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1,493,988

T. J. KERWIN

LAMP SOCKET

Filed May 16, 1921

Fig. 1.

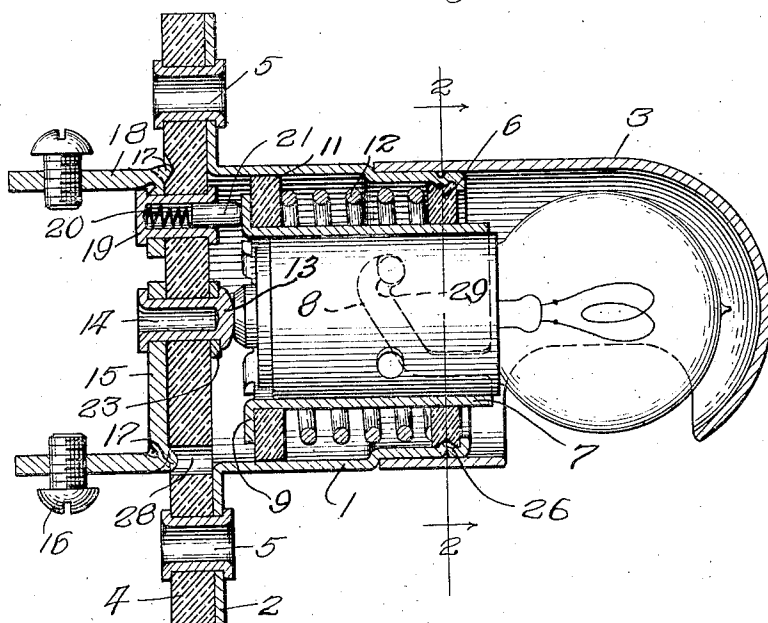


Fig. 5.

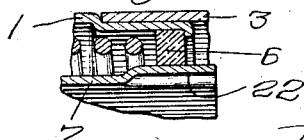


Fig. 2.

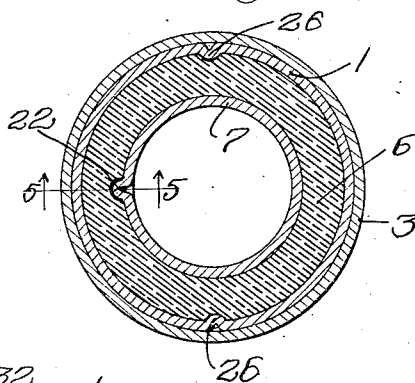


Fig. 3.

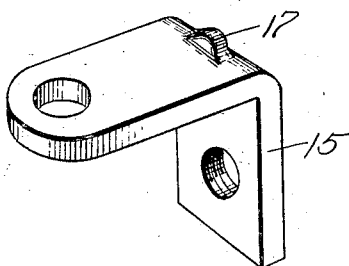
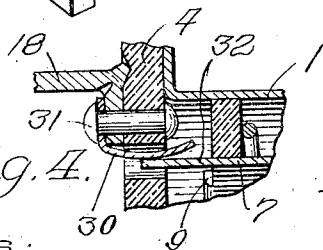


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LAMP SOCKET.

Application filed May 16, 1921. Serial No. 470,160.

To all whom it may concern:

Be it known that I, THOMAS J. KERWIN, citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in a Lamp Socket; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sockets for incandescent lamps, its general objects being those of providing a compact and cheaply manufactured socket which will hold the lamp firmly interlocked in spite of jarring and which will readily adapt itself for use with rear wiring. Furthermore, my invention aims to provide a socket of this class which will be particularly suitable for use on the instrument boards of automobiles, which can readily have its metal parts secured directly to the insulating panel of such a board, and which can conveniently be used as a cowl lamp.

In certain underlying principles, my invention is an improvement over the lamp socket disclosed in U. S. Patent No. 1,106,459, of August 11, 1914, to George C. Knauff, which patent shows a spring interposed between the inner and outer shells of a socket and continuously tending to slide one shell lengthwise of the other, one of the shells being equipped for interlocking with the base of the lamp while the other is fast with respect to one of the socket terminals. In the construction of this Knauff patent, the two relatively slidable shells or casings were electrically connected to each other both by the spring and by a finger and slot arrangement which prevents the inner casing from rotating with respect to the outer. Consequently, such a construction only lends itself readily to grounded circuit connections, such as those employed in automobile lighting when one terminal of the circuit is grounded through metal parts of the automobile.

