

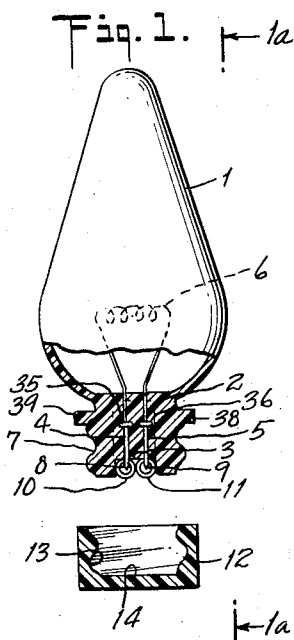
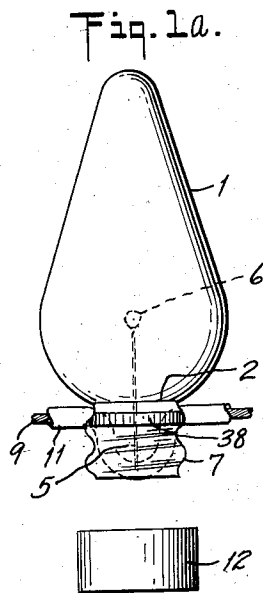
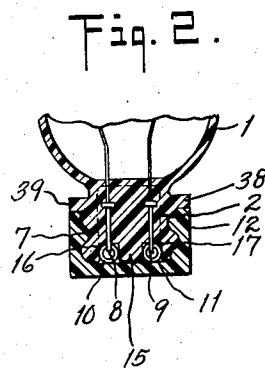
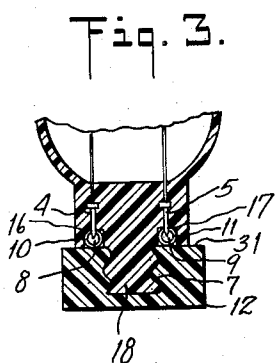
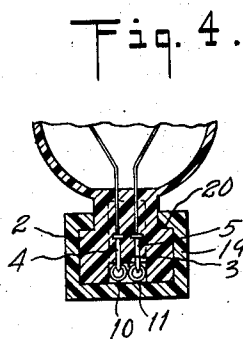
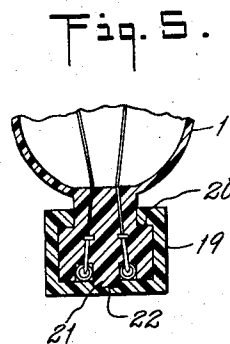
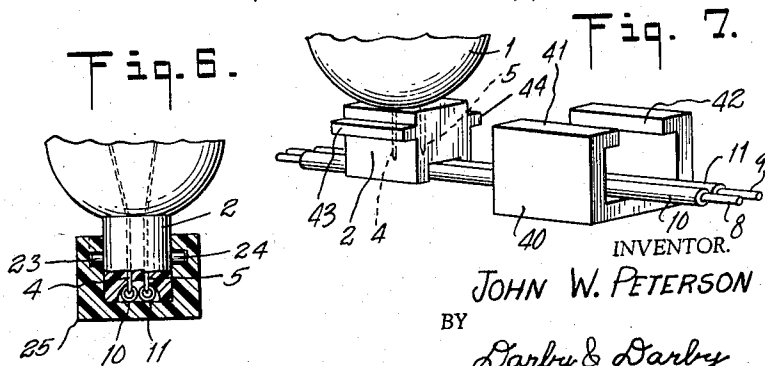
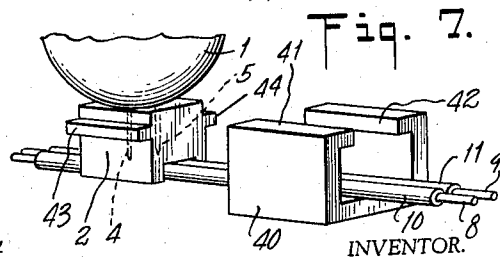
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2,884,555

DIRECTLY ATTACHABLE ELECTRIC LIGHT BULB

Filed April 25, 1958



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DIRECTLY ATTACHABLE ELECTRIC LIGHT BULB 5

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16 Claims. (Cl. 313—318)

This invention generally applies to the field of electric light bulbs and more particularly to a light bulb that requires no socket and can be used at any position along a pair of parallel electrical conductors.

