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3,372,362

LAMP SOCKET AND CLIP

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FIG. 1

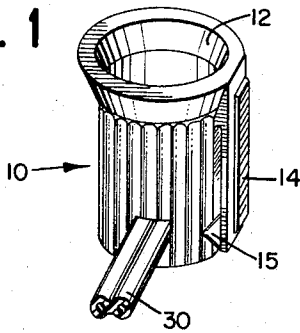


FIG. 2

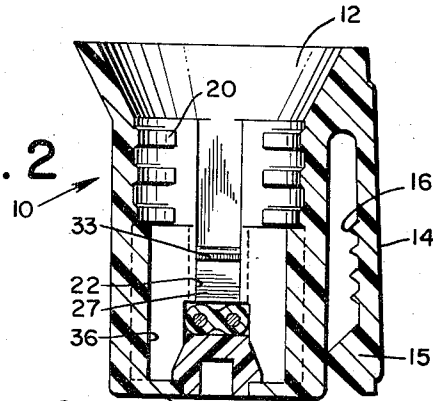


FIG. 3

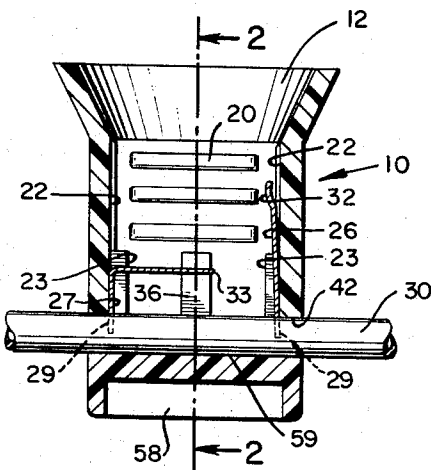


FIG. 4

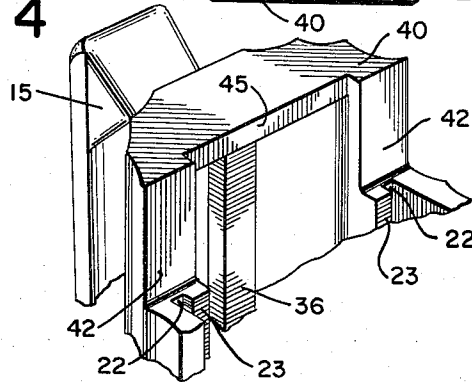


FIG. 5

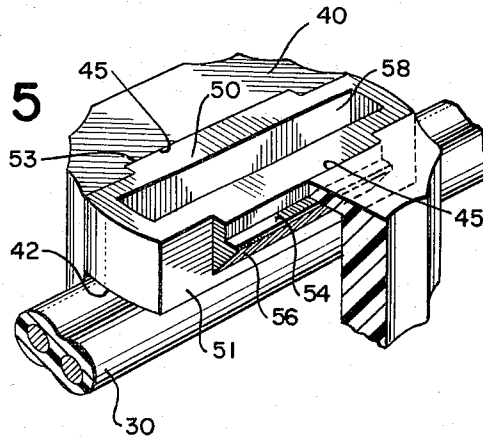
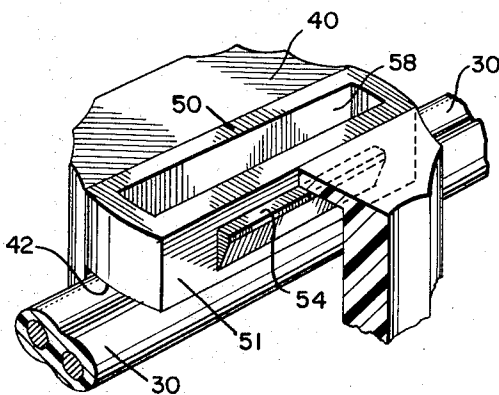


FIG. 6



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LAMP SOCKET AND CLIP

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ABSTRACT OF THE DISCLOSURE

A socket for receiving a light bulb having an opening in the bottom wall for receiving a pair of current carrying wires, the socket having a cover piece with arms mounted on deformable side walls which arms engage the socket bottom wall to hold the cover piece thereto.

