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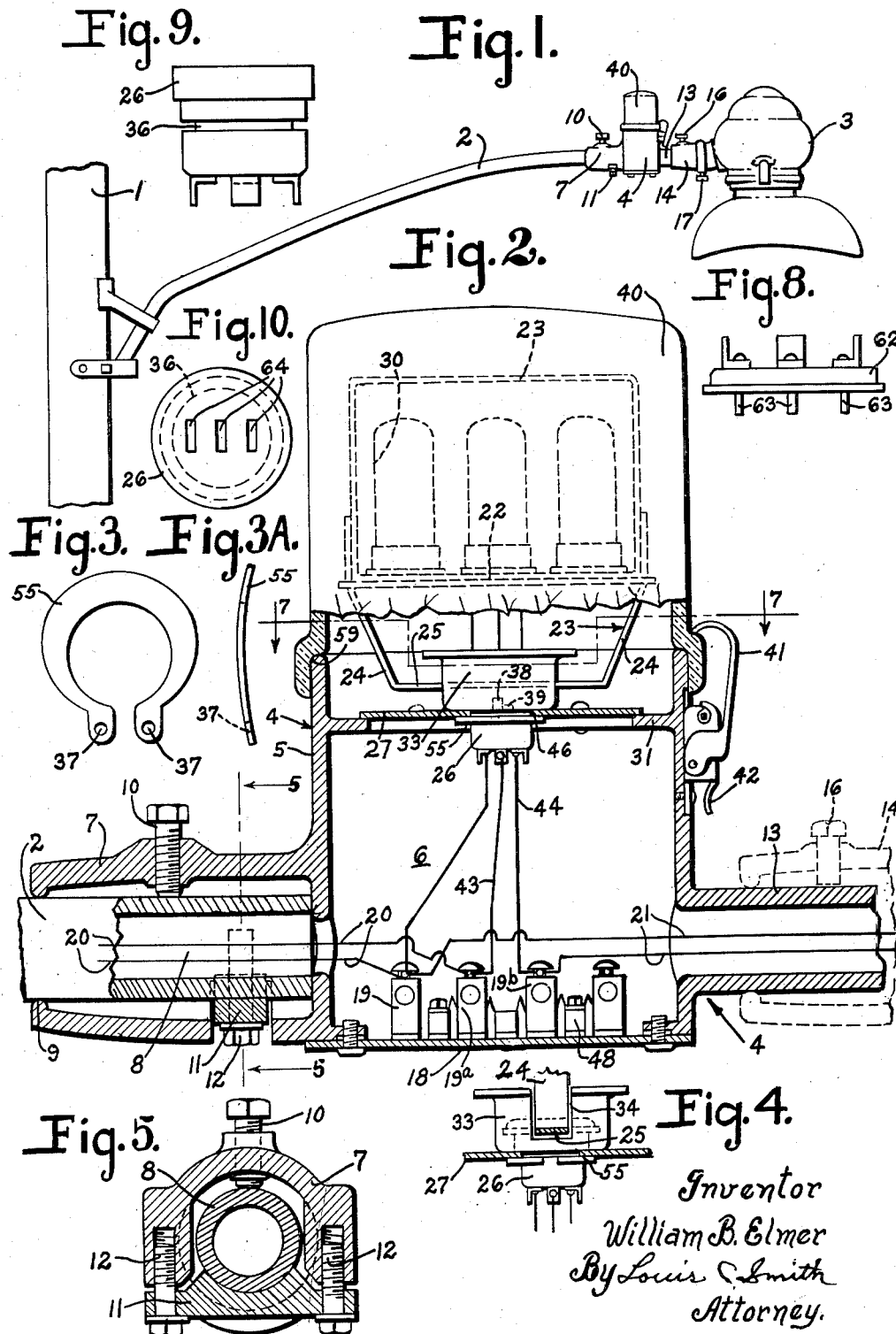
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OUTDOOR LIGHTING LUMINAIRE

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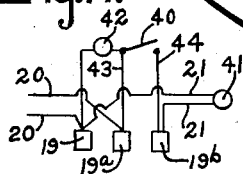


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2 Sheets-Sheet 2

Fig. 11.



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2,970,223

OUTDOOR LIGHTING LUMINAIRE

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This invention relates to an outdoor luminaire and especially to a luminaire of this type which is carried on the end of a supporting arm extending laterally from a pole or other support.

Many such luminaires require the use of some form of control device by which the operation of the luminaire is automatically controlled.

One object of the invention is to provide an arm extension element which can be mounted on the end of luminaire supporting arm and which is constructed to provide a support for such control devices, and also to provide a support for the luminaire.