These grounded circuit or single-wire circuits are now being abandoned to a considerable extent in automobile lighting practice in favor of a two-wire arrangement which permits all portions of the circuit to be insulated effectively from metal portions of the vehicle. My invention aims to pro-

vide an improvement over the said Knauff socket which will readily lend itself to such a two-wire construction, which also will be cheaper to manufacture and which can more easily be employed in connection with cowls or reflectors for restricting the emitted light to a predetermined direction.

Furthermore, my invention aims to provide novel means for preventing a relative rotation of the inner and outer shells, and aims to reduce the number of fastening elements required in connection with the terminals of the socket. For this latter purpose, my invention aims to provide wire terminals each secured to the insulating base of the socket by a single rivet and each so arranged as to prevent it from rotating about the said rivet as an axis; it also aims to employ one of the rivets used for this purpose as the cylinder for a spring-pressed plunger affording the connection between the wire terminal and the sliding inner shell of the socket, and to provide a construction in which the assembly of the parts causes this inner shell to retain the spring-pressed plunger in operative position. Still further and more detailed objects will appear from the following specification and from the accompanying drawings, in which—

Fig. 1 is a central and longitudinal section through a socket of the instrument board or cowl lamp type embodying my invention.

Fig. 2 is a horizontal section through the same taken along the correspondingly numbered line of Fig. 1 and showing the method of preventing the inner shell from rotating.

Fig. 3 is a perspective view of the wire terminal from which the electrical connection is made to the axial lamp terminal.

Fig. 4 is a section similar to a portion of Fig. 1 and showing another arrangement for making the electrical connections from one wire of the circuit to the inner slidably mounted socket shell.

Fig. 5 is a fragmentary section taken along the line 5—5 of Fig. 2 and showing the arrangement used for preventing the inner shell or collar from rotating with respect to the forward insulating ring.

In the embodiment of Figs. 1 to 3 inclusive, the socket of my invention includes an outer shell 1 equipped at its rear end with an outwardly directed flange 2, this shell being desirably contracted in diameter for

the forward portion of its length so as to slidably fit a hood or cowl 3 which has a suitable light-emitting opening and which bottoms on the junctures of the two differently diametered shell portions when in use, after the manner shown in Fig. 1. The flange 2 of this outer shell is fastened to an insulating base 4 by any desirable means, such as a pair of rivets 5, and these rivets are desirably hollow so as they may be used as screw holes for the socket as a unit is to be fastened to any suitable backing.

Fastened within the upper or mouth end of the outer shell 2 is an annular insulator 6, which insulator is retained within the shell by flanging the forward end of the shell inwardly as shown in Fig. 1, and which insulator is prevented from rotation within this shell by slightly indenting the shell into the insulator at one or two points after the manner shown at 26 in the same figure.

The insulating washer 6 slidably is sleeved upon an inner shell or collar 7 which is equipped with bayonet slots 8 equipped for interlocking with the base of the lamp, as for example by providing bayonet slots 8 for interlocking with the laterally projecting pins 29 on the base of a so-called Edison lamp, this being a type of lamp for which the socket of my invention is particularly suited. The collar 7 has at its rear end a number of outwardly directed fingers 9 supporting a lower washer 11 which is also of insulating material and which slidably fits the space between the outer shell 1 and the inner shell or collar 7. Interposed between the two insulating washers 6 and 11 is a spiral spring 12 which is continuously under compression and therefore continuously tends to slide the inner shell towards the base of the socket. In so doing, this spring continuously tends to approach the bayonet slots 8 to the head 13 of a circuit terminal here shown as a tubular rivet 14 extending through the insulating base 4 of the socket axially of the latter. This rivet 14 constitutes the fastening for the wire terminal 15 to which one wire of the circuit may readily be clamped by a binding screw 16. To prevent this wire terminal 15 from rotating about the rivet 14 as an axis, I desirably provide it with an integral projection 17 entering a hole 28 punched in the insulating base 4, so that the engagement of the knob 17 with the wall of this perforation will prevent lateral movement of the wire terminal 15, although the latter is only secured to the base 4 by a single rivet.