The present invention relates to lamp sockets for tree lighting sets which can be readily connected to one or more current carrying wires and which are provided with an arrangement for fastening the socket assembly and lamp bulb to another object such as the branch of a tree.

In accordance with the invention a lamp socket assembly is provided having a shell, or husk, formed with an opening in the top to accommodate a light bulb and an opening in the bottom through which a pair of current carrying wires pass. A pair of electrical contact members are located in the husk and a cover member is used to force the wires into engagement with the contact members. The cover member has a pair of arms which lock directly to the bottom wall of the husk in a positive manner and, in a preferred embodiment, an arrangement is provided to align the cover member longitudinally of the socket bottom wall.

The preferred embodiment of the socket of the present invention is formed with an integrally molded clip which permits the entire lamp socket assembly and bulb to be attached to another object. The clip also provides a member for orienting the socket during assembly of its various components and connection of a pair of current carrying wires thereto. The various features of the present invention give rise to a lamp socket assembly which is relatively economical to construct and simple to assemble.

It is therefore an object of the present invention to provide a lamp socket with an integrally molded clip.

A further object is to provide a lamp socket using a cover member in the bottom wall thereof for pressing the current carrying wires into engagement with the electrical contacts of the socket, the cover member having a pair of arms which attach to the bottom wall.

Another object is to provide a lamp socket assembly having an opening in the bottom wall to accommodate the current carrying wires which are pressed into engagement with the contact members of the socket by a cover member having a pair of arms for engaging the bottom wall inside of the socket and means for preventing longitudinal movement of the cover member.

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 perspective view of the lamp socket assembly of the present invention;

FIGURES 2 and 3 are elevational views taken in cross section of a preferred embodiment of the invention;

FIGURE 4 is a fragmentary perspective view of the bottom wall of the socket husk taken in section;

FIGURE 5 is a fragmentary perspective view of the bottom of an assembled socket; and

FIGURE 6 is a fragmentary perspective view of the

bottom of an assembled socket according to another embodiment of the invention.

Referring first to FIGURES 1-5, the lamp socket assembly of the present invention comprises a body member, or husk, 10 formed with an opening 12 in the top thereof to accommodate the base of a light bulb (not shown). The husk also has an integrally molded clip 14 which is used to fasten the socket and light bulb to another object. The clip 14 is formed with an enlarged bottom portion 15 and ridges 16 which insure that the clip will firmly grip the object to which it is attached. The entire body 10 and the integral clip 14 are preferably molded in one piece from a suitable plastic material, preferably a thermoplastic.

The inside of the husk 10 is molded with screw threads 20 on portions thereof which are adapted to receive and hold the base of the light bulb. Of course, grooves also may be provided to accommodate a bayonet type lamp base if one is to be used.

A channel 22 is formed at diametrically opposed points of the socket. Each channel 22 has a wall 23 at each side thereof and a respective similar electrical contact member 26 and 27 is held between the channel walls by a force fit. Each contact member 26 and 27 has a respective pronged portion 29 which is adapted to pierce the insulation of a respective current carrying wire of one of a pair of wires 30. The pronged portions 29 of contact members 26 and 27 are located on opposite sides of the diameter of the husk so that each such portion can contact only one wire of the wire pair. Contact member 26 has a raised rib 32 which is adapted to make contact with the outer conductive portion of the socket of the lamp bulb base while contact 27 has a bent over portion 33 adapted to make contact with the bottom electrical contact of the base of the lamp bulb.

A stop piece 36 is also molded onto the inner wall of the husk. Preferably one such stop piece is molded diametrically opposite each other half way between the two channels 22. The stop pieces 36 limit downward travel of the light bulb into the socket so that the tab 33 portion of contact 27 will not be broken off and will make good contact with the lamp base.

The husk is also formed with a bottom wall 40 having an opening 42 therein which runs transverse of the socket and is aligned with the two channels 22 and their respective contact members 26 and 27. The opening 42 extends upwardly into the side walls of the socket, so that the current carrying wires may be passed therethrough, and slightly above the prongs 29 of the contact members.

As shown most clearly in FIGURE 4, each side of the bottom wall 40 adjacent the opening 42 is formed with a step 45. This step, or indent, is for the purpose of locating a cover member 50 in the passageway 42 in a manner described below.