In the embodiment of the invention herein illustrated, the arm extension element is constructed to provide a support for a light sensitive photoelectric control device which operates automatically to energize the light source of the luminaire whenever the daylight illumination in the vicinity of the luminaire falls below a predetermined point, and which also operates automatically to deenergize the said light source when such daylight illumination rises above a predetermined point. Said arm extension element, however, is adapted to support other types of control devices or some auxiliary device which is required in connection with operation of the luminaire.

Control devices of the type above referred to are now in common use, and include a switch element for opening and closing the circuit supplying electricity to the light source and further include a light sensitive element which is operative to close said switch and thereby energize the light source whenever the daylight illumination falls below a predetermined point, and to open said switch and thus deenergize the light source when the daylight illumination in the vicinity of the luminaire rises above some predetermined point.

These control devices have sometimes been mounted on the electric light pole which carries the luminaire to be controlled, and sometimes they are mounted directly on the luminaire body. In the latter case the mounting of the control device directly on the luminaire involves the matter of providing a special design for the luminaire body. Furthermore, control devices of the above type usually operate more satisfactorily or are more conveniently maintained if they are placed relatively close to the luminaire. Many of such devices must be so oriented that the light sensitive element thereof faces approximately north.

As stated above, it is one of the objects of the present invention to provide a novel support for the light sensitive control device such as above described, or some other control device, in close proximity to the luminaire, but without the necessity of providing the luminaire with a specially designed body to receive the control device which support has provision for mounting the luminaire thereon.

This object is accomplished by providing a supporting element for the control device which can be attached to the end of the luminaire-supporting arm extending from the light pole, such supporting element being provided

with means on which the luminaire can be mounted. In such installation the control element will be located between the end of the light-supporting arm and the luminaire and the latter will be supported directly by said supporting element.

Another object of the invention is to provide a novel means by which the control device can be easily orientated after it has been installed on the luminaire-supporting arm, if such orientation is required, in order to move it into position in which it will be most effective.

In the drawings wherein I have illustrated an embodiment of the invention:

Fig. 1 is a view showing part of a luminaire-supporting pole with its laterally extending luminaire-supporting arm, and also illustrating the control-supporting element and the luminaire mounted thereon;

Fig. 2 is a view partly in section showing the supporting element for the control device and the control device mounted thereon;

Fig. 3 is a view of a split locking ring used in mounting the control device on its supporting element;

Fig. 3a is an edge view of the locking ring;

Fig. 4 is a fragmentary sectional view showing a portion of the control device and a portion of the supporting element on which it is mounted;

Fig. 5 is a section on the line 5—5, Fig. 2;

Fig. 6 is a section on the line 6—6, Fig. 7; and

Fig. 7 is an enlarged section on the line 7—7, Fig. 2;

Fig. 8 shows the plug element supporting means for the control device;

Fig. 9 is a view of the receptacle member which cooperates with the plug element.

Fig. 10 is a plan view of the receptacle member;

Fig. 11 is a wiring circuit.

In Fig. 1, 1 designates a portion of a luminaire-supporting pole which carries the usual laterally extending luminaire-supporting arm 2; and 3 indicates a luminaire which is mounted on said arm.

In the present invention the control device above referred to, which is shown generally at 30 in Fig. 2, is mounted on a supporting element 4 which is separate from both the luminaire-supporting arm 2 and the luminaire 3 and which constitutes, in effect, a detachable extension of said luminaire-supporting arm 2 and will be referred to as an arm extension element. This arm extension element 4 is formed with a body portion 5 having an interior chamber 6, and it also is provided with a laterally extending socket extension 7 adapted to be detachably mounted on the end 8 of the luminaire-supporting arm 2. This socket extension is formed at its outer end with an interior annular bead 9 which fits around the arm end 8, and it is also provided with an adjusting screw 10 adapted to engage the top of the arm end 8 and a clamping member 11 which engages the bottom of said arm end. Said clamping member is provided with two clamping screws 12 by which the clamping member can be firmly clamped against the bottom of the arm end 8.

The body 5 of the arm extension element 4 is provided on its side opposite to that having the socket extension 7 with a laterally projecting tubular arm 13 which is of the same size and dimension as the arm end 8 and which simulates said arm end. The luminaire 3 is provided with the usual laterally extending tubular support member 14 by which it could be mounted on the end 8 of a luminaire-supporting arm 2, and by which it is shown in the drawings as being mounted on the simulated projecting arm 13 of the arm extension element. This support member 14 of the luminaire is provided with the adjusting screw 16 and with the clamping element 17 for clamping the luminaire firmly to the projecting arm 13. With the above construction, the arm extension element 4 is

detachably mounted on and supported by the luminaire supporting arm 2 and the luminaire itself is detachably mounted on and supported by the arm extension element.

