Sept. 9, 1947. A. G. MUELLER 2,427,225

LAMP SOCKET FOR DISCHARGE LAMPS

Filed July 28, 1945

Fig. 1.

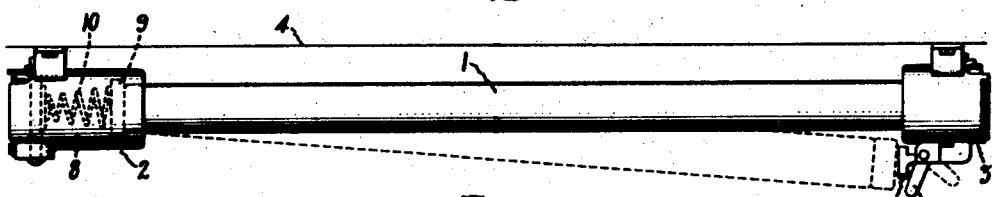


Fig. 2.

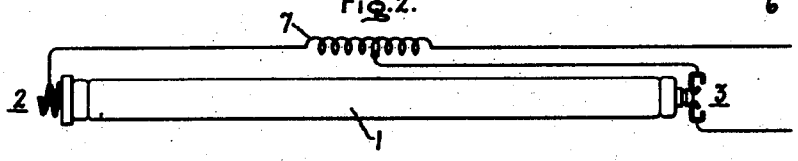


Fig. 3.

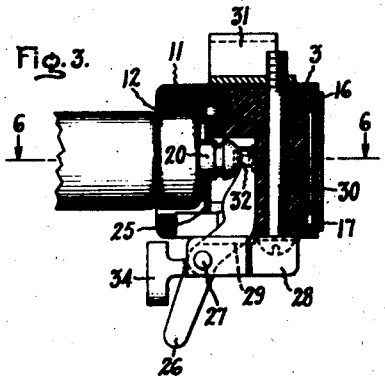


Fig. 4.

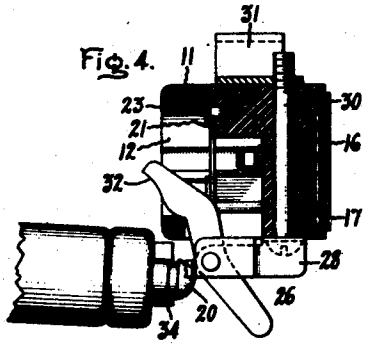


Fig. 5.

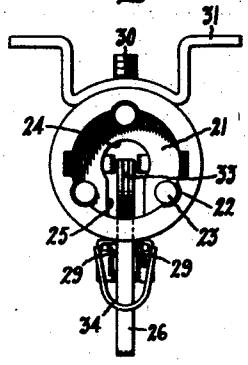
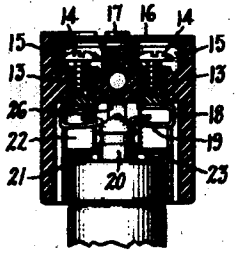


Fig. 6.



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LAMP SOCKET FOR DISCHARGE LAMPS

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Application July 28, 1945, Serial No. 607,625

4 Claims. (Cl. 173—328)

1

My invention relates to lamp sockets for discharge lamps and more particularly to a lamp socket provided with means for ejecting the lamp from the socket and for holding it in position outside the socket.

My invention relates to lamp sockets of the type described in the copending application of Frank C. De Reamer and John M. Pistey, Serial No. 607,622, filed July 28, 1945, entitled Lamp socket for discharge lamps and which is assigned to the same assignee as the instant application.

In sockets of the type described in the aforementioned application of Frank C. De Reamer and John M. Pistey, an ejector is provided to assist in removing the lamp from the socket. During operation of the ejector, there is some danger of the lamp falling away from the socket and breaking unless the other hand of the operator is positioned to catch the lamp as it is ejected. In narrow confined installations, this is sometimes a difficult thing to do, particularly as the lamps are five or six feet long and require careful handling. In order to overcome this difficulty, I construct the socket with a well or receptacle to catch and hold the lamp after it has been ejected from the socket.

Therefore, it is an object of my invention to provide a new and improved socket for elongated discharge lamps so designed as to provide a means for holding the lamp adjacent the socket after it has been ejected therefrom.

In the accompanying drawing, Fig. 1 illustrates a tubular discharge lamp supported at each end in lamp sockets, one of which is constructed in accordance with my invention; Fig. 2 is a schematic view showing the sockets connected into a lamp operating circuit; Fig. 3 is a sectional view through the socket supporting the right-hand end of the lamp showing the lamp in mounted position; Fig. 4 is a view similar to Fig. 3 but showing the lamp supported in a receptacle after it has been ejected from the socket; Fig. 5 is a view of the interior of the socket, and Fig. 6 is a sectional view through the socket taken substantially along the line 6—6 of Fig. 3.

