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H. W. SCHICK ET AL

3,206,712

LAMP SOCKET WITH CLAMP MEMBER

Original Filed July 24, 1962

FIG. 1

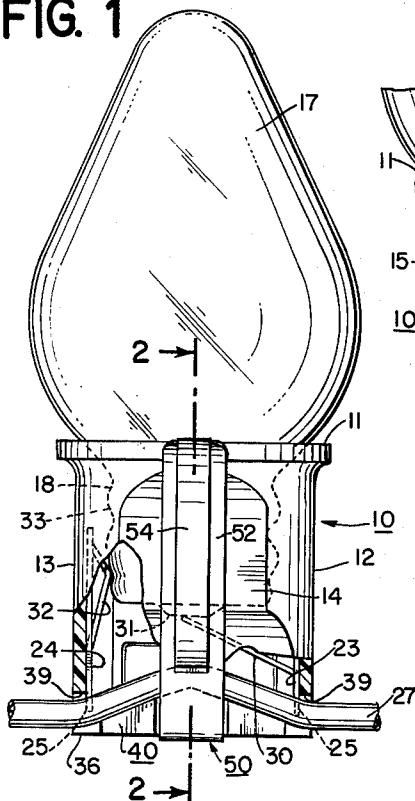


FIG. 2

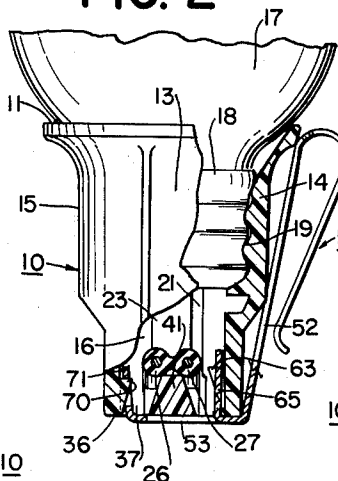


FIG. 3

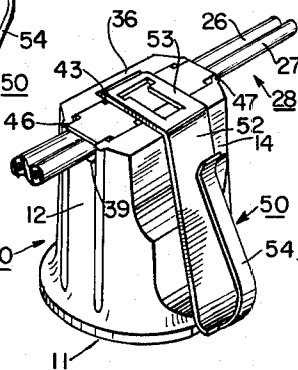


FIG. 4

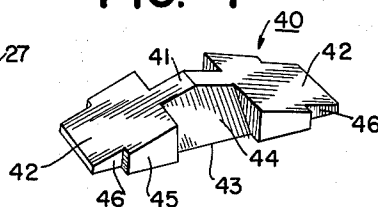


FIG. 5

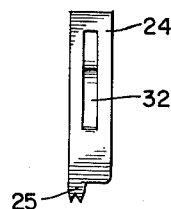


FIG. 7

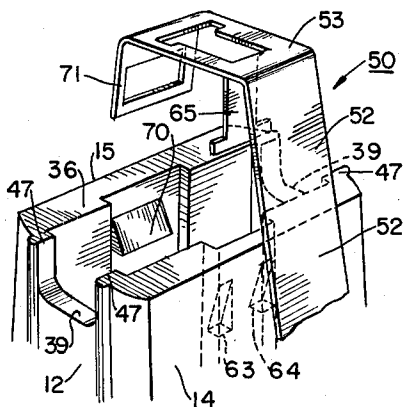
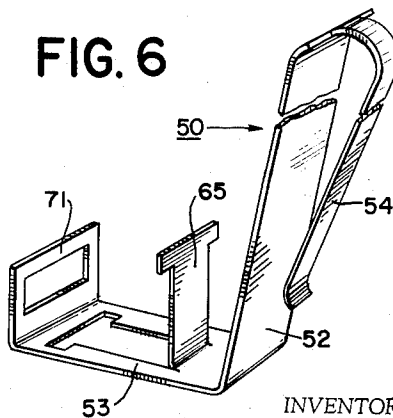


FIG. 6



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LAMP SOCKET WITH CLAMP MEMBER

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Original application July 24, 1962, Ser. No. 212,085, now Patent No. 3,151,926, dated Oct. 6, 1964. Divided and this application Aug. 20, 1964, Ser. No. 395,353
7 Claims. (Cl. 339-99)

This application is a division of our copending application Serial No. 212,085, filed July 24, 1962, entitled Lamp Socket, which is assigned to the same assignee and is now United States Letters Patent 3,151,926 issued on October 6, 1964.