It has long been a problem to provide for the connection of light bulbs anywhere along the length of a pair of conductors, which supply the electrical current for the bulbs. Previously this has been accomplished by the use of special electric light bulb sockets, which had to be suitably connected to the conductors, usually involving cutting the conductors at the point of each connection. The present invention dispenses both with the socket and the necessity for cutting the conductors, permitting locating the electric light bulb anywhere along the conductors and permitting ready transfer of a light bulb from one location to another. Such a bulb finds particular utility in remote places where power lines but no lamp sockets may be available. Another important use for this invention is in providing decorative lighting displays, such as Christmas tree lights, where a number of light bulbs can be connected at various positions along a pair of conductors without the necessity of connecting a plurality of sockets. Burnt out bulbs for which no replacements are available can also be readily removed without leaving unsightly empty sockets.

It is therefore an object of this invention to provide a novel electric light bulb which is usable any place along the length of a pair of parallel conductors.

A further object of this invention is to provide a novel electric light bulb that requires no socket to connect it to its current supply.

Yet another object of this invention is to provide an electric light bulb which can be connected to current carrying conductors with a minimum of effort in a simple, economical and expedient manner.

The objects of this invention are simply and economically accomplished by providing an electric light bulb whose base is formed with a single or plurality of grooved portions. Extending into the grooved portions of the base are contact members which have sharpened prongs. The other ends of the contact members are connected to the filament within the bulb. A pair of current carrying conductors are placed in the grooved base of the bulb and the outer edge of the base is fashioned in a suitable manner to accommodate a cover or a cap. As the cap is fastened to the base it pushes the conductors against the two prongs causing the prongs to make contact with the conductors. If insulated conductors are used, as would normally be the case, the prongs would be pushed through the insulation and make contact with the inner conductor. In this manner, electrical contact is made between the conductors and the filament of the light bulb without the use of any plugs, sockets, or other hardware.

Other objects and advantages of the present invention will become more fully apparent from the consideration of the following description of some preferred and

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illustrative embodiments thereof taken in conjunction with the appended drawings, in which:

Fig. 1 shows an elevational view partly in section of a basic form of the invention utilizing a screw-type base;

Fig. 1a shows an elevational side view of the embodiment of Fig. 1 turned 90° from the position of Fig. 1;

Fig. 2 shows a fragmentary elevational cross-sectional view modification of the screw-type base of Fig. 1;

Fig. 3 shows a fragmentary elevational sectional view of an embodiment utilizing a center post on the bulb base as the cap accommodating means;

Fig. 4 shows a fragmentary elevational sectional view of a form of the invention utilizing a snap-type cap;

Fig. 5 shows a similar view of a modification of the embodiment of Fig. 4;

Fig. 6 shows a similar view of another form of the invention utilizing a bayonet-type base and accompanying cap; and

Fig. 7 shows a fragmentary elevational cross-sectional view of another embodiment of the invention.

Referring to Fig. 1 the lamp bulb envelope is shown generally as 1. While a "tear-drop" shaped envelope is shown in this embodiment, it should be recognized that other types and shapes of envelopes such as round, candle-shaped, etc. could also be used, the particular shape of the envelope 1 forming no part of the present invention. The envelope 1 narrows down at its lower end to form a base portion 2, which is an integrally formed part of the lamp bulb envelope 1. The base 2 of the lamp bulb is formed in such a way to form a groove or channel 3, which extends totally across the diameter of the base 2. Protruding down into the grooves are two contact members 4 and 5 which have sharp ends and are also molded or sealed into the base 2. The maximum depth of groove 3 at the point where the contact members 4 and 5 protrude into the groove 3 is dependent upon the type of wire to be accommodated in the groove 3 and also upon the degree of structural strength required by the lamp itself. These contact members 4 and 5 serve as lead-in and support for the filament 6 of the light bulb or else the filament wire 6 itself can be extended into the groove 3 and sharpened to provide the contact members 4 and 5. The outside of the lamp base 2 is threaded, as shown as 7, to receive a cover or cap 12. The threads 7 can be molded as a part of the base 2 itself or else a metal form having threads 7 can be fused to the bulb base 2.

