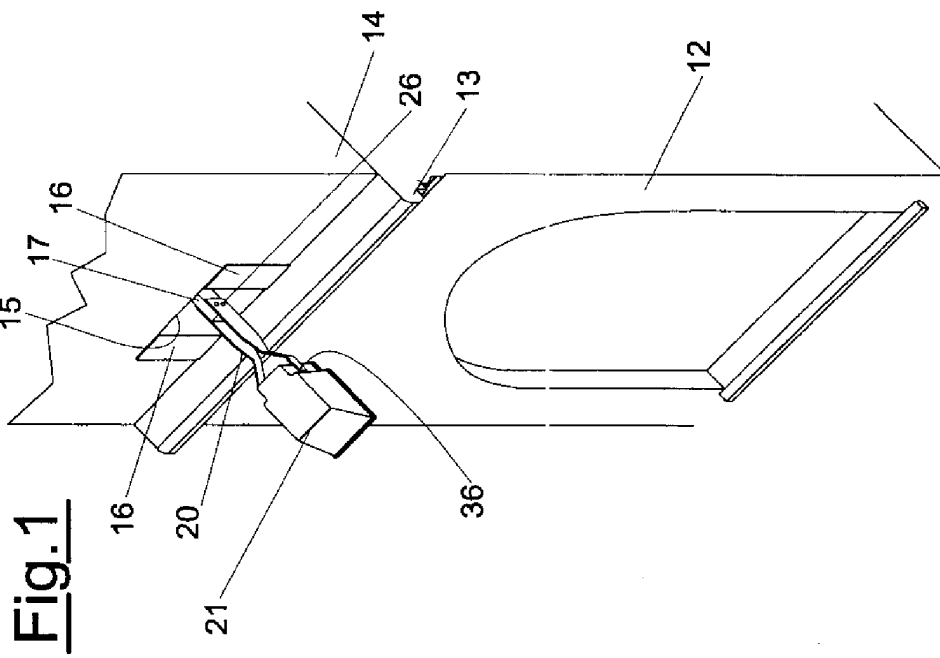
5. A retractable lighting device according to claim 1
characterised in that said support element (17) protrudes from a side opening (29) of a case (28) 25
inside which is positioned an actuator (31) to provoke the alternative oscillation of said support element (17) on a horizontal plane.

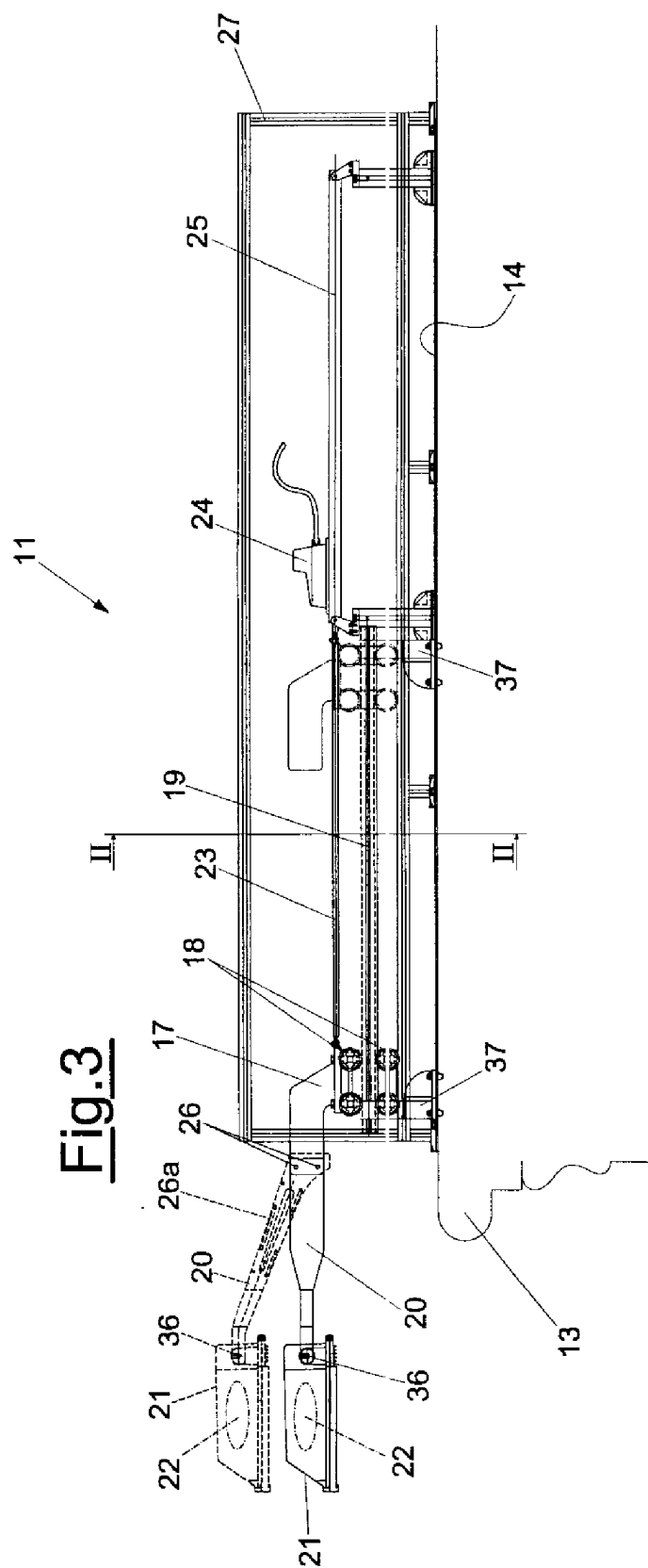
6. A retractable lighting device according to claim 5 30
characterised in that said support element (17) is integral to a plate (30) which is oscillated by means of said actuator (31), and where said plate (30) presents vertical uprights (32) facing in a downward direction to bear the wheels (33) that guide the 35
movement of said plate (30) during the oscillation movement towards the two positions.