This invention relates to lamp sockets which are adapted to be mounted along the length of an electrical conductor cord at any point thereof and more particularly to lamp socket assembly of the pin-tap type in which connection is made between the electrical contact elements of the socket and the conductor cord by piercing the wires of the conductor cord.

The present invention is directed to a relatively simple lamp socket which may be removably secured to and mounted at any point along a conductor cord which supplies the current for the lamp bulb in the socket. In accordance with the invention, the lamp socket comprises a shell or husk of plastic material having internal threads to receive and hold the base of the lamp bulb. Two grooves are formed on opposite walls of the shell for receiving and holding respective blade-type electric contact members. One end of each contact member is formed with a prong for piercing through the insulation of the conductor cord to make electrical contact with a conductor wire and each contact member is also formed with a tab or tongue to make contact with one of the electrical contact points on the lamp bulb base. In this way a current path is provided from the conductor cord to the bulb. The bottom of the socket shell is formed with a channel to hold the conductor cord and a wedge piece is provided to be placed in the channel on top of the conductor cord to hold it within the channel. In order to secure the wedge piece to the shell and to force the prongs of the contact members to pierce through the conductor wires an L-shaped clamp is provided. One arm of the clamp is formed with two portions which engage the body on opposite sides of the wedge piece. The clamp is made of suitable size and of a suitable material so that a tight fit is achieved and enough pressure is applied to the wedge piece to force it into the channel thereby causing the prongs to pierce the conductor wire. The clamp is also formed with a clip which allows the complete socket assembly and bulb to be mounted at a desired location, for example, on the branch of a Christmas tree.

The above described socket has several advantages. First of all, it is relatively simple in construction and assembly and needs no soldering or other type fastening arrangement to make contact between the socket contact members and the wires of the conductor cord. Further, the pin-tap assembly of the electrical contact blades makes the socket attachable at any point along the conductor cord; also, the L-shaped clamp is preferably made of tempered spring steel and its relatively simple shape uses a minimum amount of material and provides for easy manufacture and assembly. The use of spring steel for the clamp also gives the clip formed thereon better holding properties and increased life.

In a preferred form of the invention, the wedge piece is of pyramidal shape so that when it is laid in the channel against the wires the wires follow the contour of the

wedge piece and strain relief is provided by virtue of the conductor wires running over the highest portion of the pyramid. This is a relatively simple way of providing strain relief without the use of any additional parts.

It is therefore an object of this invention to provide a lamp socket of the pin-tap type wherein the clamp which secures the conductor holding piece is L-shaped and is provided with a clip to secure the socket assembly to a support.

A further object of the invention is to provide a lamp socket having blade type contact members which pierce through the insulation of a conductor cord, the conductor cord being held in a channel in the socket and pressed into electrical contact with the contact members by a conductor holding wedge piece.

Yet another object of the invention is to provide a lamp socket of the pin-tap type in which the conductor cord is held in a channel in the socket and pressed into electrical contact with the prong of blade contact members by a wedge piece which is held within the channel by an L-shaped clamp member.

Still another object of the invention is to provide a lamp socket in which the wedge piece holding the wires within the socket is shaped to provide strain relief.

Other objects and advantages of the present invention will become more apparent upon reference to the following specification and annexed drawings in which:

FIGURE 1 is a side elevational view of the lamp socket assembly, with the lamp socket shown partially broken away in order to illustrate certain features of the invention;

FIGURE 2 is a front elevational view of the lamp socket taken partially in section along lines 2-2, FIGURE 1 and partially broken away;

FIGURE 3 is a perspective view of the bottom of the lamp socket showing a portion of the conductor cord running therethrough;

FIGURE 4 is a perspective view of the wedge piece;

FIGURE 5 is a front elevational view of one of the blade contact members;

FIGURE 6 is a perspective view of a clamping member for holding the wedge piece within the socket shell without fastening over the top rim of the socket; and

FIGURE 7 is a perspective view of the clamping member and a portion of the bottom of the lamp socket.

Referring to FIGURES 1-7, the lamp socket is formed by a substantially hollow shell or husk 10, which has an opening 11 at the top thereof, end walls 12 and 13, and side walls 14 and 15. The top opening 11 communicates with a cavity 16 which extends substantially the entire height of the shell. The shell 10, as well as the other non-metallic parts of the socket, is preferably made of a plastic insulating material such as Bakelite or of another plastic material which has the necessary strength. The top opening 11 of the shell is flared out to accommodate the base 18 and the bottom portion of the glass envelope of a bulb 17 which is screwed into threads 19 formed on the side walls 14 and 15. The bulb 16 may be of any desired shape, type, and/or wattage and the size of the shell 10 and threads 19 may be varied to accept different bulbs.