Contact members 4 and 5 have enlarged upper ends 35 and 36 and thereby form prongs to which the filament wire 6 can be connected. The connection of filament wire 6 to the enlarged upper ends 35 and 36 of the contact members can be made by soldering or any other suitable process. In this manner, contact members 4 and 5 may have a greater diameter than if they were only extensions of the filament 6, and thus secure better contact. The enlarged upper ends 35 and 36 will also increase the strength of contact members 4 and 5 to forces applied longitudinally of the contact member axis.

Two wires 10 and 11, here shown as being insulated, and of suitable diameter are inserted into the groove 3 of the base 2. A cover 12 having internal threads 13 is adapted to screw onto threads 7 of the base 2. As the cover 12 is screwed down, the inner wall 14 presses against the outer insulation of wires 10 and 11 and forces them against sharpened contacts 4 and 5. The physical dimensions of the wires 10 and 11 and cover 12 are such that when cover 12 is screwed nearly or entirely all the way down, the wires 10 and 11 will be forced against contact members 4 and 5 and their sharpened points will pierce through the outer insulation of the wires and make contact with the inner conductors 8 and 9 of wires

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10 and 11. In this manner, a simple, efficient and economical electrical connection is secured between the filament 6 and the conductors 8 and 9. A plurality of lamps can be placed along a pair of parallel wires such as 10 and 11 at any places desired for either practical or decorative purposes.

Cover 12 may be made of any suitable material such as hard rubber, Bakelite, porcelain or plastic. Since the wires 10 and 11 are insulated and the base 2 of the light bulb is also insulated, cap 12 could also be made of suitable metal material and there would be no danger of a short circuit.

Fig. 1a shows the embodiment of Fig. 1 turned 90° to show how the wires 10 and 11 rest in groove 3. As can be seen by the lay of the wires in Fig. 1a and the dotted outline of the groove 3 in Fig. 1, the groove 3 is shaped to be of a greater depth at its ends than at the center. In this manner, the wires 10 and 11 will be subjected to a greater pressure by cover 12 at the center of the base 2, where the contact members 4 and 5 are, than at the edges of the base where the wires pass into and out of the groove 3. Two shoulders 38 and 39, which are formed from a circular ridge around base 2 cut away at the grooved portion 3, or else are ridges formed on the base 2 over a smaller area, serve as a stop for cover 12 and allow wires 10 and 11 to protrude over the top of cover 12 and thereby eliminate any danger of having the wires cut. The base 2 can be constructed without shoulders 38 and 39 and the depth of cover 12 be so chosen so that the bottom inside portion 14 of the cover 12 serves as a stop.

As shown in Figures 1 and 1a, the invention provides a novel type electric light bulb which permits contact to be made between the filament and current carrying conductors by means of contact members protruding through the bulb envelope into an integrally formed grooved base. The conductors are forced against the contact members by means of a cover which is fastened to the base. In this manner, an electric light bulb of the character described can be utilized at any place along a pair of conductors without the necessity of providing for a socket that has to be directly connected to the conductors.

Fig. 2 shows a modification of Fig. 1 in which the base 2 is formed (as by molding) to provide a center post divider 15. This divider 15 which extends across the diameter of the base 2 gives added structural support to the bulb and also provides a convenient means for separating wires 10 and 11, by forming separate grooves 16 and 17. Using this embodiment, wires 10 and 11 would not have to be insulated since they are separated by the center divider 15. However, it should be realized that if uninsulated wires are used, cap 12 would have to be made of a suitable insulating material, such as rubber, Bakelite or other synthetic plastic. The embodiment of Fig. 2 operates in the same manner as that shown in Fig. 1.

