Dec. 20, 1955 H. LAGIN 2,728,059

ELECTRIC LIGHT SOCKET PROVIDED WITH CONDUCTOR INSULATION PIERCING CONTACTS

Filed Aug. 21, 1951

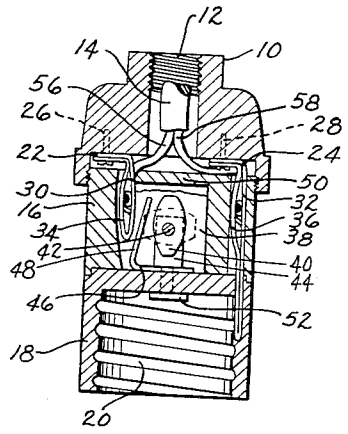


FIG. 1

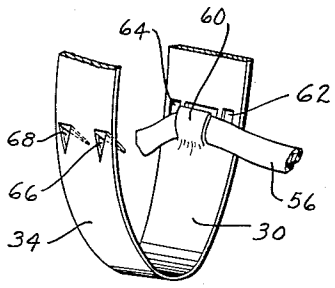


FIG. 2

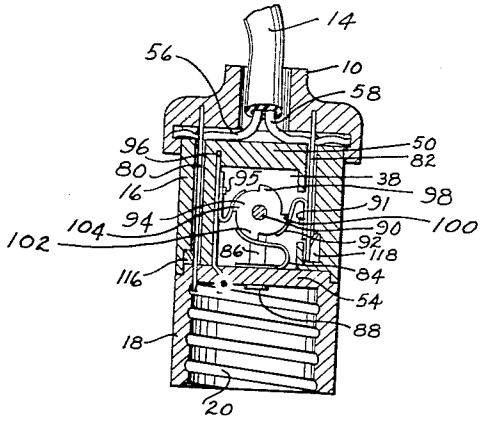


FIG. 3

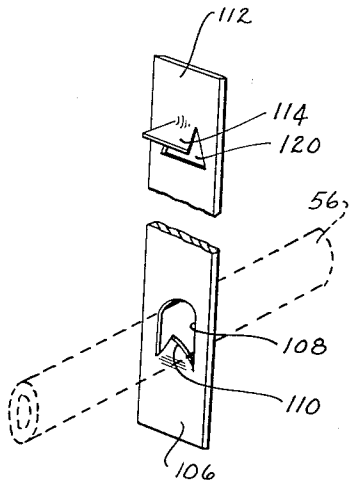


FIG. 4

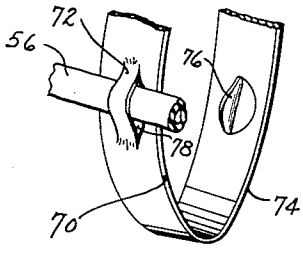


FIG. 5

INVENTOR.
HERBERT LAGIN

BY

Irving F. Goodfriend

ATTORNEY

United States Patent Office

2,728,059

Patented Dec. 20, 1955

2,728,059

ELECTRIC LIGHT SOCKET PROVIDED WITH CONDUCTOR INSULATION PIERCING CONTACTS

Herbert Lagin, New York, N. Y.

Application August 21, 1951, Serial No. 242,865

2 Claims. (Cl. 339—97)

The present invention relates to an electric light socket and more particularly to the type used in the assembly of electric lamps and light fixtures of all types.

The present invention is an improvement to the electric light socket described and claimed in at. No. 2,427,464 granted to me on September 16, 1947 and to that described and claimed in Pat. No. 2,451,680 granted to me on October 19, 1948.

In these two patents, I have illustrated wire retaining prongs formed from two integral elements between which an electric wire is held by pressure exerted against it by the prong elements upon inserting the prongs into corresponding openings in the base of the pocket.

With sockets of this type, it was necessary to strip from the wire the insulation thereon before the wire was inserted between the elements of the prong in order to make a satisfactory electrical contact between it and the prong.