For the other wire terminal I desirably employ a somewhat similar angle piece 18 also shown as having a knob interlocked with the insulating base, but here shown with this knob entering only a relatively shallow indentation in the base. This wire

terminal 18 is fastened to the base 4 by a tubular rivet 19 having its lower end closed so as to form a closed-end cylinder housing both a spring 20 and the lower end of a plunger 21. This plunger 21 projects above the base 4 and is continuously pressed by the spring 20 into contact with one of the fingers 9 on the rear end of the collar 7, thereby affording the electrical connection between the wire terminal 18 and the said collar or inner shell.

To prevent the collar 7 from rotating with respect to the shell or casing 1, I desirably form a slight outward bulge or groove 22 in this collar for slidably entering a corresponding groove in the upper washer 6 as shown in Fig. 2 and in Fig. 5. Consequently, since this washer 6 is interlocked against rotation with respect to the outer shell, the formation 22 and the said groove will prevent the collar from rotating with respect to the outer shell, thus facilitating the attaching and detaching of the lamp from the socket.

To secure a proper spacing between the slot 8 and the head of the rivet 14 (which head forms the axial contact of the socket) while allowing for other features of the construction as above described, I may desirably employ a washer 23 between the said head and the base 4. This spacing between the said slot and head is so arranged, after the general manner disclosed in the said Knauff patent, that when the lamp is detached, the hook end of the bayonet will be closer to the head of the rivet 14 than the standard spacing between the extreme tip of the lamp base and the lateral projections on this base. Consequently, when the lamp is being inserted, the tip of the base will engage the head 14 and the oblique portions of the slot 8 will serve as cams for sliding the collar 7 against the pressure of the spring 12 until the said projections snap into the hook ends of the slots.

While the collar 7 is thus being moved lengthwise of the outer shell, the plunger 21 continuously maintains the electrical connection to the same and hence affords the circuit connection through the shell of the lamp base. However, the washers 6 and 11 insulate the spring from the collar 7, so that the desired insulation is maintained between the two wire terminals.

Where such a socket is to be used as one of the features of an assembly mounted on an insulating panel, the base 4 may constitute an integral portion of this panel; that is to say, the various metal parts may be secured directly to the panel instead of being first mounted on a support on the base.

However, while I have illustrated and described my invention in an embodiment including various details of construction and arrangement, I do not wish to be limited to

the latter, it being obvious that numerous changes might be made without departing from the spirit of my invention. For example, instead of using a spring-pressed plunger for continuously maintaining the electrical connection from the wire terminal 18 to the collar or inner shell of the socket, I may employ a spring contact-finger 30 secured to the wire terminal 18 by the same rivet 31 which fastens the latter to the insulating base 4 and may have this finger in continuous sliding engagement with a rearward extension 32 on the collar 7, after the manner of Fig. 4.

In either case, it will be evident that my socket construction requires very few parts, that the spring, washers and collar are automatically retained in position by adjacent parts when the socket is assembled, and the wire terminals are conveniently disposed for the usually desirable rear wiring. Moreover, both of these terminals are stationary, thereby avoiding any strains due to movements of the wires attached to the same.

I claim as my invention:

1. A lamp socket comprising an insulating base, a shell supported thereby with freedom for relative movement axially of the shell, the said shell having its axis transverse of the said base, the shell having means thereon for interlocking with the base of a lamp to hold the lamp with the end of its base adjacent to the said insulating base, a wire terminal fast upon the insulating base and having a stationary contact portion disposed for engaging a terminal on the lamp base, means for preventing rotation of the shell with respect to the insulating base, and means carried by the insulating base for affording a circuit connection direct to the shell.

2. A lamp socket comprising an outer shell, an insulating base fastened to the rear end of the shell, an inner shell slidably mounted in the outer shell and provided with means for interlocking with the base of a lamp, the inner shell having at its rear end a contact portion extending transversely of the shell, a wire terminal member having a contact portion disposed upon the front of the insulating base and directly engaging the lamp base, a spring interposed between the inner and outer shells to urge the inner shell rearwardly, and a second wire terminal member having a portion yieldingly engaging the said contact portion of the inner shell.