As shown in FIGURE 5, the cover 50 is a symmetrical structure having a pair of side walls 51 of the same general shape and length as the passageway 42. The cover 50 is integrally molded with a shoulder 53 extending outwardly from each side wall 51 of the same general shape as the step portions 45 of the bottom wall. The length of each shoulder 53 is substantially the same as the length of the step portions 45 so that the two mate. Each shoulder 53 terminates in an extended ridge or ledge 54 spaced from the top of the walls 51 which forms an arm adapted to engage the inner surface of the bottom wall 40 internal of the body 10. A tapered wedge shaped piece 56 runs the length of the ridge 54 and tapers inwardly from ridge 56 to the side wall 51. The cover is preferably hollow in the portion 58 between the two side walls 51 so that when it is made of a material with some resiliency characteristics, pressure exerted on the side walls 51 deformed them slightly inwardly.

The socket is assembled in the following manner. First, the body 10 and the integrally molded clip are formed. These are then placed into an assembly machine where they can be readily aligned by the clip 14 with respect to a machine for inserting the contacts 26 and 27. Next, a contact inserting machine (not shown) inserts a contact 26 or 27 into each of the channels 22 from the bottom of the husk. The socket is now in a condition to be assembled to a machine for inserting the contacts 26 and 27. Here again the integrally formed clip 14 serves a useful purpose since it permits all of the sockets to be oriented one way so that the wires can be polarized with respect to a particular one of the contact members 26 and 27.

After the wires are laid into the passageway 42 the cover member 50 is inserted into the passageway. This is readily accomplished because the cover member and bottom of the socket are symmetrical. The shoulders 53 and the mating step portions 45 on the socket bottom wall permit the cover member to be readily located longitudinally with respect to the passageway 42 and keep the cover from moving.

Cover member 50 is inserted into the passageway 42 by applying force thereto. As this is done, the narrowest portion of the tapered piece 56 on each side wall 51 engages the bottom wall. Continued application of force causes the tapered pieces 56 to slide against the sides of the bottom wall until the two arms 54 snap over the bottom wall 40 and engage the surfaces thereof interior of the husk. This action is aided by the deformation of the side walls 51 on each side of the hollow cover portion 58. The cover 50 is now firmly locked to the husk 10 and it cannot move longitudinally due to the presence of the step portions 45 in the bottom wall engaging the shoulders 53. Also, it cannot fall out since the arms 54 are wedged into the opening 42 and securely engage the bottom wall.

As explained above, the hollow portion 58 of cover 50 permits the walls 51 to be deformed slightly inwardly thereby facilitating fastening of the cover member 50 to the bottom of the socket. This is useful in preventing breakage of the socket since some of the strain which would normally be applied to the bottom wall 40 when the cover member is inserted is taken up by the deformation of the side walls 51. The hollow portion 58 serves an additional useful purpose in providing a convenient place for applying force such as by the tongue of an insertion arm of an assembly machine.

As the cover member is inserted into the passageway 42 its bottom surface 59 engages both of the current carrying wires 30 and forces them against the respective pronged portions 29 of the contact members 26 and 27. These pronged members pierce through the insulation of the current carrying wires and make electrical contact with the conductive portion thereof.

As should be clear from the above description, the socket of FIGURES 1-5 is relatively economical to construct and assembly and can be readily attached to a pair of current carrying wires.

FIGURE 6 shows another embodiment of the invention in which several of the elements of the embodiment of FIGURES 1-4 have been omitted. Here, there are no step portions 45 provided in the bottom wall and no shoulders 53 on the side walls of the cover member. Instead, both the side walls of the passageway 42 and the side walls 51 are made substantially flat. Here, as before, a pair of arms 54 are provided originating from the tapered pieces 56. The assembly of the socket of FIGURE 6 is the same as that in FIGURES 1-5.

While preferred embodiments of the invention have been described above, it will be understood that these are illustrative only, and the invention is limited solely by the appended claims.

