LAMP SOCKET CONVERTER

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Application August 3, 1954, Serial No. 447,585

3 Claims. (Cl. 339—31)

This invention relates to converters or adapters for use in connection with lamp sockets to convert a lamp socket from a single contact socket into a socket with two or more contacts, without the necessity of replacing the entire sockets, lamp housings or other parts to which the sockets may be secured.

These converters or adapters may, for example, be used in converting parking lights, tail lights, or the like to direction indicating signal lights, without removing the sockets from the lights on which they are mounted. Converters of this type have heretofore been constructed which, however, are not held securely in the lamp sockets, and which are, consequently, not reliable.

It is, therefore, an object of this invention to provide an improved lamp socket converter or adapter which can be easily installed in a lamp socket and which will be securely held against displacement out of its correct position in the socket.

Another object is to provide a converter of this type which can be easily produced in quantities and which is of strong and rugged construction.

A further object is to provide a lamp bulb socket converter which is so constructed as to facilitate the correct installation of the same in a socket.

Other objects and advantages will be apparent from the following description of an embodiment of the invention and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

Fig. 1 is a perspective view of a lamp socket converter embodying this invention.

Fig. 2 is a longitudinal central sectional view of a lamp socket converter embodying this invention and showing the same installed in a lamp socket of the type commonly used in connection with automobile lamps.

Fig. 3 is a longitudinal sectional elevation thereof, on line 3—3, Fig. 2.

Fig. 4 is a transverse section thereof, on line 4—4, Fig. 2.

Fig. 5 is a side view of a locking and guide wire or key which forms a part of the converter.

Fig. 6 is a fragmentary sectional elevation, on an enlarged scale, showing the manner in which the key is seated in the converter.

Referring first to Figs. 2, 3, and 4, 8 represents a lamp socket of the type commonly used in connection with automobile lighting circuits and other low voltage circuits.

This socket 8 is of substantially cylindrical form open at one end to receive a lamp base and partially closed at the other end by means of an inwardly extending annular flange 9. The other end of the socket is provided with a pair of J-slots or bayonet slots arranged directly opposite to each other and having portions 10 extending lengthwise of the lamp socket and terminating at their lower ends in the usual laterally extending portions 11 of the slots.

The lamps used in connection with such sockets have outwardly extending, short pins in their metal bases which may be pushed downwardly along the parts 10 of the J-slots. Then, by turning the lamp, these pins enter projections 11 which are inclined slightly toward the open end of the lamp socket so that the lamps will be yieldingly held in the positions in which the pins are positioned in the inner ends of the lateral extensions 11 of the slots. Such lamps ordinarily have a single contact in the middle portion thereof which bears against a similar contact projecting outwardly from a plug, thus forming an electric circuit to one end of the filament of the electric lamp, the other end being grounded to the base of the lamp which, in turn, is grounded on the lamp socket. The contact of the plug is yieldingly urged outwardly so that contact with the lamp terminal is maintained and so that the lamp is yieldingly held in the lamp socket.

It is now quite common to supply lamps with two filaments, which necessitates two terminals on the bases of the lamp. The two terminals on such light bulbs are uniformly arranged in fixed relation to outwardly extending pins on the bases of the lamps which cooperate with the J-slots 10. Consequently, a converter with two terminals is required in the lamp socket, and the two terminals of the converter must be arranged in the same relation to the inner ends of the J-slots as the terminals of the lamp are arranged in relation to the pins of the lamp base.

My improved converter as illustrated by way of example in the drawings includes a plug 14 made of insulating material and of a diameter such as to be readily insertable into a cylindrical lamp socket 8. This plug may, for example, be made of a molded plastic material and is provided with holes 15 extending lengthwise through the same, the number of holes corresponding to the number of filaments of the lamp. In the construction shown by way of example, I have shown a converter intended to be used in connection with a double filament lamp, and consequently, two holes 15 are provided in the plug 14, but it will be understood that the plug may have more such holes if the lamp has more than two filaments. These holes terminate at their inner ends in enlargements 16. A pair of conductors 17 fit fairly snugly in the holes 15 and extend upwardly through the enlargements 16 and terminate at their inner ends in contacts or terminals 18 formed to engage the two contacts of a two-filament lamp socket. The conductors 17 extend through a disk or plate 20 and the terminals or contacts 18 are arranged on the outer face of this plate or disk, to face the end of the socket through which the lamp bulbs are inserted.

Means are also provided to yieldingly hold the disk 20 in spaced relation to the plug, such for example, as coil springs 22 which extend about the ends of the conductor 17. One end of each spring seats against the shoulder formed by the enlargement 16 of the hole 15, and the other end of the spring seats against the disk or plate 20 so that the plate 20 is normally held in spaced relation to the plug 14. Consequently, by means of the springs, the terminals 18 will be urged against the corresponding terminals of a lamp bulb, and since the plate 20 is movable in a limited extent relatively to the plug 14, it will be obvious that the two contacts 18 of the ends of the conductor 17 will be urged independently of each other into contact with the corresponding terminals of the lamp plug.

Since, as stated, the two terminals on a multi-filament light bulb are always positioned in a definite angular relationship to the pins of the base of the lamp bulb which are formed to cooperate with the J-slots, it will be obvious that it is also necessary to provide means for locating the plug 14 in similar relationship to the lamp bulb socket 8 so that the terminals 18 of the conductors 17 will be in correct engagement with the terminals on the
lamp bulb base, and it is also necessary to provide means for holding the plug 14 securely in fixed relation to the lamp socket.

