March 18, 1952 L. STUELAND 2,589,642

LAMP REPLACER FOR PUSH-PULL FIXTURES

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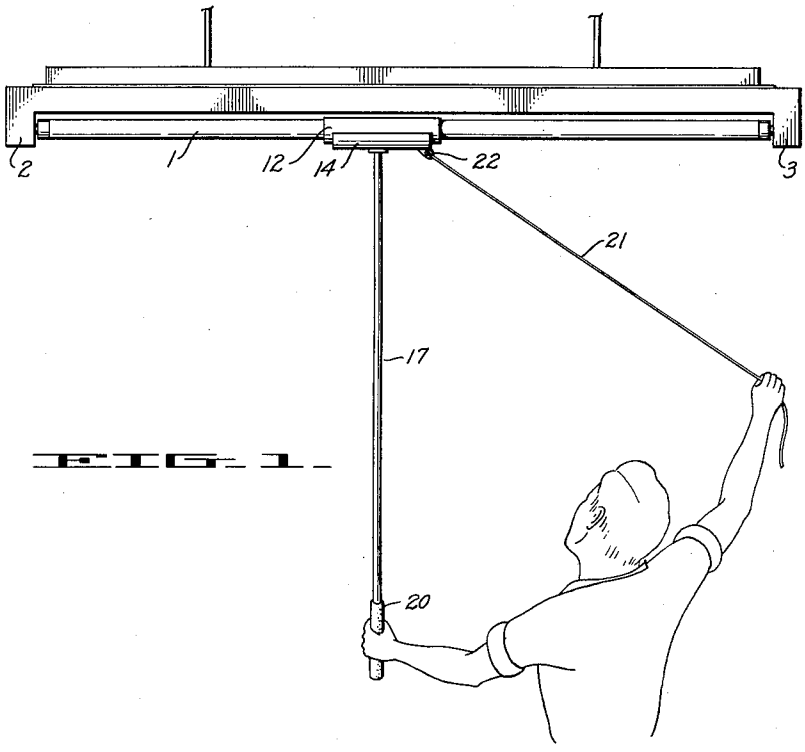


FIG. 1

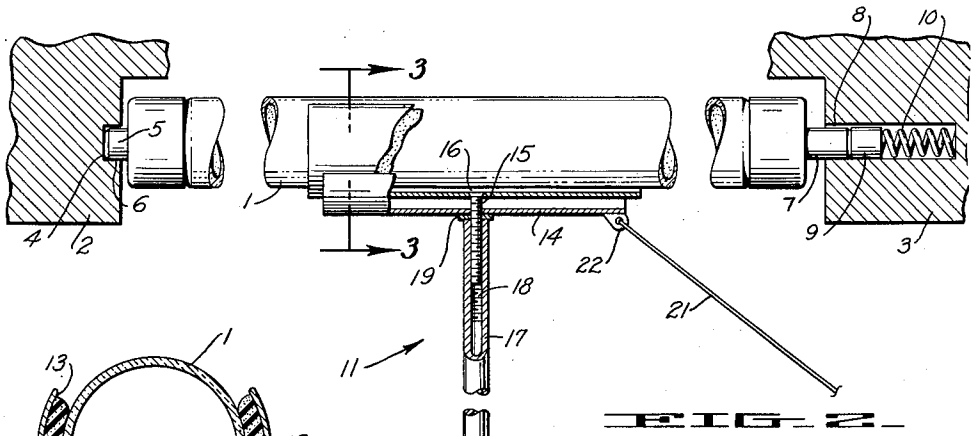


FIG. 2

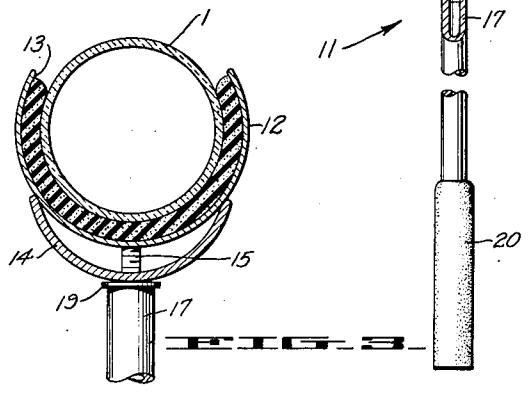


FIG. 3

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LAMP REPLACER FOR PUSH-PULL FIXTURES

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2 Claims. (Cl. 294—20)

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This invention relates to the art of fluorescent lighting and particularly to apparatus for installing and removing fluorescent lamps for their customary fixtures. Although the invention later to be more specifically described is useful in facilitating the installation and removal of fluorescent lamps of all types, it has particular application in such operations involving lamps having axially directed, spring type retaining sockets, e. g., D. C. fluorescent lamps.

As is well known, the installation and removal of fluorescent lamps is usually attended with much inconvenience. Ordinarily, the lamp fixtures are mounted well overhead so that an elevated platform or ladder is needed to place the electrician within reach of the lamp to be changed. Oftentimes the fixture is suspended from the ceiling so that it is necessary for the operator to use both hands in the operation or to have an assistant present to steady the support. The same is true when the fixture is installed at a great height.

The public has recently been made aware of the danger of beryllium poisoning involved in the handling of broken fluorescent lamps and accordingly there is an urgent need for apparatus which will minimize the contact of these lamps with the hands of service personnel and particularly in the major exposure activity thereof, namely, the removal and installation of fluorescent lamps from their sockets.

The present invention provides a safe, efficient and rapid apparatus for the removal and installation of fluorescent lamps, particularly those requiring an axial as well as a lateral displacement to accomplish such operations.

Accordingly, it is an object of the invention to provide an apparatus for removing and installing overhead fluorescent lamps from the floor level and by a single operator.