In order to insure a relatively permanent connection between the wires and the prongs, although, because of the construction of the socket described in said patents, loosening of the wires from the prongs was almost impossible, in commercial structures the wires and prongs oftentimes were soldered together.

The present invention contemplates in general the provision of a safety socket of the same general type and having the same general objects as was disclosed in the said patents granted to me except that the requirement for the removal of the wire insulation and the desirability of soldering the wire to the socket prongs is eliminated.

The prongs here concerned with in one form are preferably made from a single member folded over upon itself to form two integral spaced elements between which the wire for the lamp is held as is illustrated in Pat. No. 2,427,464.

These elements of the wire retaining prongs here proposed are constructed and arranged so that the wire is held in position by one of the elements thereof and there is provided on the other element thereof a member that is forced against and cuts into the wire insulation to make contact with the electrical wire upon inserting the prong in the base of the socket without the necessity first of stripping off the insulation or soldering the wire to the prong.

The present invention therefore contemplates the provision of an electrical socket, the prongs of which are arranged and constructed so that the electrical wire makes contact with the prongs of the socket without requiring that insulation be stripped off the wire or that it be soldered to the prong, thereby decreasing the costs of socket assembly and reducing the time required therefor.

The wire holding and insulation cutting means here contemplated, are formed by the material constituting the prong itself, which material is forced or dished out as by a conventional stamping operation.

The present invention still further contemplates the provision of an electric socket in which the prong is formed

from a single unfolded or straight element cut out to form a wire holding and cutting member which is forced against and into the wire insulation upon inserting the prong into the socket.

The present invention further contemplates the provision of an electric socket having a wire retaining prong which is punched out to form therein as an integral part thereof a catch which insures against inadvertent removal of the prong after the parts of the socket have been assembled together.

These, other and further objects and advantages of the present invention will be clear from the description which follows and the drawing appended thereto in which

Fig. 1 is a sectional elevation through a socket embodying my invention

Fig. 2 is a perspective view of a form of wire retaining prong according to my invention and broken to reduce the size of the drawing, showing a wire held thereby

Fig. 3 is a sectional elevation of a modification of a socket according to my invention

Fig. 4 is a perspective view, broken to reduce the size of the drawing, of a modified form of a wire retaining prong, according to my invention, and showing a wire held thereby

Fig. 5 is a perspective view of a further modification of a wire retaining prong according to my invention, broken to reduce the size of the drawing and showing a wire held thereby.

Similar elements throughout the drawing are referred to by the same reference characters.

Referring now to the drawing and more particularly to Figs. 1 and 2, the lamp socket essentially comprises the cap **10**, which may have the internally threaded opening **12**, extending through the center thereof and through which the wire cable **14** passes.

The lower opening of the cap **10** is internally threaded to receive therein the switch compartment body **16**. Pressed into the body **16**, I provide the member **18** which forms the internally threaded socket skirt, the threads **20** of which receive a lamp base, which, since it is standard need not be shown.

These parts of my socket, namely, the cap **10**, the switch compartment body **16** and the skirt member **18**, are preferably made from a heat resisting thermosetting plastic, which is an electrical insulator and may be cast or molded therefrom or formed by well known conventional methods.

The wire retaining prongs **22** and **24** are formed from a resilient electric conducting material bent over upon itself to form a base by means of which the prong is secured to the cap **10** as by the set screws **26** and **28**.

The bases of the prongs extend into the wire holding elements **30** and **32** which continue into the spaced wire cutting elements **34** and **36**.

The switch compartment **38** is open at the bottom to receive the rotatable switch member **40** secured on the shaft **42**.

The shaft **42** is carried on the support **44** which with the base **46** of the resilient electrode **48** is secured to the upper wall **50** of the skirt member **18** by the contact stud **52**.

The top of the switch compartment body **16** is closed by the wall **54** which is slotted to receive the prongs **22** and **24** when they are inserted into the body **16** to assemble the socket, as will be described.

