Dec. 8, 1942. H. J. McCARTHY 2,304,108

ELECTRIC LAMP SOCKET

Filed July 19, 1940

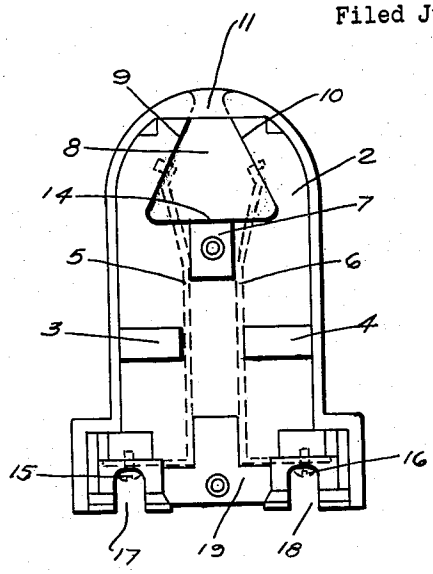


Fig. 1

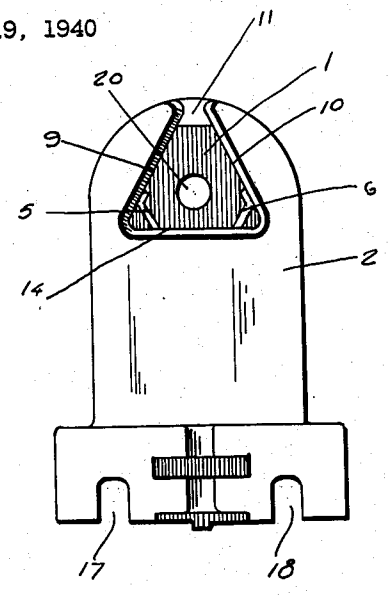


Fig. 2

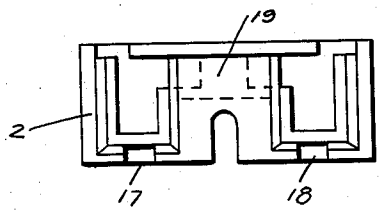


Fig. 3

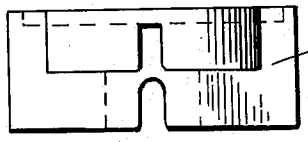


Fig. 4

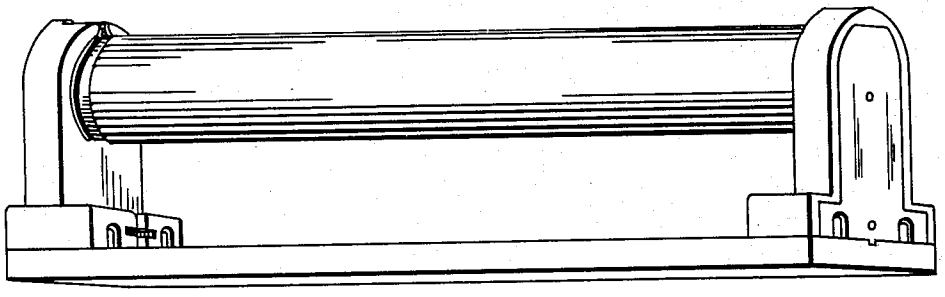


Fig. 5

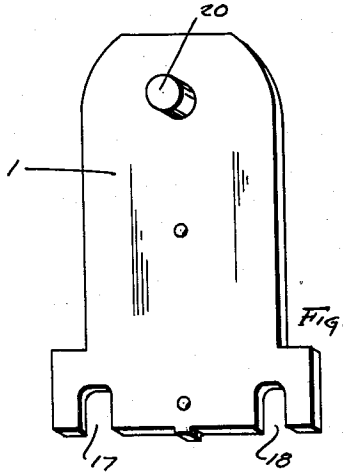


Fig. 6

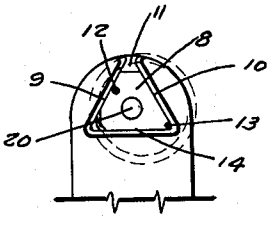


Fig. 7

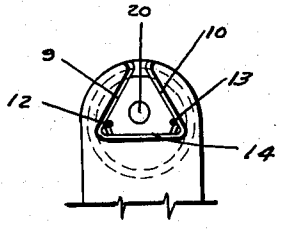


Fig. 8

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2,304,108

ELECTRIC LAMP SOCKET

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Application July 19, 1940, Serial No. 346,357

2 Claims. (Cl. 173—328)

My invention relates to a socket for electric lamps and more particularly to a socket for electric gaseous discharge lamps of the tubular type.