Fig. 3 shows another embodiment of the invention in which a circular center post 18 is formed to extend below the individual grooved portions 16 and 17 of base 2. Center post 18 is threaded, as shown at 7, as by molding the threads onto base 2 or by providing a suitable metal shell surrounding the center post 18. Cover 12, which is of solid construction, is adapted to screw on to center post 18 so that the upper surface 31 of cover 12 will therefore push insulated conductors 10 and 11 against contact members 4 and 5 to make electrical connection with their inner wires 8 and 9. It should be noted that in all the embodiments shown, the grooves can be square, circular, or of other cross-section, depending upon the construction of the base 2 and the diameter of the wire to be utilized.

Referring to Fig. 4, another embodiment of the invention is shown in which a snap-type cover 19 is utilized. In this form, base 2 is formed with a shoulder 20 extending around the periphery of the base 2 in addition

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to channel 3 extending through it. Cover 19 can be made of any suitable flexible or resilient material such as rubber, plastic or metal. The assembly of the invention is essentially the same as shown in Fig. 1, namely, cover 19 pushes the insulated conductors 10 and 11 into groove 3 and causes the sharpened ends of contact members 4 and 5 to pierce the outer insulation and thereby make contact with the inner wires. Utilizing this embodiment, the snap-type cover 19 provides a rapid way of connecting the lamp filament to the conductors.

Fig. 5 shows a further modification of the snap-type cover. In this form, base 2 is formed to provide a center post 21 of circular construction. Snap-type cover 19 is hollowed out at 22 to receive this post 21. Accordingly, a base 2 of greater structural strength is provided and post 21 also acts as a key or guide for cover 19. The assembly of this embodiment is the same as that described with respect to Figure 4.

Another embodiment, shown in Fig. 6, utilizes two protrusions 23 and 24, which can be either formed as a part of base 2 or else provided by a metal pin that is molded into base 23 to form a bayonet-type base connection. In this instance, cover 25 is suitably recessed as in conventional bayonet pin sockets to properly engage the protrusions 23 and 24. The assembly of this form of the invention is similar to that described with respect to the preceding embodiments described. In this embodiment, as the cover 25 is fastened onto the bayonet protrusions 23 and 24 it will push wires 10 and 11 onto contact members 4 and 5 and thereby secure electrical contact.

Fig. 7 shows another form of the invention in which a sliding cap 40 is generally channel shaped and the ridges 41 and 42 of the cap 40 slide onto shoulders 43 and 44 of base 2, similar to shoulders 38 and 39 of Fig. 1. As in other embodiments of the invention, the bottom inner portion of cap 40 presses the wires 10 and 11 into contact with the contact members 4 and 5. In this form, wires 10 and 11 do not have to protrude over the top of the cap member 40 but can lie flat in the channel of cap 40. Base 2 may be rectangularly shaped with shoulders 43 and 44 or else a circular shaped base 2 can be used in which the shoulders 43 and 44 are formed to extend out from the side of base 2 to engage ridges 41 and 42 of the cap 40.

It should be noted that several of the features disclosed in the several embodiments herein can be used interchangeably. For example, the center divider shown at 15 in Fig. 2 can also be used with the snap-type cover arrangement of Fig. 4 or the bayonet-type arrangement of Fig. 6. Also, the center post embodiment shown in Fig. 3 can be adapted for use with a snap-type cover arrangement such as shown in Fig. 5 or the bayonet-type arrangement of Fig. 6 by forming the center post 18 to the proper form and providing a cooperating cover.