3. A lamp socket comprising an outer shell having an outwardly directed flange at its rear end, an insulating base secured to the said flange, an inner shell coaxial with the outer shell, insulating means spacing the two shells from each other, a spring continuously tending to slide the inner shell rearwardly, a circuit terminal having a rigid

contact portion disposed on the front of the insulating base coaxial with the said shells, the inner shell having means thereon for interlocking with the base of a lamp and holding the lamp with the usual axial terminal thereof in engagement with the said contact portion of the circuit terminal, and a second circuit terminal having a yielding portion contacting continuously with the rear end of the inner shell.

4. A lamp socket comprising a supporting member, a lamp-contacting terminal fast thereon, a shell having means thereon for interlocking with the lamp base, the said shell being slidable with respect to the supporting member, a circuit terminal having one portion fast upon the supporting member and another portion continuously contacting with the said shell, spring means continuously tending to slide the shell in one direction, and means for insulating the shell from metal parts of the supporting member, the said insulating means having means thereon for preventing rotation of the shell with respect to the supporting member.

5. A lamp socket comprising relatively slidable and relatively insulated inner and outer shells, the inner shell having means thereon for interlocking with the lateral projections on the base of the lamp, a wire terminal fast with respect to the outer shell, but insulated therefrom, said terminal having means for contacting with the end of the lamp base, and spring means opposed by the interlocking of the lamp base with the socket, said spring means continuously tending to slide the inner shell in one direction with respect to the outer shell, and means for preventing relative rotation of the inner and outer shells.

6. In a lamp socket, in combination, a stationary annular member, a shell slidable with respect to the said member and having means thereon for interlocking with the base of a lamp, insulating means simultaneously spacing the said shell from the annular member and preventing rotation of the shell, a spring continuously tending to slide the said shell in one direction and insulated from the annular member by the said insulating means, a circuit terminal fast with respect to the annular member and having means for contacting with the end of the lamp base, and a second circuit terminal associated with the said shell and affording continuous electrical connection to the latter.

7. In a lamp socket, in combination, a stationary annular member, a shell slidable with respect to the said member and having means thereon for interlocking with the base of a lamp, insulating means spacing the shell from the annular member, the insulating means and said shell and annular member spaced thereby having interengaging formations for preventing relative rotation there-

of, and a spring bearing at one end against the insulating means and continuously tending to slide the said shell in one direction.

8. A lamp socket comprising relatively
5 slidable inner and outer shells, the outer shell having an outwardly directed flange at its rear end, an insulating base secured to the said flange, an insulating washer interposed between the two shells and slidable with respect to one of the shells, a compression
10 spring operatively interposed between the said insulating ring and the shell with respect to which the ring is slidable, the inner shell having means thereon for interlocking with the base of a lamp, a circuit terminal
15 mounted on the base and contacting with the end of the lamp base, and a second circuit terminal affording continuous electrical connection to the inner shell.
20 9. In a lamp socket, in combination, an insulating base, a stationary shell fast thereon, an insulating washer housed by the shell at its forward end and interlocked with the shell against rotation, an inner shell extending
25 slidably through the insulating ring and having outwardly directed fingers at its rear end, the inner shell having means thereon for interlocking with the base of a lamp, a second insulating washer disposed between
30 the two shells and bearing against the said

fingers, a compression spring interposed between the two insulating washers, and two conducting means carried by the insulating base and respectively affording the circuit connections to the axial lamp terminal and
35 to the inner shell.

10. A lamp socket comprising an insulating base, an outer shell fastened at its rear end to the said base, an insulating ring mounted in the forward end of the shell, an
40 inner shell slidable in the insulating ring and having means thereon for interlocking with the base of a lamp, a second insulating ring disposed between the two shells and slidable with respect to the outer shell,
45 means on the inner shell for limiting the movement of the second insulating ring with respect thereto in one direction longitudinally of the said shell, a pair of circuit terminal members mounted on the base and re-
50 spectively arranged for affording electrical connection to the inner shell and to the axial terminal of the lamp, and a compression spring interposed between the two insulating rings, the compression spring being disposed
55 between the two shells but continuously out of engagement with at least one thereof.

Signed at Chicago, Illinois, May 13, 1921.

THOMAS J. KERWIN.