An object of my invention is to provide a socket so constructed as to permit a quick and easy insertion of the lamp therein.

Another object is to provide a socket so constructed as to create a positive locking position when the lamps are inserted therein.

A further object is to provide a socket so designed in its structure that it will obviate any possibility of base pins from being accidentally inserted or withdrawn improperly and thereby placing a strain on the pins, the base, and the socket itself.

Further objects and advantages will be apparent from the accompanying specification and drawing in which:

Figure 1 is a rear elevational view of the base member;

Figure 2 is a front elevational view of the complete socket;

Figure 3 is a bottom view of the base member;

Figure 4 is a top view of the base member;

Figure 5 is a side perspective view of the sockets with a lamp therein;

Figure 6 is a front perspective view of the cover plate;

Figure 7 is a schematic diagram of the lamp socket showing the positions which the base pins assume when moving in or out of the locking position in the socket;

Figure 8 is a schematic diagram of the lamp socket showing the positions which the base pins assume when they are in the locking position in the socket.

Similar reference characters refer to similar parts throughout the several views of the drawing and in the specification which follows.

The socket, according to my invention, comprises two pieces of insulating material, one of which is a cover plate, 1, and the other a base member 2. The insulting material is dye cast in a manner as to provide a base member of a contour substantially as shown in Figure 1.

The studs 3 and 4 in the base member 2 are so located as to serve as a restraining means on the flexing of the spring contact fingers 5 and 6. The stud 7 in the base member 2 is located between the contact fingers 5 and 6 and serves as a means of preventing these contact members from touching each other. It also serves as a means through which the cover plate 1 may be attached to the base member 2.

The upper section of the inner face of the base member is cut out to provide the triangular section 8. This cut-out assumes the form of an isosceles triangle except that the equal sides 9 and 10 do not meet to form the apex angle but flare out to provide the flared slot 11 through which the base pins may pass when they are in alignment with the slot.

When a lamp is to be inserted in the lamp socket, the base pins are brought into alignment with the flared slot 11. By a downward movement of the lamp, the pin 13 as shown in Figure 7 will pass through the flared slot 11 and into the triangular cut-out 8. By rotating the lamp slightly in a clockwise or counter-clockwise manner, the pin first to enter the cut-out 8 will slide along either side 9 or side 10 of the cut-out. Assuming that the lamp is rotated slightly in a counter-clockwise manner, the pin 13 will slide along side 10 until it touches the spring contact finger 6. By applying a slight pressure on the lamp at this point, the contact finger will flex and the pin 13 will assume a position similar to that shown in Figure 7. When this point has been reached the pin 12 has passed through the flared slot 11 and assumed a position along the side 9 of the triangular cut-out 8 similar to that shown in Figure 7.

By rotating the lamp in a counter-clockwise manner the pin 12 will slide down the side 9 until it touches the spring contact finger 5. By causing pressure to be exerted at the pin 12, the contact fingers 5 will flex and the pin 12 will move still further down along the side 9 of the triangular cut-out. When this pressure is exerted at the pin 12, pressure at the pin 13 will be relieved slightly and the pins will tend to center themselves in their locking positions as shown in Figure 8. The locking positions are created by the contour of the spring contact fingers 5 and 6. This contour is substantially as shown in Figure 1. When in this locking position, the base pins 12 and 13 are tangent to the sides 9 and 10, respectively.