By way of example, I have for this purpose provided the plug 14 with a wire anchoring member 25 which has a middle portion 26 terminating at its ends in outwardly extending arms 27, the wire anchoring member 25 being preferably made of resilient metal, such as spring wire. This anchoring member may be secured to the plug 14 in any suitable or desired manner, and in the construction shown in the drawings, the plug 14 has a radially extending recess 28 having a circumferential recess 29 formed in the lower face thereof. This groove 29 is of a width which is slightly less than the width or diameter of the part 26 of the wire member. Consequently, because of the resilience of the plastic material, it is possible to force the part 26 of the wire member into this groove by pressure or impact, care being taken that when seated in the groove the arms 27 will project toward the outer end of the plug. In order to ensure the correct location of the arms 27 of the wire member with relation to the plug 14, the sides of the plug at opposite ends of the groove 29 are preferably provided with longitudinally extending recesses 30 which are slightly larger in width than the diameter of the arms 27 of the wire member 25. These recesses also ensure the maintaining of the arms 27 of the wire member in correct relation on the plug 14, and the longitudinally extending recesses 30 also permit the arms 27 to move into and out of these grooves during the use of the converter.

When the converter, after it has been assembled, is applied to a lamp socket, the conductors 17 are first passed lengthwise through the socket so that they will extend from the inner end thereof, as shown in Figs. 2 and 3. The plug 14 is then positioned so that the arms 27 are in a longitudinal alignment with the inner ends of the portions 11 of the J-slots of the lamp socket. The plug is then pressed toward the inner end of the socket and during this movement, the arms 27 will be flexed so that the outer ends thereof will be moved toward each other. In this manner, the converter may readily be positioned in the socket, as clearly shown in Figs. 2 and 3, and the relatively sharp outer ends of the arms 27 will tend to dig in or embed themselves in the inner surface of the socket, and thus resist movement of the plug 14 in the reverse direction, and also will resistly extending the plug within the socket. Consequently, by a correct positioning of the arms 27 of the wire member with relation to the terminals 18 of the conductors, these terminals, after the plug has been positioned in the socket, will be in position to contact with the terminals of the base of the lamp bulb when the same is moved into its operative position in the socket. The coil springs 22 seated in the enlargements 16 of the holes 15, hold the terminals 18 in correct relation to the socket, so that these terminals will be in contact with the terminals of a light bulb when the same is in correct operative relation to the lamp socket.

The means of this construction, it is a relatively easy matter to convert a single terminal lamp socket into a multi-terminal socket. By aligning the spring wire arms 27 with the inner ends of the portions 11 of the J-slots for positioning the plug correctly in the socket, the converter can be easily installed correctly in a lamp socket. The arms 27 of the wire member 25, consequently, serve the two purposes of helping to position the plug in the correct relation to the lamp socket, and also of holding the converter in such correct relation, when the same has been inserted into a lamp socket. These arms, because of their inclination, permit the ready insertion of the plug into the socket, and because of the tendency of the sharp ends of the wire to dig into the interior of the lamp socket, the plug will be securely held in the lamp socket both against removal therefrom and against turning.

It will be understood that various changes in the details, materials, and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

I claim as my invention:

1. A converter for insertion into a lamp socket having bayonet slots in the lamp receiving end thereof, said converter comprising a plug of substantially cylindrical shape, electrical terminals on said plug, and a wire anchoring member arranged crosswise of said plug and having its ends bent to form arms extending beyond the sides of said plug, said plug having a groove formed in one end thereof and arranged in predetermined relation to said terminals, said groove being of less width than the diameter of said wire member, the side walls of said groove tightly gripping said wire member when the same is inserted into said groove, said plug also having grooves at opposite sides thereof into which said arms extend to hold said arms in positions to serve as guides for inserting said plug into said socket in predetermined relation to said bayonet slots.

2. A converter for insertion into a lamp socket having bayonet slots in the lamp receiving end thereof, said converter comprising a plug of substantially cylindrical shape, and a wire anchoring member arranged crosswise of said plug and having its ends bent to form arms extending beyond the sides of said plug, said plug having a groove formed in one end thereof and in which said wire member is held in fixed relation to said plug, the sides of said plug having recesses therein extending from the ends of said groove along the sides of said plug and into which the arms of said wire member may extend, said arms of said wire member being bent to lie within said recesses at a slight angle thereto with the free ends of the arms extending slightly beyond the sides of said plug into position to embed themselves in the interior wall of the socket.

3. A converter for insertion into a lamp socket having bayonet slots in opposite sides of the lamp bulb receiving end thereof for cooperation with outwardly projecting pins of a lamp bulb base having a pair of terminals arranged in fixed relation to said pins, said converter comprising a plug of insulating material and an anchoring member secured to said plug and including a pair of resilient wire arms extending outwardly from said plug toward the light bulb receiving end of said socket at an acute angle to said plug, the ends of said arms being spaced apart a distance slightly greater than the outside surface of the plug, whereby said arms, when forced into said socket from the light bulb receiving end thereof will be held in fixed relation to said socket by the ends of said arms frictionally gripping the inner surface of said socket, and a pair of electrical contacts on said converter and arranged in the relationship to said wire arms as the contacts of the lamp bulb are to the pins thereof.

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