July 7, 1964 V. OHARENKO 3,140,054

SAFETY INSPECTION LIGHT

Filed April 25, 1963

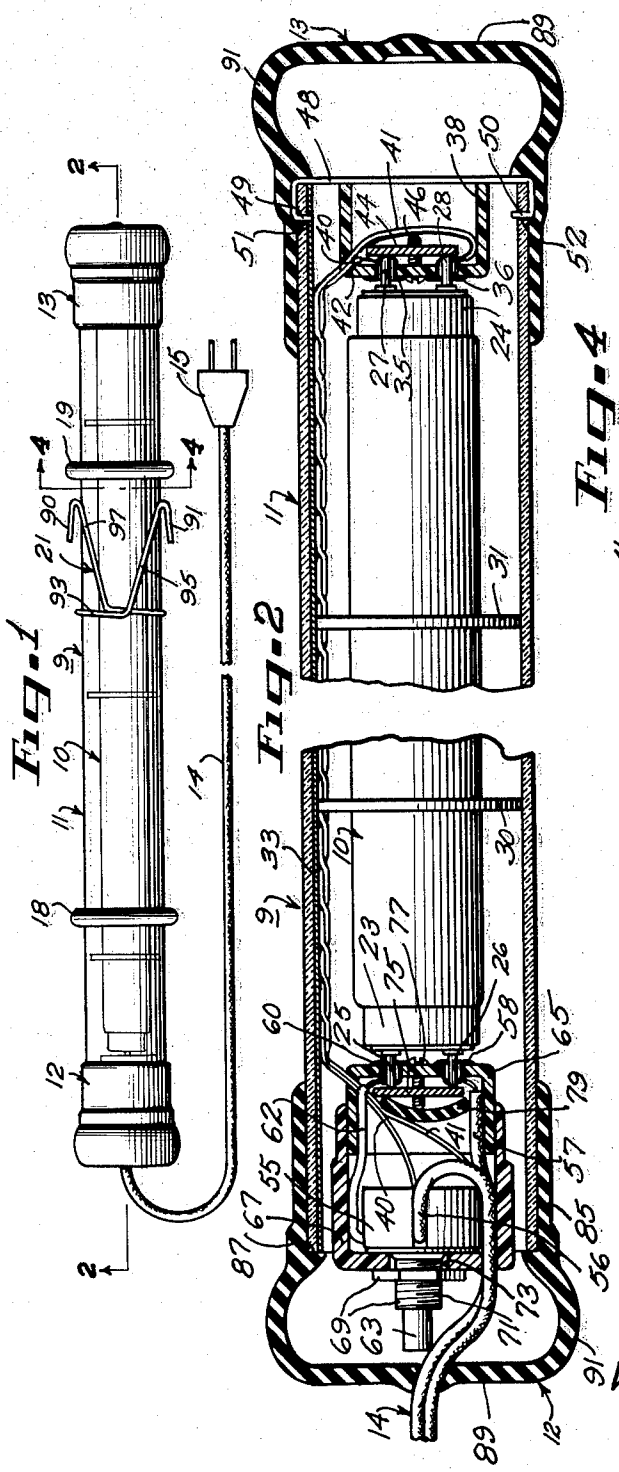


Fig-1

Fig-2

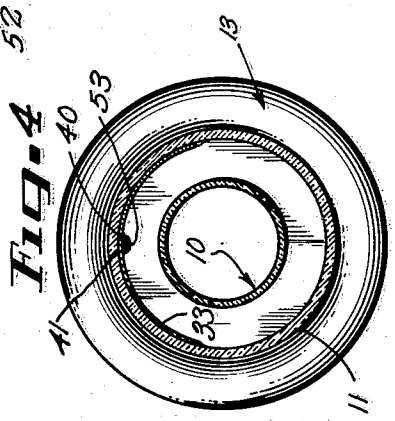


Fig-4

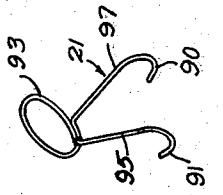


Fig-5

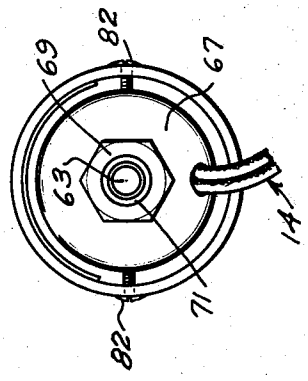


Fig-3

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United States Patent Office 3,140,054 Patented July 7, 1964