A socket of this type provides a very positive locking device. By studying Figure 8 which shows the positions which the pins assume in their locking positions, it may be clearly seen that the only way in which the pins could be removed is by rotation of the lamp. Both pins could not become loose and drop out of their locking positions at the same time because of the angular disposition of the sides 9 and 10 to which they are tangent. One of these pins could not become loose and drop out of its locking position because for this to happen it would be neces-

sary for a pressure to be exerted on the opposite pin in order to flex the opposite contact member back far enough to allow the first pin to move up through the triangular cut-out.

The possibility of too much pressure or improperly applied pressure being applied while rotating a lamp, either during the process of inserting or withdrawing it from its socket, and thereby causing one of the base pins to strike up against a side of the cut-out with such force that it will snap off a piece of the upper portion of the lamp socket, is not present in this type of socket. If one of the base pins were rotated too far either to the right or to the left, the other pin would slide along the base 14 of the triangular cut-out as soon as the first pin struck against the side of the cut-out. The feature in my invention that permits this correction of improper and excessive pressures in the rotation of the lamp is the fact that there is no fulcrum against which one of these pins could rest and thereby allow the excessive or improperly applied pressure to expand its force through the other pin and against the side of the cut-out.

Due to the fact that there is usually a small shoulder on the base pin at the point where the pin extends into the base, the sides of the triangular cut-out 8 are beveled, thereby providing a more rigid and positive seating of the lamp in the socket. The slot 11 is rounded as shown in Figures 1 and 2 in order to provide for an easier insertion of a base pin therethrough especially when the pins on the other end of the lamp have already passed down through the corresponding slot in the other socket.

When a lamp is to be removed from its sockets, there is no danger of twisting or straining the pins because the lamp may be rotated in either a clockwise or counter-clockwise direction. In either case, the pressure exerted in the rotation will cause one of the spring contact fingers to flex and thereby release one of the base pins. This pin will then slide up along the adjacent side of the triangular cut-out 8 and assume the position as shown in Figure 7, for example. When the lamp is rotated sufficiently to bring pin 12 in alignment with slot 11, the rotating motion may be stopped and the lamp withdrawn in an upward manner, the pin 13 sliding along side 10 while the lamp is being withdrawn. If the rotating motion is continued, no harm can be done to the lamp base or to the lamp socket, for no great amount of pressure will be able to be exerted through the pin 12 on the side 10 of the triangular cut-out due to the absence of any fulcrum against which the pin 13 could rest.

The spring contact fingers 5 and 6 of a contour substantially as shown in Figure 1 are seated in the base member in such a manner that they are kept from touching each other by the separating stud 7, and, in their lower extension, are flush with the restraining studs 3 and 4 which serve to increase the tension of the contact members against the base pins, thus assuring a firm and positive locking contact.

The lower extremity of the base member is dye cast in a manner as to provide a contour substantially as shown in Figures 1 and 3. The contact members 5 and 6 may be bent at right angles at their lower extremities so as to form screw plates for the screws 15 and 16. Lead-in wires may be connected to the contact fingers through the cut-outs 17 and 18, thereby establishing an electrical contact.

The cover plate 1 is fastened to the base member 2 by means of screws or the like driven into the studs 7 and 19 provided therefor in the base member 2. The stud 20 in the middle of the upper part of the cover plate projects through the triangular cut-out 8 of the base member 2 when the cover plate is attached in a flush mounting manner to the base member. This stud serves as a safety device in helping eliminate any possibility of shock from contact with the spring fingers extending up through the triangular cut-out.

What I claim is:

1. A contact socket for a lamp having two pin contacts, said socket comprising: a member of insulating material having a flat surface with an opening therein bounded on the outside by an isosceles triangle whose apex meets an edge of said flat surface at a slot in said edge and on the inside by a small circle; and two spring contact fingers at opposite sides of said triangle and above the base of said triangle, the distance between said fingers being less than the shortest distance from a base corner of the triangle to the opposite side.

2. A contact socket for a lamp having two pin contacts, said socket comprising: a member of insulating material having a flat surface with an opening therein bounded on the outside by an isosceles triangle whose apex meets an edge of said flat surface at a slot in said edge; and two spring contact fingers at opposite sides of said triangle and above the base of said triangle, the distance between said fingers being less than the shortest distance from a base corner of the triangle to the opposite side.

HENRY J. McCARTHY.