March 18, 1952 H. E. DARNEY 2,589,677

SOCKET FOR ELONGATED TUBULAR LAMPS

Filed June 3, 1950

Fig. 1.

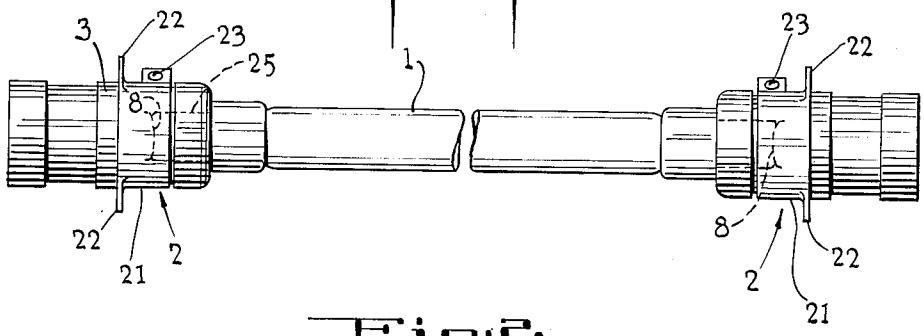



Fig. 2.

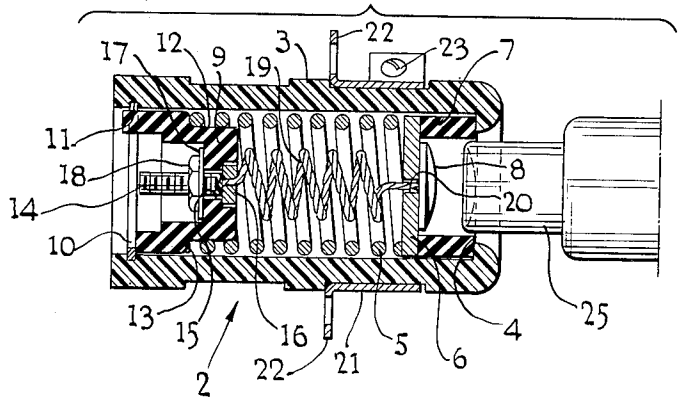
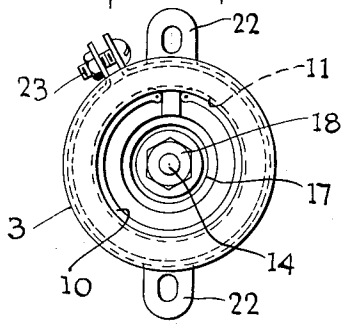



Fig. 3.




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## SOCKET FOR ELONGATED TUBULAR LAMPS

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1 Claim. (Cl. 173—328)

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This invention relates to tubular lamps and is concerned in particular with a socket for such lamps. It is especially applicable to tubular lamps that operate at high temperatures and high voltages and currents, such as metal vapor discharge lamps, cold cathode lamps and infrared generators. It is to be understood, however, that the invention is not limited thereto but may be used wherever found applicable.

Sockets that have been employed heretofore have certain disadvantages among which is that their usefulness becomes impaired upon being subjected to high temperatures. Among the objects of this invention is the provision of a new and improved device for supporting tubular lamps, that is simple in construction and capable of being manufactured at low cost. It is further among the objects of this invention to provide a socket that is adapted for easy mounting of a lamp and will operate efficiently even after prolonged use under conditions of high temperature. Other objects and various advantages of this invention will appear from the following detailed description and from the accompanying drawing in which:

Figure 1 is a side elevation of a tubular lamp mounted in sockets embodying the invention,

Figure 2 is a sectional view through a lamp socket with a lamp terminal slightly moved out of contact with the socket, and

Figure 3 is an end view of the holder.

In Figure 1, the numeral 1 indicates a tubular lamp that is supported in the sockets at each end thereof.

Referring particularly to Figure 2, the socket comprises a tubular housing 3 that is formed of electrically insulating material, such as, for example, ceramic material and the like. The housing is counterbored to provide an inturned flange or shoulder 4. In the housing is a coiled spring 5 which acts against a metal contact plate or disc 6. The disc is retained in the housing against the expansion of the spring by a spacer sleeve 7 of electrically insulating material that abuts on the shoulder 4, said sleeve being of sufficient length to prevent arcing between the contact disc and conductors that may be located near the end of the housing.

