G. C. KNAUFF.

LAMP SOCKET.

APPLICATION FILED FEB. 26, 1917.

1,260,401. Patented Mar. 26, 1918.

Fig. 1.

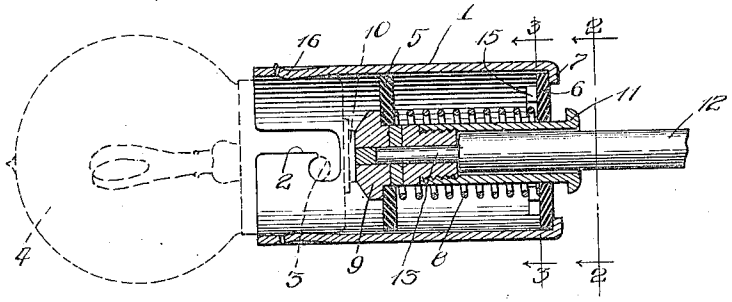


Fig. 2.

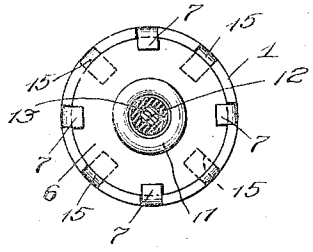


Fig. 4.

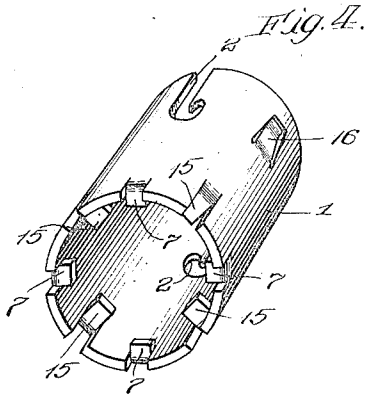


Fig. 3.

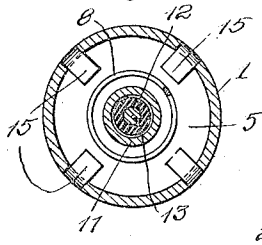


Fig. 7.

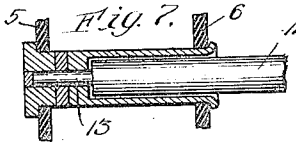


Fig. 6.

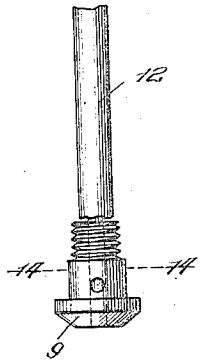
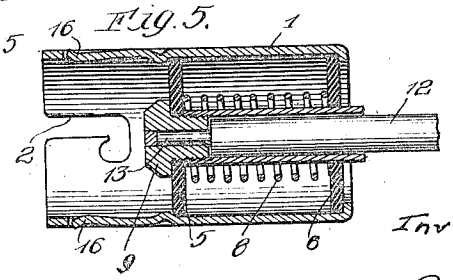


Fig. 5.



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LAMP-SOCKET.

1,260,401. Specification of Letters Patent. Patented Mar. 26, 1918.

Application filed February 26, 1917. Serial No. 150,977.

To all whom it may concern:

Be it known that I, GEORGE C. KNAUFF, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lamp-Sockets; 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 electric fittings employing slidably mounted conducting elements, and more particularly to electric sockets or connectors in which certain electrical connections are made by spring-pressed plungers forming parts of the electric circuit. With appliances of this general class, it has heretofore been difficult to secure permanently firm wire connections (thereby avoiding a loosening of the connections by jarring) as well as compactness of construction. This has been particularly true in connection with sockets for automobile lamps, which sockets are subjected to continuous and severe jarring when in service and are desirably mounted within a very limited space. Thus, in employing the socket shown in my U. S. Patent No. 1184966 of May 30th, 1916, I have found that the screw fastening for the wire leading to the central socket terminal was apt to jar loose, and have also found it impractical to solder this wire connection without softening and damaging the insulating disk adjacent to the latter. Moreover, the space between the rear end of the reflector and the lamp casing is apt to be too scant to permit of such an exposed wire terminal at the rear end of the socket.

To overcome these and other objections, my present invention aims to provide a socket construction in which the wire terminal will be inside the socket casing (thereby reducing space), and in which the wire can readily be soldered to this terminal before the socket parts including the insulating members are assembled (thereby avoiding any damage to the insulation by the heat of the soldering).

Furthermore, my invention aims to provide a grounded shell socket or connector in which the wire forming the other end of the circuit may enter the socket shell axially of the latter, and in which the insulation on the wire will be duly protected against damage while the wire slides back and forth axially of the socket casing. It also aims to provide simple and cheap means for mounting an insulator adapted to guide a slidable conducting member, and simple means for enabling the tip of the wire to be soldered to such a conducting member. Further objects will appear from the following specification, and from the accompanying drawings in which—

Figure 1 is a central longitudinal section through a lamp-socket embodying my invention.

Figs. 2 and 3 are transverse sections taken respectively along the lines 2—2 and 3—3 of Fig. 1.

Fig. 4 is a perspective view of the socket casing of Fig. 1.

Fig. 5 is a longitudinal section through another embodiment of my invention in which the rear insulating disk is held only against movement in one direction.

Fig. 6 is a view showing the forward head element of the conducting member with the wire ready for soldering to the same.

Fig. 7 is a view showing a single-piece conducting member in which the rear head is formed by flaring out the tubular shank.