3,140,054

SAFETY INSPECTION LIGHT

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Filed Apr. 25, 1963, Ser. No. 275,672
7 Claims. (Cl. 240—2.18)

The present invention generally relates to safety inspection lights, and it more particularly relates to portable inspection lights which employ a tubular fluorescent lighting element as the primary light source.

Inspection or work lights of the type with which the present invention is concerned must be sufficiently sturdy in construction to withstand the many and substantial physical shocks which they are likely to sustain during use. For example, lights of this type are commonly used in garages where automotive maintenance is done and are thus frequently dropped on hard concrete surfaces or accidentally struck with hard and relatively heavy objects. Inasmuch as rough handling is the norm, rather than the exception, such lights must be designed to withstand dropping and jarring from substantially any angle.

Therefore, it is the principal object of the present invention to provide a new and improved safety inspection light.

Another object of the present invention is to provide a new and improved infrangible safety inspection light employing a fluorescent lighting element.

A further object of the present invention is to provide a new and improved safety inspection lamp having novel end caps for preventing damage to the light.

Still another object of the present invention is to provide a new and improved hanger bracket for use with a safety inspection light.

Briefly, the above and further objects are realized in accordance with the present invention by providing a safety inspection light including an infrangible tubular housing in which a tubular fluorescent lamp is mounted, a pair of substantially identical resilient end caps are stretched over the ends of the housing to absorb axial shocks imparted to the light, and a simple and yet novel hook removably and adjustably secured to the housing intermediate the end caps makes the light extremely versatile.

Further objects and advantages and a better understanding of the present invention may be had by reference to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of a safety inspection light embodying the present invention with portions of the power cord and the ballast transformer removed;

FIG. 2 is a greatly enlarged, fragmentary, longitudinal sectional view of the device of FIG. 1;

FIG. 3 is a view looking at the left-hand end of the device of FIG. 2 with the end cap removed;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 2 assuming the entire device to be shown therein; and

FIG. 5 is a side elevational view of the hook type hanger as shown in FIG. 1;

Referring now to the drawings and more particularly to FIG. 1 thereof, a safety inspection light **9** comprises a tubular fluorescent lighting element or lamp **10** of the straight cylindrical type which is mounted within a transparent tubular housing **11** having a pair of resilient end caps **12** and **13** mounted over the respective ends thereof. A conventional electric plug **15** is connected through a multiple lead power line **14** to the left-hand end of the safety light. It will be understood by those skilled in the art that a ballast transformer is required, but for the sake of clarity and brevity it is not shown in the drawings. A schematic electric circuit diagram suitable for use with this lamp is, however, illustrated in my co-pending application, Serial No. 168,356, filed January 24, 1962.

A pair of rings **18** and **19**, which are preferably resilient, are tightly fitted over the housing **11** at spaced-apart intervals. These rings have an external diameter about the same as that of the end caps **12** and **13** thereby to protect the housing **11** by better distributing applied forces thereto.

In order to provide means for hanging the safety light of FIG. 1 there is provided a hanger member **21** which is secured to the tube **11** for adjustable movement therealong to permit hanging of the light in many different ways. The hanger **21** is more fully described hereinafter.

Referring more particularly to FIG. 2, the fluorescent tube **10** includes an insulating base member **23** mounted at one end thereof. A pair of terminal prongs **25** and **26** are supported by and extend from the base **23**. A similar base terminal **24** provided at the other end of the tube **10** mounts a pair of terminal prongs **27** and **28**.

