

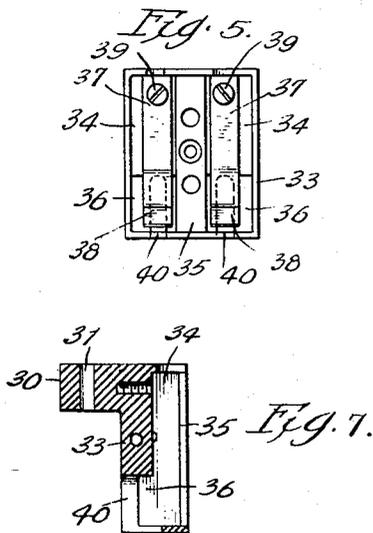
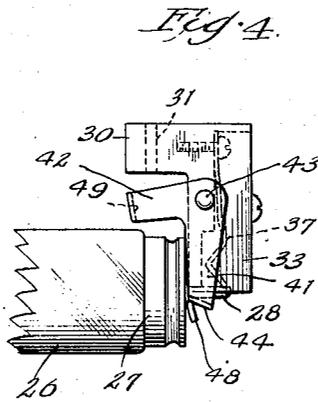
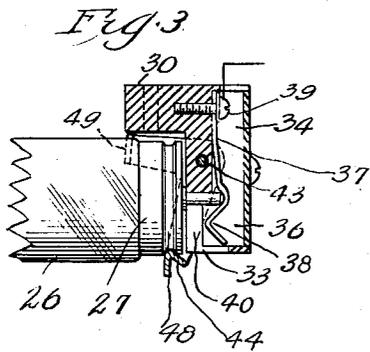
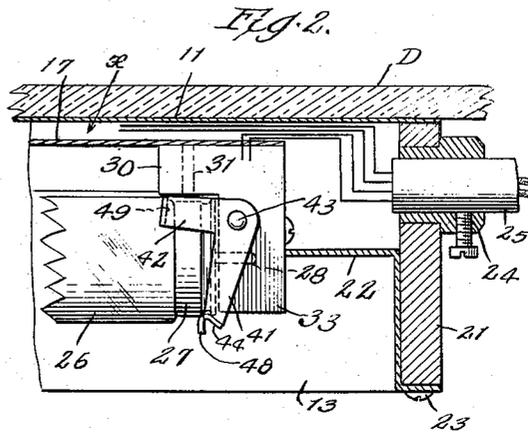
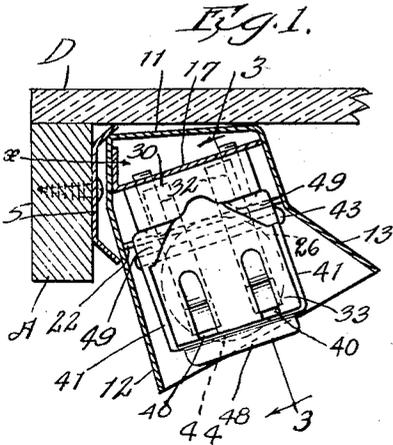
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FLUORESCENT LAMP HOLDER

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FLUORESCENT LAMP HOLDER

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7 Claims. (Cl. 173-328)

This invention relates to devices for mounting electric lamps, especially lamps of the fluorescent type that are of elongated tubular construction and are provided at their ends with longitudinal disposed studs for connection with a suitable electric current.

Lamps of the fluorescent type are usually quite long, sometimes several feet, and extreme care must be exercised in removing or replacing the lamp from the socket. One difficulty which has arisen is the liability of the lamp accidentally falling out of one or both holders when such holders are installed in an inverted position, such as when the lamp is used to provide downwardly directed illumination from within an elongated restricted housing.

The lamp holder disclosed herein is designed for providing ready accessibility to the lamp. This is attained by means, associated with the lamp holder, that permit the lamp to be easily inserted in or removed from the holder or mount. In addition, provision is made to prevent accidental displacement of the lamp, thereby adding a safety factor to the structure.

It is an object of this invention to provide a lamp holder that is novel in the construction and arrangement of its parts. Other objects are to provide a device of this character that is effective and dependable in operation, is easy to install, which is made of simple and sturdy parts, and which is economical to manufacture so that it may be sold for a reasonable retail price to the user. The above-mentioned and other advantages will be apparent to persons skilled in the art after the construction and operation of the present device is understood from the within detailed description taken in connection with the accompanying drawing that forms a part hereof.

In the drawing:

Figure 1 is a view near the end of a housing showing a lamp holder in face elevation therein, the lamp being omitted.

Figure 2 is a side elevation of the lamp holder with the lamp in place.