To assemble the socket, the cable **14** is inserted through the threaded opening of the cap **10** and spliced to form the two wires **56** and **58**.

Referring now to Fig. 2, the prong **22** is there illustrated, though it will be understood that the prong **24** is the same in all respects except that it is of greater length so that it will extend into the skirt member **18** where it

will be contacted by the metallic base of the lamp which is inserted into the socket.

The wire holding element 30 (see Fig. 2) is punched out to form the strap-like wire holding member 60 and the openings 62 and 64.

The other wire cutting element 34 is also punched out to form the inwardly extending sharp pointed teeth 66 and 68.

In operation, the wire 56, it being understood that the same operation applies to the wire 58, is inserted in the opening between the strap 60 and the element 30, where it is relatively tightly held.

The prongs 22 and 24 are inserted in the slots in the upper wall 50 thereby forcing the elements 34 and 36 toward the elements 30 and 32 forcing the sharp pointed teeth 66 and 68 through the insulation of the wire against it thereby insuring good electrical contact without requiring the insulation to be stripped off. This also serves to eliminate any possible requirement of soldering as does the holding strap 60.

To close a circuit through the lamp, the switch member 40 is rotated, by means of the conventional button (not shown) to force the resilient electrode 48 into contact with the prong 22, the circuit being completed through the prong 24 and the base of the lamp.

It will be noted that in the embodiment illustrated in Fig. 2, the wire is positioned on the inside of the prong and the contact made on either side of the strap member 60, though it will of course be recognized that only one cutting tooth need be provided.

In Fig. 5, I have illustrated a modification of a wire retaining prong in which the wire 56 appears on the outside of a wire holding element 70. The element 70 is punched outwardly to form the strap member 72, in which the wire is inserted, and the other wire cutting element 74 is punched inwardly to form the insulation cutting knife-like member 76.

Thus, when the prongs are inserted in the corresponding slots in the upper wall 50, the knife-like member 76 is forced into the insulation to thereby make contact with the wire and may pass into the corresponding opening 78 remaining after the strap 72 is punched out.

Referring now to Fig. 3, I have there illustrated an electric socket for use with the so-called "butterfly" switch by means of which any selected one of three light intensities, for example, 50 watts, 100 watts and 150 watts, may be utilized and in which socket the modification of prong illustrated in Fig. 4 is used, though it will be understood that the modifications illustrated in Figs. 2 and 5 may be used as well.

It will also be understood that the prong illustrated in Fig. 4 may, if desired, also be used in the socket illustrated in Fig. 1 modified to accommodate that prong.

The socket illustrated in Fig. 3 may be used with a special three intensity lamp, such as the General Electric "Three-Lite" lamp.

A lamp of this kind is composed of two filaments and internally wired so that current passing through one filament will provide a 50 watt light, current passing through another filament a 100 watt light and current passing concurrently through both filaments will provide a 150 watt lamp, although a lamp having three different intensities of light may be utilized.

The switch by means of which either one or both of the filaments may be connected in the circuit is conventional and is sometimes referred to as a butterfly switch. Only so much of its construction as is required for an understanding of my invention will be here described.

The cap 10 (see Fig. 3) is slotted or recessed to receive the straight unbent prong members 80 and 82, one being illustrated in Fig. 4.

The switch compartment body 16 is provided with longitudinal prong member receiving channels and with the switch compartment 38, which is open at the bottom and provided with the upper slotted compartment closing wall 50.

The upper wall 54 of the skirt member 18 carries the resilient electrode 84 and the support 86 which are riveted to it by the contact stud 88, the shaft 90 being carried by the support.

The prong member 82 is provided with the pin or finfier 91 on which is carried the resilient electrode 92 and which electrode is held thereon by the four starred or butterfly switch member 94.