The lamp **10** is physically supported within the tubular housing **11** by means of a plurality of spaced-apart resilient annular members or washers **30** and **31** which fit tightly on the fluorescent tube **10** and snugly in the housing **11**. In addition to supporting the lamp **10** within the housing, these annular spacers **30** and **31** also serve to mount a semi-cylindrical shade and reflector **33** by urging it against an arcuate portion of the housing **11**.

At the right-hand end of the lamp **10**, as shown in FIG. 2, the terminal prongs **27** and **28** are respectively received in conductive receptacles **35** and **36** which are secured in a cup-shaped insulating member **38**. A pair of conductive leads **40** and **41** extend through an aperture **42** near the base of the cup-shaped insulating member **38** and are respectively soldered to the prong receptacles **35** and **36**. An insulating disk **44** is secured over the ends of the prongs **27** and **28** by means of a screw **46** which extends through the base of the cup **38** and is threadedly received in disk **44**. Axial movement of the lamp **10** in a direction toward the right in FIG. 2 is limited by a C-shaped wire clamping member **48** having reversely bent end portions **49** and **50** which extend along the end portions of the housing **11** and are received respectively in diametrically opposed apertures **51** and **52**. The wire of which the member **48** is formed is sufficiently elastic to permit the member **48** to be snapped into and out of place on the housing **11**.

The leads **40** and **41** extend through suitable notches **53** in the spacers **30** and **31** to the left-hand end portion of the housing **11** wherein they connect to a double-pole, double-throw switch **55**. One of the conductive leads **56** in the A.C. power line **14** is also connected to the switch **55** and the other conductive lead **57** is connected to a resilient terminal receptacle **58** in which the fluorescent lamp prong **26** is received. A similar receptacle **60** which receives the lamp prong **25** is connected by means of a conductor **62** to the switch **55**. The switch includes a depressable actuating button **63** which, upon successive operations, makes and breaks connections between the power line lead **56** and the lead **40**, and between the lead **41** and the lead **62**. The switch **55** may be of any conventional type and is not, therefore, described in detail herein.

The resilient terminal receptacles **58** and **60** are suitably mounted as by press fitting in apertures in an insulating cup **65** over the open end of which a resilient insulating cap **67** is stretched. The switch **55** is mounted within the cap **67** and, as best shown in FIG. 2, is secured thereto by means of a nut **69** threaded on a bushing **71** which forms part of the switch **55** and extends through an axial aperture **73** in the cap **67**. An insulating disk

75 is secured to the insulating cup 65 by means of a screw 77 in like manner to the disk 44 at the other end of the safety light. A soft, resilient insulating disk 79 formed of, for example, rubber, is positioned in the cup 65 to minimize spurious movement of the leads therein which might weaken and eventually break the soldered connections between the leads 57 and 62 and the terminal receptacles 58 and 60.

In order to secure the switch 55 in the housing 11, a plurality of screws 82 extend through aligned apertures in the housing and the cup 67. The apertures in the cup 67 have an unstressed diameter substantially less than that of the screws 82 so as to sealably grip the screws 82 in the assembled state.

In order to provide a substantial seal of the space within the safety light 9 from the ambient atmosphere, the pair of soft, resilient end caps 12 and 13 are tightly fitted over the ends of the tubular housing 11. Except for the fact that the cap 12 includes an axial aperture 83 through which the power line 14 sealably extends, it is identical to the other end cap 13. Therefore, the end cap 13 need not be described in detail herein. As shown, the end cap 12 is generally cup-shaped having a cylindrically extending skirt portion 85 which is stretched over and, therefore, tightly fitted onto the end of the tubular housing 11. The unstressed internal diameter of the skirt 85 is less than the external diameter of the housing member 11. An inwardly extending annular flange has an annular shoulder 87 which is adapted to abut against the adjacent end of the tube 11, thereby to provide a space of predetermined length between the end of the housing 11 and the end of the cap 12. The cap 12 has a relatively flat end wall 89 which blends into a circular portion 91 which is generally arcuate in cross-section. The portion 91 thus acts to absorb shocks which are axially applied to the safety light 9 and also to seal the ends.