Figure 3 is a vertical section on line 3-3 of Figure 1 showing normal operative position of the lamp.

Figure 4 is a side elevation similar to Figure 2 showing the lamp dislodged from normal position and maintained in the holder by a safety device.

Figure 5 is a rear view of the lamp holder with the cover plate removed.

Figure 6 is a side view illustrating the manner of ejecting or inserting the lamp.

Figure 7 is a vertical section through the holder body with the parts removed.

It will be understood the drawing is generally schematic and is for the purpose of disclosing a typical or preferred embodiment of this invention, and in the drawing similar reference characters are used to identify the same parts in the different views.

Figures 1 and 2 show a lamp and holder in a show-case illuminator mounted in the top of the case on the rail A below the glass plate D. The housing is supported on a strip 5 secured to rail A and comprises a top wall 11 and longitudinal sides 12 and 13. A false top 17 spaced below the top provides a wire-way x for conductors. Walls 21 close the housing ends and screws 23 secure rectangular plates 22 to the ends to provide small wiring boxes. A bushing 24 in an end wall 21 has a pipe 25 secured in it to lead the wires into the housing to the lamp mounts. Briefly stated, the lamp comprises a tube 26 of glass of several inches in length that is sealed at its ends with metal caps 27 and is charged with a gaseous element that becomes fluorescent when subjected to the proper electric current. Longitudinally disposed terminal pins or studs 28 project from the ends of the lamp for connection, through the medium of the sockets or holder elements, with the electric circuit. In the present structure a novel lamp holder or socket is installed at the ends of the housing whereby the lamp may be quickly mounted or dismounted, and these holders are provided with means for insuring the retention of the terminal pins against accidental dislodgement from a holder as well as means for ejecting these pins from their normally operative position. This novel holder comprises a body of substantially L-shape that is preferably cast or molded resinous or phenolic condensation product such as that commercially known as "Bakelite." The lateral member 30 of the body has transverse bores 31 and screws 32 pass there-through and securely anchor this member to the under side of the false top 17 so that the other member 33 of the body depends into the housing as shown in Figure 1. The side of the member 33 opposite the lateral member is provided with longitudinal parallel channels 34 that are divided by a solid wall 35, and which have deepened portions 36 at their lower ends. The upper ends of spring contact tongues 37 are anchored in the shallow top portions of the channels and the lower free ends of these tongues, which have a V-shaped formation 38 project into the lower deeper portions 36 of said channels. Threaded binding posts 39 screw

into the body at the upper ends of the tongues for connecting the electric conductor wires to the tongues, and said screw posts may also provide the means for anchoring the tongues in place. In order to provide for the easy entrance of the terminal pins or studs 28 of the lamp to contact the tongues there are parallel slots 40 in the body member 33 that extend upwardly from the lower end thereof and terminate above the apices of the V-bends in the tongues as seen in Figure 3 of the drawing. By means of this arrangement the terminal pins or studs have endwise engagement with the tongues and when said pins initially enter the lower ends of the slots they will engage with oblique free ends of said tongues and push said tongues backward towards the opposite side of the body member 33, and further movement of the pins in the slots will cause them to slide past the apex of each V-bend 38 as they come to rest and seat in the ends of the slots 40.

The V-bends and the tension of the spring tongues would ordinarily be sufficient to maintain the lamp studs against dislodgement from the slots 40 except in the event of sudden jar or an undue vibration, and in order to insure against any accidental displacement of the studs with resultant damage to the lamp, effective means are provided to positively retain the studs in the slots and prevent the lamp dropping out of these holders. This means is in the form of a combined retainer and ejector device that operates automatically when the lamp studs are inserted into the slots 40. This device is a swinging element that is constructed upon the principle of a bell-crank, although it may take other forms and operate with equal efficiency. As shown herein, the device is fabricated from a sheet-metal blank bent into the desired form so that two spaced L-shaped side elements are provided that embody vertical arms 41 with lateral or horizontal arms 42 disposed at approximately right angles to the vertical arms. These L-shaped elements are positioned alongside the edges of the body member 33 of the holder and they are fulcrumed at the juncture of the arms 41 and 42 upon a pivot 43. This pivotal element may be a pin that passes through the block that provides the body of the holder, or the retainer may be pivotally carried by a convenient portion of the housing near the holder. The free ends of the arms 41 that are remote to the pivot are connected by a bridge-piece 44 that extends across the open ends of the pin slots 40 to perform the function of a retainer and prevent the pins 28 moving out of said slots. When however the device is swung to the proper position the bridge-piece will clear the ends of the slots thereby permitting the terminal pins on the lamp to be moved out of the slots. It will be seen this bridge-piece 44 is of sufficient width so that one margin extends across the adjacent edge of the closure cap 27 at the end of the lamp body.