It is another object of the invention to provide an apparatus of the character described that is effective to grasp the body of the lamp and also to move it lengthwise and also laterally of its sockets from the position of an operator standing on the floor below.

It is a further object of the invention to provide an apparatus of the character described which will positively grip the body of the lamp over a considerable area prior to removal thereby minimizing the risk of breakage of the lamp in such operation.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

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Referring to the drawing:

Figure 1 is a side elevation of a fluorescent light fixture assembly showing my apparatus in place thereon and showing also the position of the operator.

Figure 2 is a side elevation of my improved apparatus in position upon an installed fluorescent lamp and parts broken away to show details of construction.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2 and looking in the direction of the arrows.

Particular reference will now be made to the drawing and to Figure 2 thereof, in which it will be noted that the fluorescent lamp 1 is mounted in a pair of spaced sockets 2 and 3. Socket 2 is provided with an axial bore or recess 4 adapted to receive the lamp contact pin 5 of one end of the lamp 1 in mechanical and electrical relationship and retain the same therein by means of the cylindrical shoulder portion 6 thereof. Socket 3 similarly receives the lamp contact pin 7 in the bored recess 8 thereof, which, it is to be noted, is somewhat longer than the recess 4 and has disposed inwardly of the pin 7, a bolt 9 urged outwardly against said pin by means such as a coil spring 10 contained in the innermost portion of said recess 8. To remove the lamp 1 from the sockets described it is therefore necessary to move the lamp to the right, compressing the spring 10 longitudinally by an amount equal to or greater than the length of the lamp contact pin 5 at the opposite end of said lamp. The apparatus of the invention now to be described provides for a convenient and safe removal and installation technique by an operator from a standing position on the floor below.

Referring now to Figures 2 and 3, it will be observed that there is shown generally at 11 an implement comprising an expansible lamp gripping member 12 preferably in the form of a section of a cylinder extending arcuately for more than 180 degrees in order to go more than half way around the lamp 1 as shown particularly in Figure 3. Member 12 is preferably formed of resilient and thin-walled sheet metal and the inner surface is lined with a layer 13 of a shock absorbing material such as sponge rubber.

To expand the gripping member 12 sufficiently to enable it to be disposed about the lamp 1 and to contract it to gripping relation thereabout, there is provided relatively rigid actuating means in the form of a smaller section 14 of a smaller and slightly shorter cylinder disposed directly beneath the member 12 and in spaced line contact therewith. Midway between the ends of gripping member 12, an elongated screw 15 having a head 16 countersunk in an aperture in member 12 and secured therein against rotation as by welding, extends also through a corresponding, aligned aperture in the actuator 14 and into an elongated, hollow rod 17 which is internally threaded at 18 to mate with the threaded shank of screw 15. A washer 19 disposed between the rod 17 and actuator 14 serves as a bearing to minimize wear between the end of rod 17 and said actuator. A handle portion 20 at the lower end of rod 17 and integral therewith is of enlarged diameter to serve as a comfortable and secure hand grip for an operator as shown in Figure 1.

From the foregoing it will be readily apparent that upon turning the handle 20, the actuator 14 will be moved toward and away from the gripping member 12 to clamp or release the lamp 1, as desired.

For moving the lamp axially in its sockets and to thus compress the spring 10 so that the opposite contact pin 5 may be swung outwardly by the clamp apparatus described and removed from the fixture I have provided a preferably flexible member connected to the clamp apparatus in proximity to the lamp and adapted to receive and transmit to the lamp a substantial axial component of motion due to a pull exerted by the operator as shown in Figure 1. A flexible cord or rod 21 connected to an eyelet 22 for example, provided on the surface of the actuator 14 has been found to be satisfactory for the reason that such cord is conveniently disposed for operation by the right hand as shown.

It will be noted in conclusion that the implement described in the foregoing, not only eliminates entirely the handling of lamps by the operator but also is designed to grip the lamp in the most stable location possible, viz., at the middle thereof and also over a substantial area, reducing the chance of dropping to a minimum.

I claim:

1. Apparatus for facilitating the installation and removal of tubular fluorescent lamps from the fixtures thereof comprising a thin-walled substantially cylindrical resilient clamp member defining a recess and having axially extending spaced upper edge portions adjacent and providing an opening to the recess, said recess having a normal diameter substantially equal to the diameter of said lamps, a threaded connector member secured to said clamp member intermediate the ends of and adjacent the lower portion of the clamp member, an elongated handle threadedly engaged with said connector member, an arcuate actuator of a diameter less than said clamp member having an aperture therein for receiving said connector member, means on the upper end of said handle forming a bearing seat for the lower surface of said actuator whereby on rotation of said handle relative to said connector element said actuator will be selectively moved toward and away from said clamp means whereby said edge portions of the clamp will be respectively moved toward and away from the other.

2. Apparatus for facilitating the installation and removal of tubular fluorescent lamps from the fixtures thereof comprising a thin-walled substantially cylindrical resilient clamp member defining a recess and having axially extending edge portions adjacent and providing an opening to the recess, said recess having a normal diameter substantially equal to the diameter of said lamps, a threaded connector member secured to said clamp member intermediate the ends of and adjacent the lower portion of the clamp member, an elongated handle threadedly engaged with said connector member, an arcuate actuator of a diameter less than said clamp member having an aperture therein for receiving said connector member, means on the upper end of said handle forming a bearing seat for the lower surface of said actuator whereby on rotation of said handle relative to said connector element said actuator will be selectively moved toward and away from said clamp means whereby said edge portions of the clamp will be respectively moved towards and away from the other, and elongated flexible means connected to said clamp means adjacent one end of the latter for transmitting axial movement to said lamp.

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