The upper wall 50 is recessed to have frictionally mounted therein the contact member 96 which passes through the wall 54 into the interior of the skirt member 18 where it may be contacted by the base of the lamp inserted in the socket.

The contact member 96 is provided with the pin or finger 95 on which is carried the resilient electrode 97 which is also held on the pin or finger by the pressure placed upon it by a contacting finger of the star shaped or butterfly switch member 94.

The prong member 80 is larger than the prong member 82 and extends through the wall 54 into the interior of the skirt member where it will be contacted by the base of a bulb held in the socket.

The four starred or butterfly switch member 94 is provided with the contacts 98, 100, 102 and 104, which engage the complementary shaped electrodes 84, 92 and 97.

Referring now to Fig. 4, each prong member 80 and 82 is punched out at the upper part 106 to form the wire receiving opening 108 and the wire cutting reentrant tooth or knife-like element 110.

The lower part 112 of the prong members 80 and 82 is punched out to form the catch 114.

In operation, a wire 56 of the cable 14 is inserted in an opening 108 of each of prong members 80, 82, to pass through the same to the other side of said prong members, as shown in Figs. 3 and 4 of the drawing. These prong members 80 and 82 are then forced into the corresponding slots and channel in the switch compartment body. The tooth or knife-like element 110 is thereby forced into the insulation to cut it and make contact with the wire.

The body 16 is recessed at 116 and 118 to form shoulders under which the catches on the lower part 112 of the prong members 80 and 82 pass by reason of the inherent resiliency or spring-like characteristic of the material from which all of the prongs are made.

It will be understood that the prong members 80 and 82 are made of a resilient current conducting material so that as a prong is forced into a corresponding channel, the catch 114 is pressed into the opening 120 to permit the prong to be inserted. As the catch 114 is brought into alignment with a recess 116 or 118, the catch because of the resilience of the material will spring away from the opening under the shoulder formed by the recess to thus lock the prong in place.

It will thus be recognized that the unbent or straight prong serves three purposes, namely, to hold the wire in position, provide an insulation cutting and wire contacting means and a prong locking catch to hold the body member 16 to the cap 10.

It will also be recognized that I have provided a socket prong by means of which the wire for the electric light is held in place and which prong has provided an insulation cutting and wire contacting means which is forced against the wire through its insulation upon insertion of the prong into the socket.

It will be further recognized that with the socket just described, the requirement of stripping insulation from the lamp wire and soldering it to the prongs of the socket, is dispensed with though a satisfactory strong contact is provided at comparatively low cost.

While I have described in specific detail, embodiments of my invention, it will be understood, of course, that various changes may be made thereto without departing from the spirit thereof and, I therefore intend to be lim-

ited only by the scope of the appended claims in view of the prior art.

I claim:

1. An electric light socket comprising a body member formed with parallel slots; a cap adapted to fit one end of said body member and provided with a peripheral flange adapted to engage an adjacent end of the body to be attached thereto so as to leave a recess between the adjacent surface of the cap and the extremity of said body member; a pair of prongs attached to said surface of the cap and traversing said recess and adapted to pass into said parallel slots; each of said prongs being formed with a perforation one edge of which is in the form of a reentrant pointed knife element; insulated wires passing through an aperture in said cap; the strands of said wires entering said recess and respectively passing through said perforations at one side of said prongs to the other side

of said prongs; said prongs with said strands being forced into said slots so that the knife elements pierce through the insulation of said wires and make electric contact therewith.

2. An electric light socket as defined in claim 1, in which said body member is formed with interior shoulders adjacent said slots engaging resilient offset lug elements projecting from said prongs.

References Cited in the file of this patent

UNITED STATES PATENTS

2,012,627	Gilbert	Aug. 27, 1935
2,181,576	Chirelstein	Nov. 28, 1939
2,301,919	Petry	Nov. 17, 1942
2,309,311	Grohsgal	Jan. 26, 1943
2,451,680	Lagin	Oct. 19, 1948