Referring to the drawing, Fig. 1 shows a tubular discharge lamp 1, such as a fluorescent lamp, mounted at opposite ends in lamp sockets 2 and 3. The sockets are supported beneath a reflecting surface 4 which may form part of a lighting fixture, or the like. In order to facilitate removal of the lamp from the fixture, the socket 3 is provided with an ejector 5 for moving the lamp axially out of the socket. When the lamp is ejected, it rests in a receptacle 6. After the

2

lamp has been removed from one socket, it may be easily grasped in the hand and removed from the other socket 2. An ejector and receptacle of this type are particularly useful in installations in which the fluorescent lamp is located in the corner of a showcase, or the like, where it is inaccessible by hand for easy removal from the fixture.

In Fig. 2, the lamp sockets have been illustrated in schematic form and are shown connected into the operating circuit for the lamp. The lamp socket 2 is provided with a single contact for engaging the contact pin on one end of the lamp 1. The socket 3 is provided with two spaced contacts which are bridged by the contact pin on the other end of the lamp so that the contacts are short circuited when the lamp is inserted in the socket. An autotransformer 7 is connected into the operating circuit to supply a proper voltage for starting and operating the lamp. It acts as a ballast. When the lamp is inserted in the socket 3, a circuit is closed from the A.-C. supply to the primary of the ballast transformer. When the circuit is closed, a high voltage appears across the secondary of the transformer and this voltage is applied across the lamp cathodes to start the lamp and maintain it in operation. In many instances, the voltage across the secondary may reach 600 volts or more. It will be apparent that when the lamp is removed from the socket, the circuit to the primary of the transformer is opened in the socket 3. Hence, when the lamp is removed from the sockets, there is no danger of the high voltage of the secondary being applied to socket 2. This eliminates any hazard which might occur if the contacts of socket 2 were inadvertently touched.

The left-hand socket 2 is the same as that described in the aforementioned application of Frank C. De Reamer and John M. Pistey and itself forms no part of the present invention. It is provided with an elongated housing 8 which is provided with an open end for receiving the lamp ferrule. The lamp ferrule and contact pin engage a contact plate 9 which is biased into engagement with the contact by a spring 10. The spring 10 also forces the lamp firmly into engagement with the socket 3 at its opposite end. As shown in Fig. 1, the housing 8 is elongated to provide a substantial amount of movement of the contact plate 9 so that the lamp may be inserted into the socket a considerable distance before the other end of the lamp is clear of the edge of the other socket 3 for insertion therein. This means that the lamp can be inserted in the

sockets in only one way. It must first be inserted in the socket 2 and then in the socket 3. In this way, the contact in the socket 2 will not be energized until the lamp is correctly seated in the other socket 3 where it short-circuits the contacts to energize the primary of the ballast transformer. If an attempt is made to first insert the lamp in the socket 3, it will be found that the lamp cannot be inserted in the socket 2 because there will be insufficient clearance between the edge of socket 2 and the end of the lamp.

Turning now to the construction of the right-hand socket and referring to Fig. 3, the socket 3 comprises a base 11 of insulating material, such as a suitable molded plastic, and the base is provided with a recess 12 for receiving the end of the lamp. As shown in Fig. 6, the bottom wall of the recess carries two spaced contact means in the form of hollow rivets 13 each being provided with a terminal screw 14 seated in a recess 15 at the rear of the socket. A cover plate 16 is pivotally mounted on the socket by means of a drive pin 17 and when in seated position overlies the recesses 15 to form an enclosure for the terminal screws 14. Each of the hollow rivets is provided with a contact member 18 fastened thereto in any suitable manner as by spot welding. The contact members are bent in the form of a U to provide flexible contact blades 19 which extend inwardly from the walls of the recess toward each other and which are spaced apart a distance slightly less than the thickness of the lamp contact pin 20. When the lamp is mounted in the socket, the lamp contact pin 20 engages each one of the contact blades 19 and electrically short-circuits the contacts. At the same time the socket contacts make an electrical connection with the lamp contact pin.

In order to insulate the contact members and prevent them from being exposed in the open end of the recess 12, a plate 21 of insulating material is placed in the recess over the spring contact blades in the manner shown by Figs. 5 and 6. The plate rests on abutments 22 extending inwardly from the wall of the recess and is held in position on the abutments by drive pins 23. An opening 24 is formed in the plate 21 and is of a size to receive the lamp contact pin so that it may engage the socket contact blades located in back of the insulating plate. The plate is also provided with a slot 25 extending from the opening 24 to the wall of the recess 12 and which provides a space for movement of the ejector 5 in a manner to be described later.

The ejector 5 comprises a lever 26 which is mounted by a pivot 27 in a bracket 28. The bracket is formed of sheet metal and is folded over to provide two parallel side portions 29 for mounting the lever therebetween. The bracket is fastened to the base 11 by means of a screw 30 which extends through the base and also serves to mount the base on a supporting bracket 31 carried by the reflecting surface 4. One end of the ejector lever extends outside the housing to form a handle. The other end extends within the housing and is provided with a curved surface 32 for engaging the lamp contact pin 20. This surface is provided with a groove 33 which tends to grip the lamp contact pin and prevent it from slipping sideways when the lever is moved to force the lamp contact pin out of the socket.