The arms 41 and the bridge-piece 44 together form a U-shaped element that is disposed along the sides and end of the body member 33 of the socket, and if desired these arms may press against the sides of the body to frictionally maintain the structure in different positions into which it may be moved. As shown in Fig. 6 this device may have free swinging movement upon its fulcrum in order that positive means may be utilized to yieldably maintain it in an operative position with the bridge-piece 44 disposed across the ends of the slots 40. For this purpose use is made of a spring wire that has a coil 45 en-

circling the pivot pin 43 and has one end 46 pressed against an edge of the arm 41 of the retainer while the other end 47 of the wire is anchored to the molded body of the socket in any suitable manner. A curved lip or flange 48 extends outwardly from a margin of the bridge-piece 44 to afford means to be grasped in the fingers to manually move the retainer away from the slots to release the lamp studs. When the lamp is being inserted in the holder the ends of the terminal studs may be pressed against the face of this lip 48 to overcome the urge of the spring 45 and thus swing the retainer to a position where the studs may enter the slots and may be moved to their proper positions against the tongues 37 back of the V-bends. When the studs have entered their slots the spring 45 will automatically return the retainer to its normal position.

It will be understood the bridge-piece 44 need not extend across the end of the lamp body in the manner described, but it should afford means that prevent the escape of the studs 28 from the slots 40. Furthermore, the retainer need not be of the U-shaped formation shown, for it is obvious the device will successfully operate if made L-shape by entirely omitting one of the bell-cranks and by leaving off the arm 42 in such a modified structure. As will later appear herein, the bell-crank formation is desirable for providing means to eject the lamp from the socket when the retainer is being operated.

When the retainer is swung out of normal position to clear the slots 40 the lamp may be pulled out of position causing pins 28 to move in the slots past the V-bends 38 and be released. This removal of the lamp is assisted by providing ejector means that are operated by the retainer. The ejector is preferably a part of the short arms 42 of the bell-cranks and embody transversely bent portions of triangular shape at the outer free ends of said arms that provide ejection fingers 49 extending towards each other in the manner shown in Figure 1. Normally, these fingers 49 contact the face of the lateral member 30 of the socket or holder near the outer edge thereof, and in this position said fingers will be disposed back of the end of the lamp so that when the retainer is moved to uncover the slots 40 these fingers will push against the lamp and move it in a direction away from the member 30 until the ends of studs 28 have been cleared from the V-bends 38 on the tongues. This operation readily ejects the lamp from the socket. During the operation of inserting the lamp, the ends of the lamp will engage the ejector fingers 49 while the studs are being guided in their seats and the device will be rocked upon its pivot until the fingers are returned to their position shown in Figure 2 at which time the studs will have been properly placed in the seats 40 and in proper contact with the tongues 37.

From the foregoing it will be seen that the show-case illuminator herein described is capable of effectively utilizing lamps of the elongated types having terminal studs projecting longitudinally from their ends, and the operation of relamping the fixture is greatly facilitated by means of the special accessories that are combined in co-active relation with each other. Also the risk of the lamp accidentally slipping out of the sockets or holders is avoided. Owing to the necessarily restricted cross-sectional dimensions of the housing when used as a show-case illuminator considerable inconvenience may be experienced

in removing the lamp with the fingers, but by using this improved holder, with the ejector co-acting therewith, the lamp is readily expelled from the housing without difficulty. Still another advantage of this structure resides in the fact that the spring contact members in the lamp holders yield in the direction of the length of the lamp thereby equalizing or balancing the lamp between the holders as well as insuring the same degree of contact at both ends of the lamp.

What is claimed is:

1. A holder and ejector device for tubular lamps having end studs, said device embodying a base having a longitudinal slot that opens through its outer end and is adapted to receive a lamp stud; means for mounting said base; a bell-crank fulcrumed on said base; a lateral extension at the free end of one of the arms of said bell-crank, said extension disposed normally across the open end of said stud-receiving slot; an ejector lug disposed laterally at the free end of the other arm of said bell-crank; stop means normally limiting movement of the bell-crank in one direction; and yielding means adapted normally to urge the bell-crank in the aforesaid direction, whereby movement of the bell-crank away from its normal position is adapted to move said lug in a direction to eject the lamp from the holder.