It is therefore seen that each of the embodiments shown provides a novel electric light bulb which can be connected to a current source without the necessity of providing a socket for the bulb at the point of use. Utilizing the present invention, extreme flexibility in the design of decorative lighting displays can be achieved and the bulb can be connected to its current source in a simple, economical and expedient manner, at any desired location, or can be readily moved from one point on the cord to another.

While several forms of the invention in various details have been shown, it should be understood that numerous alterations and modifications can be made without departing from the essential features described. Therefore, the foregoing description should be considered as illustrative only, and the scope of the invention is defined solely by the appended claims.

What is claimed is:

1. In combination an electric light bulb comprising an envelope, said light bulb having a base portion which

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is continuous and integral with said envelope, said base being formed with a grooved portion, and a cover retaining portion, said cover retaining portion also being continuous and integral with said envelope and said base, a plurality of contact members extending from within said envelope into said grooved portion, and a cover member fastened directly to said integral cover retaining portion of said base.

2. An electric light bulb as described in claim 1 wherein the cover retaining portion of the base and the cover are of bayonet type construction.

3. An electric light bulb as described in claim 1 wherein the cover retaining portion of the base and the cover are of snap-type construction.

4. An electric light bulb comprising an envelope with a continuous integrally molded base having grooves, said base also having a section continuous and integral therewith extending below said grooves and constructed to accommodate a cover, a filament for said light bulb located within said envelope, contact members connected to the filament and extending into said grooves, a wire placed in each of said grooves and a cover member fastened to said extending section and pressing said wires into said contact members to make contact therewith.

5. An electric light bulb as described in claim 4 wherein the extending section and the cover are of screw-type construction.

6. An electric light bulb as described in claim 4 wherein the extending section and the cover are of bayonet type construction.

7. An electric light bulb as described in claim 4 wherein the extending section and the cover are of snap-type construction.

8. An electric light bulb comprising an envelope with a continuous integrally molded base having a grooved portion, said base being constructed to receive a cover member, contact members sharpened at one end and extending downwardly into said grooved portion, a filament for said bulb connected to said contact members, current-carrying wires placed in said grooved portion, and a cover member retained by said base and pressing said wires against the sharpened ends of said contact members to make electrical contact therewith and supply current to the filament.

9. An electric light bulb as described in claim 8 wherein the base and cover are of screw type construction.

10. An electric light bulb as described in claim 8 wherein the base and cover are of bayonet type construction.

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11. An electric light bulb as described in claim 8 wherein the base and cover are of snap type construction.

12. An electric light bulb comprising an envelope having a continuous integral substantially cylindrical base, said base being formed with an exterior channel extending diametrically across the bottom thereof, a pair of rigid lead-in conductors sealed into said base and having pointed ends extending into said channel and a filament within said envelope and connected to said lead-in conductors, said conductors having enlarged portions within said base for increasing the strength of said pointed ends against force applied longitudinally thereof.

13. An electric light bulb comprising an envelope, said light bulb having a base portion which is continuous and integral with said envelope, said base being formed with a grooved portion and a cover retaining portion, said cover retaining portion also being continuous and integral with said envelope and said base, and a plurality of contact members extending from within said envelope into said grooved portion.

14. An electric light bulb comprising an envelope, said light bulb having a base portion which is continuous and integral with said envelope, said base being formed with a grooved portion and a cover retaining portion, said cover retaining portion also being continuous and integral with said envelope and said base, a filament within said envelope, and contact members connected to said filament extending from within said envelope into said grooved portion.

15. An electric light bulb as set forth in claim 14 wherein said contact members are substantially rigid and are molded within said base and have an enlarged portion to which the filament is connected.

16. An electric light bulb comprising an envelope, said light bulb having a base portion which is continuous and integral with said envelope, said base being formed with a grooved portion and a cover retaining portion, said cover retaining portion also being continuous and integral with said envelope and said base, and a filament wire within said envelope, the ends of said filament wire extending into the grooved portion of the base.

References Cited in the file of this patent

UNITED STATES PATENTS

2,079,801	Grant	May 11, 1937
2,483,351	Richardson	Sept. 27, 1949