In the embodiment of Fig. 1, the socket or connector of my invention includes a substantially cylindrical casing 1 equipped at its forward end with bayonet slots 2 for interlocking with pins 3 on the base of a terminal-carrier, such as a lamp 4. Within the shell or casing 1 are two cylindrical disks 5 and 6, of which the rear disk normally abuts against stops (such as lugs 7 formed from the casing 1), which stops prevent a movement of the disk out of the rear of the end of the casing. The forward disk 5 may be of any desired size smaller than the bore of the casing 1, its diameter depending somewhat upon the exactness of the interfitting of certain of the parts hereafter mentioned. Both of the disks 5 and 6 have alined perforations disposed axially of the casing, and these disks are kept in spaced relation by a compression spring 8 operatively disposed between the same.

Extending through the said alined perforations in the two insulating disks is the shank of a conducting member having heads disposed respectively forward of the disk 5

and to the rear of the disk 6, the forward head 9 of this member being disposed for contacting with the axial terminal 10 of the said lamp. The rear head 11 of the said conducting member is desirably integral with the main shank portion of this member, which shank portion is hollowed out so that it may house the insulation 12 on a wire 13 extending into a longitudinal bore in the portion of the conducting member which includes the forward head 9. This last named portion of the conducting member is desirably threaded upon the other portion, as shown in Fig. 1, and preferably as a transverse bore extending through it and intercepting the said longitudinal bore, for the purpose hereafter described.

In using the socket thus described, I first strip the insulation from the extreme tip portion of the wire 13, and slide this tip into the longitudinal bore of the forward head member, as shown in Fig. 6. I then dip these assembled parts into molten solder to about the distance shown by the dotted line 14 in Fig. 6, thus permitting the molten solder to enter both of the bores in the said head member, so as to secure the wire 13 rigidly to this member. Next I slip the two insulators 5 and 6, together with the interposed spring 8 over the free or opposite end of the wire, slide the tubular shank member (which has the head 11) also over this wire and thread the latter upon the forward head member. Then I insert the assembled parts in the casing 1 of the socket with the rear insulator 6 bearing against the lugs or contracted casing portions 7; and secure this insulator 6 against forward movement in the casing by indenting other projections, such as the lugs 15.

With the parts thus assembled, it will be obvious that the heads 9 and 11 (being both larger than the bores of the two insulators) will limit the separational movement of these insulators. Moreover since the length of the conducting member is such that the forward head 9 will be engaged by the base of the lamp before the latter can enter the casing of the socket sufficiently to interlock with the catch formation in the slots 2, the conducting member will be moved to the rear of the casing against the action of the spring 8 when the lamp is placed in position as shown in Fig. 1. To hold the lamp itself more firmly, I desirably equip the casing also with spring fingers 16 after the manner of my previous U. S. Patent #1090630. These fingers may also be used for preventing the forward insulator 5 and the parts associated therewith from being drawn out of the forward end of the casing as in Fig. 5; hence the inner lugs 15 may be omitted entirely, as in Fig. 5. In either case, it will be evident that when a lamp is mounted in the casing, both of the insulating washers will be firmly clamped between the spring 8 and other portions adjacent respectively to these insulators, so that I entirely avoid the noisy rattling of the outer insulating disk as used in the socket of my previous Patent 1184966. Moreover, by making the central contact element of two separable portions and soldering one of these portions to the forward head of this element before assembling the socket as a whole, I can insure a permanently rigid connection and one which is not dependent for its security upon screws of any kind or upon the carrying capacity of any spring. So also, the tubular portion of the main conducting member affords proper mechanical protection for the portion of the insulating wire entering the socket casing, while enabling this wire to be brought substantially to the forward end of this conducting member. I am therefore able to considerably reduce the distance required between the rear end of the socket and the wall of any casing in which this socket is mounted.

However, I do not wish to be limited to the various details of construction or arrangement as here disclosed, nor to the method of assembling as above described, since these various features might obviously be varied in many ways without departing from the spirit of my invention. For example, the rear head 11 might be omitted altogether and the forward insulator 5 might be clamped between the forward head 9 and the main or tubular portion of the central conducting member, the latter being a straight tube as shown in Fig. 7. Or, both heads may be integral with the interposed tube or wire-incasing shank as shown in Fig. 7. Of course, it will be understood that the other terminal of the circuit is grounded to one terminal of the lamp through the casing 1 after the manner now customary in connection with so-called single-pole automobile lighting systems.

I claim as my invention:

1. In a lamp socket, a substantially cylindrical casing adapted for receiving one end of a lamp, a spring-pressed conducting member disposed axially of the casing, and a pair of spaced insulating guides for said member disposed within the casing; said member comprising a forward head disposed for contacting with the lamp and equipped for receiving the tip of a wire, a tubular shank incasing a portion of said wire, and a rear head, said heads being respectively integral with and threaded upon said shank.

2. In a lamp-socket, a casing equipped at one end for interlocking with a lamp, a spring-actuated plunger within the casing arranged for contacting with the lamp and for holding the lamp interlocked with the

casing, and a perforate insulator held within the casing by portions bent from the casing at opposite sides of the insulator, the plunger extending through a perforation in the insulator and being slidable with respect to the latter.

3. In a lamp-socket, a casing equipped at its forward end for interlocking with the lamp, a perforated insulator mounted in the other end of the casing, a conducting member extending slidably through the perforation of the insulator and equipped at each end with an enlarged head, and a compression spring operatively interposed between the insulator and the head at the forward end of the conducting member, the said member comprising as interconnected elements a wire terminal integral with the said forward head and a wire-incasing sleeve integral with the other head.

Signed at Chicago, Illinois, February 21st, 1917.

GEORGE C. KNAUFF.