A contact head 8 is carried on the outside face of the contact disc 6 and it is suitably bonded to the disc as by soldering or welding. The contact head constitutes the means for conducting electric current from the socket to a contact terminal in the end of the lamp 1 to which the lamp electrodes are connected as is well known to those

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skilled in the art. The contact head is formed from metals that are highly conductive to electric current; examples of metals that are suitable for this purpose being silver, copper and noble metals such as gold and metals of the platinum group, as well as alloys of these metals and sintered materials in which any of these metals constitute a substantial part.

The opposite end of the spring 5 pushes against and to an end block 9 that is stopped from axial movement out of the housing by means of a ring 10 that is expanded into the annular groove 11 in the inner wall of the housing. The end block 9 is formed of electrically insulating material and is shown having an annular recess 12 that forms a shoulder 13 for seating the spring. The block is preferably cup-shaped so that it will accommodate a terminal post 14 that passes through a bore 15 in the base of the block and is held therein by means of the post head 16, lock-washer 17, and nut 18. The socket is connected to a source of electric energy (not shown) by means of the stud 14 which may be connected to a lead from said source prior to assembling of the socket.

In sockets that are used for lamps of the type herein contemplated, it is desirable to maintain a high contact closing pressure between the electrode terminal of the lamp and the contact element in the socket so that the hazard of arcing with its resulting pitting and erosion of the contact surfaces will be practically eliminated. This high closing pressure is obtained by means of the spring 5 that expands against the contact disc 6 forcing it against the lamp terminal in the manner explained above. If the electricity that passes through the socket to the electrodes of the lamp had to flow through the spring 5, the spring would soon become heated under the high currents that are needed to energize said lamps. Under these conditions and after prolonged use, the spring would become fatigued, whereby it could no longer maintain high pressure between the contact head 8 and the terminal of the lamp. For this reason, a conductor 19 is provided for conducting electricity between the terminal stud 14 and the contact head 8 so that there will be no flow of current through the spring 5 which is insulated from the terminal stud by means of the end block 9. The conductor 19 preferably comprises a multi-strand helical coil of a metal having high electrical conductivity, such as, for example, nickel, copper and alloys of these metals. Although the conductor is shown in the form of a coil, it is ob-

vious that it need not be so formed since the conductor does not exert any spring tension upon the contact terminals. The conductor may be joined directly to the terminal post 14 and to the contact head 8 as by passing through an opening 20 in the contact disc 6; however, for some installations, the conductor may be bonded directly to the disc 6.

The socket may be supported by any suitable mounting means. For this purpose, I have shown a ring clamp 21 having the ears 22 for fastening the clamp to a support, and having tightening means as shown at 23.

It will be observed that the contact surface of the head 8 is convex and that the terminal 25 of the lamp is provided with a concave face so that the lamp may become aligned with the axis of the socket when the lamp is fitted into the sockets.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course, be understood that changes in construction may be resorted to without departing from the spirit of the invention and scope of the appended claims. For example, I have described the contact disc 6 as being formed of metal, and the end block 9 as being formed of electrically insulating material. The reason for so forming these elements of the respective materials is to insure that there will be no flow of current through the spring 5. Obviously, this same result may be had by forming both the disc 6 and the block 9 of insulating material, or the block may be metal and the disc of insulating material so long as there is an electrical connection between the contact head 8 on the disc and the terminal stud 14 on the block.

What I claim is:

A socket for receiving the terminal of a high pressure lamp comprising, a tubular housing formed of electrically insulating material, an internal flange at one end thereof, said flange providing an opening having a diameter that is greater than the diameter of said terminal, a retainer spacing sleeve of electrically insulating material slidably mounted within said housing and having a diameter that is greater than the diameter of said opening and adapted to abut said flange, a contact disc of substantially the same diameter as said spacing sleeve slidably mounted within said housing and engaging said sleeve, a coiled spring of substantially the same diameter as said sleeve mounted within said housing, a cup-shaped retaining member formed of electrically insulating material fixedly mounted in the other end of said housing the outer diameter of said member being in engagement with the internal surface of said housing, said member having a slightly reduced diameter extending inwardly from the end of said housing thus forming a flange on said member, one end of said spring engaging said flange on said retaining member and the other end of said spring engaging said disc to urge it into engagement with said spacing sleeve, said retainer member having an opening centrally thereof, an electrical connecting post mounted within said opening in said retainer member for connecting the socket to a source of electric energy, an electrical contact head affixed to said disc adapted to engage the terminal of a high pressure lamp, and a multi-strand helical coil conductor mounted within but out of contact with said spring and electrically connecting the post to the contact head.



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