The end walls 12 and 13 of the shell are respectively formed with channels or grooves 21 (only one of which is shown in FIGURE 2) to hold a respective blade contact member 23 or 24. The grooves 21 are made of a suitable size so that the blade contact members 23 and 24 are tightly held therein when they are placed in the grooves. As shown in FIGURE 6, each blade contact member is formed with a downwardly extending sharp pointed prong 25 at the bottom end thereof which is of a size to make contact with one of the wires 26 or 27 of a two conductor cord 28. The blade contact members 23 and 24 are

formed and located within the shell 10 so that the prong 25 of one is adjacent the side wall 14 and the prong of the other adjacent the side wall 15. Therefore, each prong will make contact with only one of the wires 26 or 27. Any suitably shaped blade contact member may be utilized so long as has the sharp pointed prong to pierce the current carrying wire and can be held within the socket body.

Blade contact member 23 has a tongue 30 which extends into the shell cavity 16 to make electrical contact with the bottom contact point 31 of the lamp bulb base 18 when the bulb is screwed substantially all the way down on the threads 19. The other blade contact member 24 has a bent-out tab portion 32 which makes electrical contact with the metallic threaded portion 33 on the side of the bulb base. In this manner an electric circuit is established to provide current to the lamp filament through the two wires 26 and 27 of the conductor, blade contact members 23 and 24 and their respective tongue and tab 30 and 32, and the two contact points 31 and 33 on the lamp bulb base.

The socket shell 10 also has a bottom wall 36 which is formed with a longitudinal channel 37 therein running between the end walls 12 and 13. The channel 37 extends part way up into the end walls 12 and 13 which have cut out sections 39 (FIGURE 1) so that the conductor cord 28 may be readily placed in the channel 37 and held within the socket. The prong 25 of each blade contact member 23 and 24 extends part way down into the channel 37 to a point opposite the openings 39 in end walls 12 and 13 and above the bottom wall 36 of the shell. As described previously, the blade contact members are located in grooves 21 in the end walls.

A wedge piece 40 is provided to fit within the channel 37 and to hold the conductor cord within the shell. The wedge piece holds the conductor cord 28 within the channel 37 and when it is clamped, exerts pressure on the wires 26 and 27 so that the prongs 25 of the blade contact members pierce through the wires. Wedge piece 40 is generally pyramidal in shape with a high point 41 at the center thereof and sloping surfaces 42 tapering off from the high point along the longer dimension of the piece. The center portion of the wedge piece is also cut out on both sides and has sloping surfaces 44 which run from the top of the piece. The surfaces 44 extend down to the bottom of the wedge piece but do not reach the sides 45 thereof so that openings or notches 43, which are shown in FIGURES 3 and 4, are provided on the piece. These notches may not be needed. Each end of the piece 40 is also provided with two notches 46 which allow the piece 40 to fit over the abutting pieces 47 of the end walls 12 and 13. It can be seen that the piece 40 is symmetrical so that it can be placed either way in the channel 37 with the high point 41 facing in toward the center of cavity 16. Of course, any suitable shape wedge piece may be used.

A clamp 50 is used to hold the wedge piece 40 to the socket and to exert pressure on the piece so that the prongs 25 of the blade contacts will pierce through the wires of the conductor cord. The clamp 50 is formed of tempered spring steel or some other suitable material and is preferably generally L-shaped with a long arm 52 and a short arm 53. The center portion of the longer arm of the L-shaped clamp may be punched out and bent to form a clip 54 which is used to mount the socket and bulb on a desired support or else this clip may be formed as a bent over extension of the long arm 52 of the clamp, as shown best in FIGURES 3 and 6.

In assembling the complete lamp socket, the conductor cord 28 is first laid into the channel 37 into which the prongs 25 extend near the end walls 12 and 13. The wedge piece 40 is next placed on the shorter arm 53 of the L-shaped clamp. The wedge piece is next forced into position so that its bottom is substantially flush with the bottom 36 of the socket by applying pressure to the

short arm 53 of the clamp so that the wedge piece 40 is forced into the channel and sufficient pressure is exerted to force wires 26 and 27 up onto the prongs 25. The prongs pierce through the insulation surrounding the wires 26 and 27 so that the blade contacts make electrical contact with the inner conductors of the wires. The short arm 53 is fastened to the shell 10 in a manner described in greater detail below. Of course, the assembly procedure may be changed.