When the lamp is in seated position in the socket, as shown in Figs. 3 and 6, the inner end of the lever 26 rests against the rear wall of the recess immediately in back of the lamp contact

pin. When it is desired to eject the lamp from the socket, the handle of the lever is moved toward the back of the socket to a position shown by Fig. 4. This causes the opposite end of the lever to move forwardly into the space between the contact blades 19 and through the slot 25 in the protecting plate 24 to forcibly move the lamp and the lamp contact pin out of the socket. The curvature of the inner face 32 of the ejecting lever is such as to move the lamp contact pin outwardly and downwardly to eject the lamp from the socket into a position such as indicated in Figs. 1 and 4. During the ejection of the lamp, the lamp is moved against the action of the spring 10 in the opposite socket 2.

In order to catch the lamp after it has been ejected from the socket to prevent the lamp from falling away from the sockets and becoming broken, I provide a well or receptacle 34 located in a position immediately adjacent to but outside the recess 12 in the housing. In the form of the invention illustrated, the receptacle is designed as an open-ended U-shaped strip of metal having a portion extending parallel with one of the side walls 29 of the bracket 28 and being fastened thereto with the pivot 27. As shown in Fig. 5, the open end of the receptacle is disposed toward the socket and the receptacle is so shaped as to accommodate the contact pin 20 at the end of the lamp. It should be manifest that the size and shape of the receptacle will depend upon the type of contact means located on the end of the lamp and that if the size or length of the lamp contact means is changed, a corresponding change would be made in the receptacle 34.

As already mentioned, the curvature of the inner face 32 of the ejecting lever is such as to move the lamp contact pin outwardly and the curvature is also such as to guide the lamp contact pin toward the open end of the receptacle 34. As the lamp is ejected from the socket, the spring 10 in the socket at the opposite end of the lamp has a tendency to bias or push the lamp into engagement with the receptacle 34.

My socket can be used in locations in which it is almost impossible to grasp the lamp by hand for removal from the socket. The ejector can be used without fear of the lamp dropping out of the sockets and becoming damaged because the receptacle 34 forms a positive means for catching the lamp and holding it in position where it is disengaged from the socket yet where it can be easily reached for removal from the lamp fixture.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A socket for a tubular lamp holder having a first socket adapted to provide spring biased axial pressure against a lamp inserted therein toward a second socket, the latter comprising a housing of insulating material having a recess therein adapted axially to receive one end of the lamp, a lever pivoted to said housing having one arm outside of the housing adapted to be manually operated and a second arm in the interior of said recess adapted to engage the end of the lamp to eject it from the recess in a substantially axial direction against said spring pressure, and a receptacle carried by said housing and positioned to receive the end of the lamp under the action of gravity and said spring pressure after it has been ejected from said recess.

2. A socket for a holder for a tubular lamp having a contact pin at one end thereof, said holder having a first socket adapted to provide

spring biased axial pressure against a lamp inserted therein toward a second socket, the latter comprising a housing of insulating material having a recess therein adapted axially to receive one end of the lamp, a lever pivoted to said housing having one arm outside of the housing adapted to be manually operated and a second arm in the interior of said recess adapted to engage the contact pin at the end of the lamp to eject it from the recess against said spring pressure, and a receptacle carried by said housing shaped and positioned to receive the lamp contact pin after it has been ejected from said recess, the second arm of said lever being provided with guide means to guide the lamp pin into said receptacle under the action of said lever and said spring pressure.

3. In combination a lamp holder for a tubular lamp having a contact pin at one end thereof, said pin having a smaller diameter than the end of the lamp and said holder having a pair of spaced sockets, the first of said sockets being adapted to provide spring biased axial pressure against the lamp inserted therein toward the second of said sockets, the latter comprising a housing of insulating material having a recess therein adapted axially to receive said one end of the lamp, a lever pivoted to said housing having one arm outside of the housing adapted to be manually operated, and a second arm in the interior of said recess adapted to engage the contact pin at the end of the lamp to eject it from the recess in a substantially axial direction against said spring pressure, and a receptacle carried by said housing, said receptacle being shaped and positioned to receive the contact pin of the lamp under the action of gravity and said spring pressure after it has been ejected from said recess.

4. In combination a lamp holder for a tubular lamp having a contact pin at one end thereof, said pin having a smaller diameter than the end of the lamp and said holder having a pair of spaced sockets, the first of said sockets being adapted to provide spring biased axial pressure against the lamp inserted therein toward the second of said sockets, the latter comprising a housing of insulating material having a recess therein adapted axially to receive said one end of the lamp, a lever pivoted to said housing having one arm outside of the housing adapted to be manually operated, and a second arm in the interior of said recess adapted to engage the contact pin at the end of the lamp to eject it from the recess in a substantially axial direction against said spring pressure, and a substantially U-shaped receptacle carried by said housing, said receptacle being large enough to receive the lamp contact pin but being smaller than the end of the lamp and said receptacle being positioned to receive the contact pin of the lamp with the end of the lamp abutting the receptacle after the end of the lamp has been ejected from said recess.

ADOLF G. MUELLER.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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FOREIGN PATENTS

Number	Country	Date
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