7. A retractable lighting device according to claim 1
characterised in that said support element (17) is positioned to protrude sideways from an actuator (31) that determines the alternative oscillation on a 40
vertical plane between the said two positions.

8. A retractable lighting device according to any one of the previous claims, **characterised in that** said arm (20) is attached in an articulated manner to said support element (17) by means of pins (26) and levering systems (26a) that permit further variation of 45
the working position. 50

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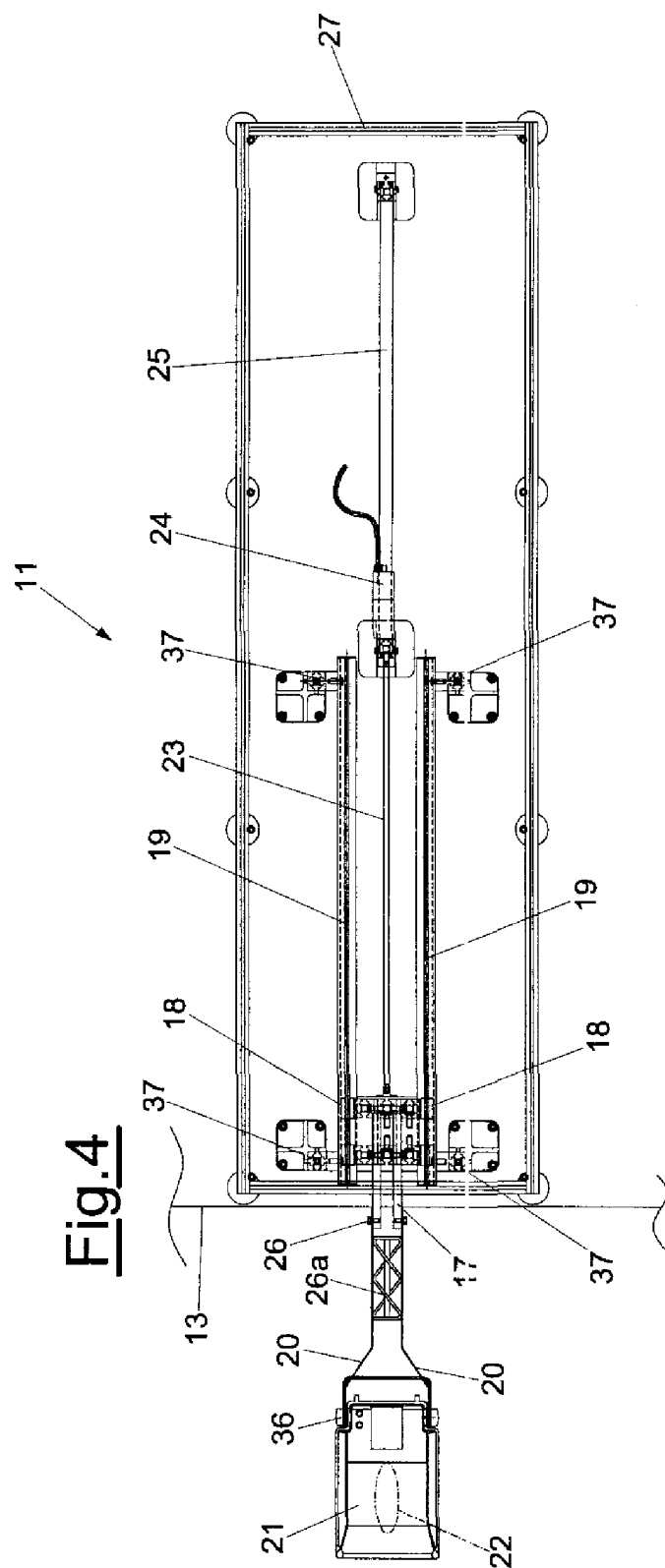


Fig.5

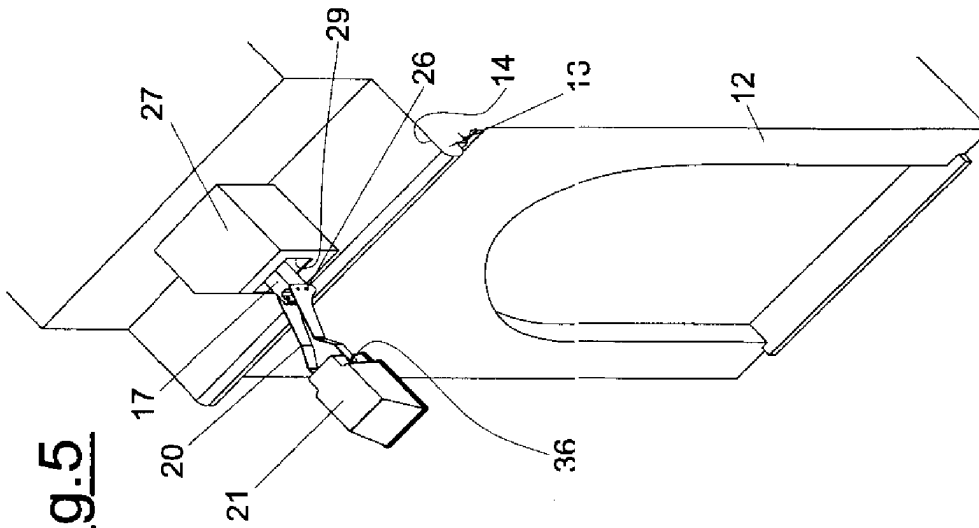


Fig.6