What is claimed is:

1. A light socket assembly comprising:

a body member formed with; (a) an opening in the top to accommodate a light bulb, (b) openings in

the wall of the body member to accommodate the passage through the body of a pair of current carrying conductors, (c) and a bottom wall having an opening therein aligned with said wall openings to accommodate a cover member,

a pair of electrical contact members held within said body member, each said contact having a portion for making contact with the current carrying portion of one of said pair of current carrying wires, and a cover member formed with a pair of deformable side walls, each side wall having a rigid arm attached thereto for engaging the bottom wall of the body member to hold the cover member in the opening of the bottom wall upon forcing the cover member between the portion of the bottom wall defining the opening.

2. A socket assembly as set forth in claim 1 wherein said cover member has a hollow portion between said side walls to permit the same to be deformed to insert said cover member within said bottom wall opening.

3. A socket assembly as set forth in claim 1 wherein said body member has an integral clip.

4. A light socket assembly comprising:

a body member formed with; (a) an opening in the top to accommodate a light bulb, (b) openings in the wall of the body member to accommodate the passage through the body of a pair of current carrying conductors, (c) and a bottom wall having an opening therein aligned with said wall openings to accommodate a cover member,

a pair of electrical contact members held within said body member, each said contact having a portion for making contact with the current carrying portion of one of said pair of current carrying wires,

a cover member formed with a pair of deformable side walls, each side wall having a rigid arm attached thereto for engaging the bottom wall of the body member to hold the cover member in the opening of the bottom wall upon forcing the cover member between the portion of the bottom wall defining the opening,

and mating means on said cover member and said bottom wall of said body member for aligning said cover member longitudinally in said bottom wall opening.

5. A socket assembly as set forth in claim 4 wherein said cover member has a hollow portion between said side walls to permit the same to be deformed to insert said cover member within said bottom wall opening.

6. A socket assembly as set forth in claim 4 wherein said body member has an integral clip.

7. A light socket assembly comprising:

a body member formed with; (a) an opening in the top to accommodate a light bulb, (b) openings in the wall of the body member to accommodate the passage through the body of a pair of current carrying conductors, (c) and a bottom wall having an opening therein aligned with said wall openings to accommodate a cover member, said opening having a step portion on each side thereof,

a pair of electrical contact members held within said body member, each said contact having a portion adapted to pierce the insulation of a respective current carrying wire to make contact with the current carrying portion thereof, and a cover member formed with

(a) a pair of deformable side walls, each of said side walls having integrally formed thereon,

(i) a rigid shoulder portion of substantially the same shape as said step portions on said bottom wall, to mate therewith and to locate the cover member longitudinally in the opening in said bottom wall,

(ii) an arm for engaging the bottom wall of the body member to hold the cover member in the opening of the bottom wall as the

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cover member is pushed into the bottom wall opening,

(b) and a bottom surface for engaging the current carrying wires to press them into engagement with said contact members when said cover member is held to said body member bottom wall by said arms. 5

8. A socket assembly as set forth in claim 7 wherein said cover member has a hollow portion between said side walls to permit the same to be deformed to insert said cover member within said bottom wall opening. 10

9. A socket assembly as set forth in claim 7 wherein said body member has an integral clip.

10. A light socket assembly comprising:

a body member formed with; (a) an opening in the top to accommodate a light bulb, (b) openings in the wall of the body member to accommodate the passage through the body of a pair of current carrying conductors, (c) a bottom wall having an opening therein aligned with said wall openings to accommodate a cover member, said opening having a step portion on each side thereof, (d) an integral clip for attaching the socket to another member, and (e) means for receiving and holding a lamp bulb, a pair of electrical contact members held within said body member, each said contact having a portion adapted to pierce the insulation of a respective current carrying wire to make contact with the current carrying portion thereof, 15 20

and a cover member formed with

(a) a pair of deformable side walls, each of said side walls having integrally formed thereon, 25 30

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(i) a shoulder portion of substantially the same shape as said step portions on said bottom wall, to mate therewith and to locate the cover member longitudinally in the opening in said bottom wall,

(ii) an arm for engaging the bottom wall of the body member to hold the cover member in the opening of the bottom wall upon pushing of the cover member into the opening,

(b) a bottom surface for engaging the current carrying wires to press them into engagement with said contact members when said cover member is held to said body member bottom wall by said arms,

(c) and an opening between said side walls to permit the same to be deformed to insert said cover member within said bottom wall opening.

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