It should be noted that both of the wires in the channel are forced to follow the general contour of the wedge-shaped piece 40 in the channel so that at the center of the channel the wires run over the high point 41. The sloping surfaces 42 and the high point 41 of the wedge piece provide strain relief for the wires and prevent them from being separated from the blade contact members when a pull is exerted on the wires.

FIGURES 6 and 7 show details of a clamp for fastening the wedge piece 40 without the need of fastening the clamp 50 over the top rim of the socket body. The clamp is of one piece construction and its short arm 53 is bent and is stamped out to have two upstanding pieces 65 and 71 the former of which is generally T-shaped. The bottom of the socket body for this clamp has formed on the interior of one side wall 14 adjacent bottom wall 36 a notch 62 and two sloping bosses 63 and 64. A notch 62 and a single sloping boss 70 are formed on the interior of the opposite side wall 15 adjacent bottom wall 36. Therefore, in assembling the clamp to the socket the T-shaped piece 65 is fastened over the two bosses 63 and 64 on one side wall and the cutout piece 71 is fastened over the single boss 70 on the other side wall with the wedge piece 40 being between the two upstanding pieces 65 and 71. The two pieces 65 and 71 fit within the notches 43 of the wedge piece 40 and/or the notches 62 of the side walls. The clamp of FIGURES 1-7 does not need a hook to fasten over the top rim of the socket since positive clamping of the wedge piece 40 is provided by the pieces 65 and 71 in cooperation with the bosses 63-64 and 70. A similar arrangement without the hook 52 on the clamp can be formed by providing slots on each side of the channel 37 and by punching out barbed legs from the bottom piece 53 of the clamping member 50 to fit in these slots.

While a preferred embodiment of the invention has been described above, it will be understood that this is illustrative only, and the invention is limited solely by the appended claims.

What is claimed is:

1. A lamp socket assembly comprising a substantially hollow shell having a bottom wall and an opening in the top thereof to receive a lamp bulb, a pair of blade type contact members each having a prong portion at the bottom thereof, said shell having means to receive and hold the blade contact members, a channel in the bottom of said shell through a portion of said bottom wall adapted to receive a pair of current carrying wires, the bottom wall of said shell on one side of said channel formed with a notch portion and a single projecting boss and the bottom wall on the other side of the channel formed with a notch portion and a pair of projecting bosses, a wedge piece formed with openings therein to fit in said channel and adapted to hold the wires therein and press a wire against the prong of a respective blade member, and an L-shaped clamp for holding said wedge piece in said channel, said clamp formed with; a first piece having a cutout portion to extend into one of the wedge piece openings and to fasten onto the single projecting boss, a second piece to engage said wedge piece, and a third piece which has a T-shaped portion to extend into the other wedge piece opening and fasten onto the pair of projecting bosses.

2. A lamp socket assembly as set forth in claim 1 wherein said clamp is formed with a clip member adapted to hold said socket assembly to a support.

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3. A lamp socket assembly as set forth in claim 2 wherein said wedge piece is formed with oppositely sloping surfaces thereon within the channel to provide strain relief for said wires.

4. A lamp socket assembly comprising:

a substantially hollow shell member having a bottom wall and an opening in the top wall thereof adapted to receive a lamp bulb, the bottom of said shell formed with a channel adapted to receive a pair of current carrying wires,

at least one abutment projecting from the interior of each of the side walls of said shell member toward the interior of said shell,

a pair of contact members each having a portion thereon adapted to make electrical contact with a respective current carrying wire, said shell member having means to hold said contact members,

a wedge piece to fit in said channel and adapted to hold the current carrying wires therein; said wedge piece and said bottom wall defining a passage into the interior of said shell member on each side of said wedge piece,

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and a clamp member having an arm formed with two upstanding portions, the wedge piece located between said upstanding portions of said arm and said portions extending into said shell interior through said passages to engage said abutments to thereby hold the wedge piece to the shell member.

5. A lamp socket as set forth in claim 4 wherein said side walls of said channel are each formed with a recess in which a corresponding abutment is located.

6. A lamp socket as set forth in claim 4 wherein the clamp member has another arm and said member is generally L-shaped with the other arm extending generally along the outside of the shell.

7. A lamp socket as set forth in claim 6 wherein said other arm is provided with a spring clip member thereon.

References Cited by the Examiner

UNITED STATES PATENTS

20	2,636,069	4/53	Gilbert	339—99
	2,938,189	5/60	Keeler et al.	339—99

JOSEPH D. SEERS, *Primary Examiner*.