2. A holder and ejector device for tubular lamps having end studs, said device embodying a base having a longitudinal slot that opens through its outer end and is adapted to receive a lamp stud; means for mounting said base; bell-cranks fulcrumed upon opposite sides of said base; a cross-piece connecting the free ends of correspondingly disposed arms of said bell-cranks, said cross-piece disposed normally across the open end of said stud-receiving slot whereby to maintain the lamp against dislodgement; ejector lugs projecting laterally towards each other at the free ends of the other arms of said bell-cranks; stop means normally limiting movement of the bell-cranks in one direction; and yieldable means adapted to normally urge the bell-cranks in the aforesaid direction, whereby movement of the bell-cranks away from their normal positions is adapted to move said lugs in an opposite direction to eject the lamp from the holder.

3. A holder and ejector device for tubular lamps having end studs, said device embodying a substantially L-shaped block the lateral portion of which constitutes a mounting member and the body portion of which extends outwardly therefrom; said body portion having a longitudinal slot that opens through the outer end of the body and is adapted to receive a lamp stud; a bell-crank fulcrumed on said block; a lateral extension at the free end of one of the arms of said bell-crank, said extension disposed normally across the open end of said stud-receiving slot; an ejector lug disposed laterally at the free end of the other arm of said bell-crank; and yielding means adapted to normally urge the bell-crank in a direction to engage said lug with the mounting member of said block, whereby movement of the bell-crank away from its normal position is adapted to move said lug in a direction to eject the lamp from the holder.

4. A holder and ejector device for tubular lamps having end studs, said device embodying a substantially L-shaped block the lateral portion of which constitutes a mounting member and the body portion of which extends outwardly therefrom, said body portion having a longitudinal slot

that opens through the outer end of the body and is adapted to receive a lamp stud; a bell-crank fulcrumed on said block, the respective arms of said bell-crank extending in the same general directions as the mounting member and the body of said block; a lateral extension at the free end of the bell-crank arm that is adjacent the body of the block, said extension disposed normally across the open end of said slot whereby to retain the lamp against dislodgement; an ejector lug disposed laterally at the free end of the bell-crank arm which is adjacent the mounting member of said block, whereby movement of said bell-crank in a direction away from its normal position is adapted to eject the lamp from the holder; and yieldable means adapted to normally urge said bell-crank in a direction to engage said lug with the mounting member of said block.

5. A holder and ejector device for tubular lamps having end studs, said device embodying a substantially L-shaped block the lateral portion of which constitutes a mounting member and the body portion of which extends outwardly therefrom, said body portion having a longitudinal slot that opens through the outer end of the body and is adapted to receive a lamp stud; bell-cranks fulcrumed upon opposite sides of said block; a cross-piece connecting the free ends of correspondingly disposed arms of said bell-cranks, said cross-piece disposed normally across the open end of said stud-receiving slot whereby to maintain the lamp against dislodgement; ejector lugs projecting laterally towards each other at the free ends of the other arms of said bell-cranks; and yieldable means adapted to normally urge said bell-cranks in a direction to engage said lugs with the mounting member of said block, whereby movement of said bell-cranks away from their normal positions is adapted to move said lugs in directions to eject the lamp from the holder.

6. A holder and ejector device for tubular lamps having end studs, said device embodying a substantially L-shaped block the lateral portion of which constitutes a mounting member and the body portion of which extends outwardly therefrom, said body portion having a longitudinal slot that opens through the outer end of the body and is adapted to receive a lamp stud; bell-cranks fulcrumed on the sides of said block and arranged with their arms extending respectively in the same general directions as the mounting member and the body of said block; a cross-piece extending across the open end of said slot, said cross-piece connecting the free ends of the bell-crank arms which are alongside the body of said block, whereby the lamp is maintained against dislodgement and said bell-cranks are adapted for simultaneous movement; ejector lugs projecting inwardly towards each other at the free ends of the other arms of said bell-cranks, said lugs disposed normally back of the lamp; and yieldable means adapted to normally urge said bell-cranks simultaneously in a direction to engage said lugs with the mounting member of said block, whereby movement of said bell-cranks against the urge of said yieldable means is adapted to move said lugs in directions to eject the lamp from the holder.

7. A holder and ejector device for tubular lamps having an end stud, said device embodying a base having a longitudinal slot that opens through an end of said base and adapted to receive the lamp stud; means for mounting said base; a lever pivotally mounted intermediate its ends upon said base, the axis of the pivot being transverse

to the longitudinal axis of the lamp; an extension
on said lever projecting across the open end of
said slot to form a closure for said slot; a portion
of said lever being positioned to engage behind
5 and bodily move the proximate end of the lamp
to remove the said stud out of said slot through

said open end thereof when the said extension is
moved out of proximity to the said open end
of the slot; and means tending normally to
position the said extension across the said slot.

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