Referring now more particularly to FIGS. 4 and 5, the hook 21 comprises a single piece of spring wire having a pair of reversely bent end portions 90 and 91 and a central circular portion 93 having an unstressed internal diameter less than the external diameter of the tube 11. The central portion 93 is connected to the hooked end 91 by means of a straight section 95 which meets the section 93 at an angle of about 110 degrees. The reversely bent section 90 is connected to the central portion 93 by means of a straight section 97 which also meets the portion 93 at an angle of about 110 degrees. It will be noted, as best shown in FIG. 1, that the portions 95 and 97 are spaced apart a substantial distance at the place where they connect to the circular section 93. Accordingly, in order to adjust the position of the hanger 21 longitudinally along the housing 11, the portions 95 and 97 may be squeezed together, thereby increasing the internal diameter of the center portion 93 so that it exceeds the external diameter of the tube 11. The hanger 21 can now be moved longitudinally along the tube 11 to the desired location, at which point the portions 95 and 97 are released so that the resilient nature of the wire causes it to return to its initial state wherein it tightly grips the housing 11.

In using the lamp 9, the hanger 21 is adjusted to a position commensurate with the way in which the safety light is to be hung and the device on which it will be supported. In some instances it is desirable that the hanger be at one end of the light, in other cases it is best in the middle, and in other cases it is better located at the opposite end. Irrespective of where it is to be placed, the adjustment can be made very readily. Thereafter, with the plug 13 connected to a suitable power line receptacle the push button 63 is actuated by merely depressing it through the end cover 12. If a starter were

to be used, the switch 63 may be quickly released. On the other hand, if a starter is not used, then the switch should be held down momentarily until an arc is drawn. In any event, the fluorescent lamp 10 is thereby lighted and ready for use. To turn the lamp off it is merely necessary to again depress the end cap 12, thereby once more actuating the push button 63 to open the switch 55.

While the present invention has been described in connection with particular embodiments thereof, it will be understood that those skilled in the art may make many changes and modifications without departing from the true spirit and scope of the present invention and it is intended to cover all such changes and modifications as fall within the true spirit and scope of this invention.

I claim:

1. A safety inspection light comprising a translucent tubular housing member having at least one open end, a fluorescent lamp resiliently mounted in said housing, means for supplying electrical power to said lamp, a resilient end cap tightly fitted over said open end of said housing member, said end cap having a generally tubular skirt and an end wall, an annular shoulder internally of said cap abutting the said end of said housing member, said shoulder being disposed a substantial distance from said end wall to provide a space between said end wall and said open end, and an annular enlargement on said cap connecting said skirt and said end wall for providing a resilient shock absorbing portion between said end wall and said housing member.

2. A safety inspection light according to claim 1 wherein said enlargement has an external diameter substantially greater than the external diameter of said housing member.

3. A safety inspection light according to claim 2 wherein said housing member is open at both ends and substantially identical end caps are provided over both said open ends.

4. A safety inspection light according to claim 3 wherein is provided a plurality of resilient rings surrounding said housing member at spaced apart locations.

5. A safety inspection light according to claim 4 further comprising a switch, a resilient cup-shaped switch housing member, said cup-shaped housing member having an end wall and a cylindrical skirt extending therefrom, said switch having a depressable actuating button extending from the end wall of said housing, and a terminal base member having a plurality of receptacles for receiving the terminal prongs of a lamp, said base member being tightly received in said skirt of said switch housing member, and means securing said switch housing member to said tubular housing member whereby resiliently to support said switch in said tubular housing member independently of said end caps.

6. A safety inspection light according to claim 1 further comprising a wire member secured across the end of said tubular housing member opposite to the location of said switch to limit axial movement of said lamp.

7. A safety inspection light according to claim 1 further comprising a hook member having a split circular spring portion surrounding and spring biased against said tubular housing member, and having reversely bent hooked end portions.

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