It will be noted that the clamping member 11 of the socket extension 7 and the adjusting screw 10 are offset from each other in the lengthwise direction of the arm 2, thereby making it possible by proper adjustment of the adjusting screw and clamping element to level up the arm extension element 4. The same is true of the adjusting screw 16 and clamping member 11 on the tubular support member 14 of the luminaire 3.

The body 5 of the arm extension element 4 is made with an opening in its bottom which can be closed by the plate 18 which carries a terminal block 48 having a plurality of terminal elements 19. These terminal elements provide means for connecting the incoming wires 20 of the power circuit to the wires 21 leading to the lamp of the luminaire through the control device as shown in the wiring diagram Fig. 11 in which 40 indicates the switch for opening and closing the circuit 21 which supplies current to the light source 41 and 42 is the light sensitive control element. So long as the daylight illumination in the vicinity of the luminaire is above a predetermined point, the control element will maintain the switch in open position and no current will flow to the light source 41. However, when the daylight illumination falls below a predetermined point, the light sensitive control element operates to close the switch 41 and thereby close the circuit 21 which supplies current to the light source. It will be noted that one of the wires of circuit 21 is connected to the terminal 19a which is connected to the switch 40 by wire connection 43, said switch being also connected by wire 44 to the terminal 19b to which the other wire of circuit 21 is connected.

Inasmuch as the light sensitive control device itself is an article of commerce which is now in common use, it is not deemed necessary to illustrate it in detail. Elements of the control device, which include a light sensitive tube, are mounted on a plate 22 carried by a yoke 23. The side portions 24 of the yoke are connected to a bottom portion 25 which carries a plug element 62 to which the elements of the control device 30 are electrically connected. The plug element 62 is provided with contact arms 63 adapted to be removably plugged into socket openings in a receptacle element 26. Said receptacle element 26 is mounted in a cup-shaped support 33, the cylindrical wall of which has two oppositely disposed slots 34 through which the end portions of the bottom 25 of the yoke extend. The bottom 47 of the cup-shaped support 33 has an opening 35 through which the receptacle element 26 extends and said bottom 47 rests on a stationary supporting plate 27 which is located within the chamber 6 of the body portion 5 and is secured to and supported by an inwardly directed flange 31 with which said body portion is provided. Said plate 27 also has an opening 46 through which the receptacle element 26 extends. The yoke 23 and the receptacle element 26 are detachably and adjustably secured to the plate 27 by means of a split-bowed locking ring 55, the inner edge of which is received in a groove 36 formed in the receptacle member 26 and located immediately beneath the plate 27. The split ring 25 is preferably of the well known bowed circular spring type; that is, it is bent or bowed in its plane as shown in Fig. 3a. It is also provided in each of its ends with an opening or socket 37 to receive a tool by which it can be spread somewhat.

In assembling the control device with supporting element 4, said control device is placed in position with the bottom 47 of the cup-shaped support 33 resting on the plate 27 and with the receptacle element 26 extending through the opening in the plate 27 as shown in Fig. 6. When the parts are in this position the groove 36 in the receptacle member will be just below the bottom of the plate 27. The bowed split ring 55 is then sprung flat and

opened or spread sufficiently so that it can be placed in the groove 36. The radial resiliency of the locking ring will cause it to hug the receptacle member, and the bowed shape shown in Fig. 3a will apply an upward pressure on the plate 27 and a downward pressure on the bottom 47 of the cup-shaped support 33 which holds them in frictional contact, while permitting the control device and the cup-shaped element 33 to be turned about a vertical axis relative to the plate 27. The frictional contact between the plate 27 and bottom 47 of the member 33 is sufficient to hold the control device in any adjusted position.

Stop means are provided to limit the rotation of the cup member relative to the supporting plate, and as herein illustrated, the supporting plate has a portion 38 struck up therefrom and the wall of the cup member 33 has another portion 39 struck out therefrom, said portions 38 and 39 being of such length as to prevent complete rotation of the cup element 33. The said stop elements 38, 39, however, will permit a rotation of the cup element through nearly 360°.

When the control device has been installed in the arm extension element 4 as above described and said element has been mounted on the luminaire-supporting arm 2, and the luminaire 3 has been mounted on the arm 13 of the arm extension element, then the control device may be oriented by turning the yoke 23 and the cup element 33 about a vertical axis until the light sensitive element of the control device has been brought into a position in which it functions most efficiently, as shown by dotted lines, Fig. 7. The control device is so mounted in the arm extension or supporting element 4 that the plate 22 and the parts of the control device mounted thereon are located above the top edge 59 of the body 5 so that the light sensitive element is freely exposed to the daylight illumination. The control device which is exposed above the body 5 is enclosed in a transparent cover 40 which is mounted on the top of the body 5 and may be held in position by clamping devices 41 of the type which can be released from their clamping position by the operation of a finger control 42.

While I have above described the arm extension element as it might be used in supporting a light sensitive photoelectric control device, yet it also may be used to support and house other luminaire auxiliaries, such as a mercury lamp ballast for a mercury lamp luminaire, or a capacitor for power factor correction, or other control means, either singly or in any combination. The scope of my invention is intended to include the arm extension with any one or all of said auxiliaries, with or without the photoelectric control element.

An important feature of the present invention is the fact that the light sensitive control device is mounted on an arm extension element 4 which is separate from both the luminaire-supporting arm 2 and the luminaire itself, and said arm extension element with the light sensitive control device is mounted on the end of the luminaire-supporting arm and is provided with a projecting arm 13 on which the luminaire is mounted. With this construction, an ordinary luminaire that is not equipped with a light sensitive control device may be readily converted into a luminaire which has such a control device by removing the luminaire from its supporting arm 2, mounting on the end of the luminaire-supporting arm 2 the arm extension element carrying the light sensitive control device, and then mounting the luminaire which was removed from the end of the luminaire-supporting arm on the projecting arm 13 of the arm extension element.

I claim:

1. An outdoor lighting unit comprising a laterally extending luminaire-supporting arm, a luminaire having a light source and also a laterally extending tubular support member, and an arm extension element separate from both the luminaire and the luminaire supporting arm and having means for detachably mounting it on the end of

5

the luminaire-supporting arm and also having a lateral projection which simulates the end of the luminaire-supporting arm and on which the luminaire is detachably mounted, said arm extension element having a body portion provided with an open-topped chamber, a supporting plate stationarily mounted within said chamber and having an opening, a light sensitive control device provided with a light sensitive element and having a body portion extending through said opening, which portion is provided with an external circumferential groove situated below said stationary plate and a split-bowed locking ring occupying said groove and locking the light sensitive control device to said supporting plate while permitting said control device to be oriented by turning it about the vertical axis of said opening.

2. In an outdoor lighting unit of the type having a light source, a circuit therefor, and a light sensitive control device which automatically closes said circuit when the daylight illumination is below a predetermined point and automatically opens said circuit when the daylight illumination is above a predetermined point, the combination with a luminaire element having a light source and a circuit therefor, of a laterally extending luminaire-supporting arm, an arm extension element which is separate structurally from both said supporting arm and the luminaire element and which has means for detachably mounting it on the end of said supporting arm, said arm extension element also having means for attaching the luminaire thereto, a light sensitive control device for said circuit, means for mounting said control device on said arm extension element, said arm extension element having a body portion provided with an open-topped chamber and the means for mounting said light sensitive control device, which includes the light sensitive element, being located within said chamber in such a position that the light sensitive element projects above said chamber, said means for mounting the light sensitive control device including a stationary plate situated within said chamber and provided with an opening, said light sensitive control device having a support element resting on said stationary plate and provided with an opening which registers with the opening in said plate, and also having a portion which projects through both openings and which has an external peripheral groove situated below the supporting plate, and a split-bowed locking ring occupying said groove and locking the light sensitive control device to the supporting plate while permitting said control device to be oriented by turning it about its vertical axis.

3. An outdoor light having a laterally extending luminaire-supporting arm, an arm extension element separate from the luminaire-supporting arm and provided with a

6

horizontal socket extension having a socket of a size to receive the end of said supporting arm, said socket extension having at the open end of the socket an interior bead defining an opening having substantially the same diameter as that of the end of supporting arm, a clamping member carried by the socket extension and engaging the under side of the portion of the supporting arm occupying said socket, an adjusting screw mounted in the top side of the socket extension at a point which is offset from the clamping member in the lengthwise direction of the socket extension, means for adjusting the clamping member in a direction radially of said socket extension whereby the arm extension element may be leveled up by a simultaneous adjustment of the adjusting screw and the clamping member, said arm extension element having a lateral projection which simulates the end portion of the luminaire-supporting arm, and a luminaire mounted on said lateral projection.

4. In an outdoor lighting unit of the type having a light source, a circuit therefor, and a light sensitive control device for automatically closing said circuit when the daylight illumination is below a predetermined point and automatically opening said circuit when the daylight illumination is above a predetermined point, the combination with a luminaire element having a light source and a circuit therefor, of a laterally extending luminaire-supporting arm, an arm extension element which is separate structurally from both said luminaire-supporting arm and the luminaire element and which has means for detachably mounting it on and supporting it by the end of said luminaire-supporting arm, said arm extension element also having luminaire supporting means on which the luminaire is detachably mounted and by which it is supported and further having a body portion provided with an open-topped chamber, a light sensitive control device for said circuit, which control device includes a light sensitive element, a support plate situated within said open-topped chamber, means mounting said light sensitive control device on said supporting plate for turning movement about a vertical axis and in such a position that the light sensitive element projects above said open-topped chamber.

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