July 2, 1940. D. P. BARRY ET AL 2,206,217

LAMP MOUNTING

Filed May 28, 1938

FIG. 1

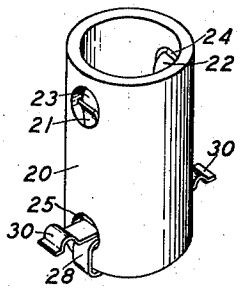


FIG. 2

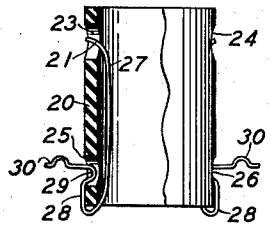


FIG. 3

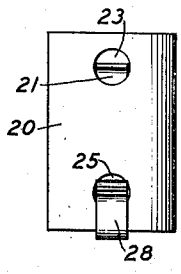


FIG. 7

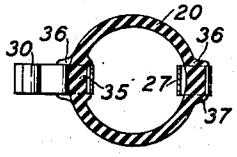


FIG. 4

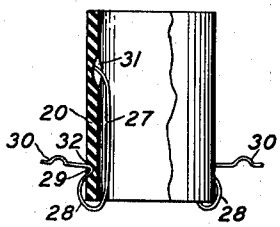


FIG. 5

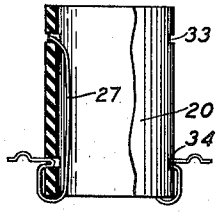


FIG. 6

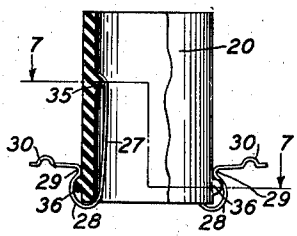


FIG. 10

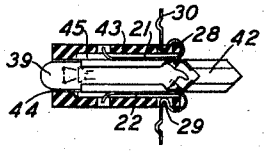


FIG. 8

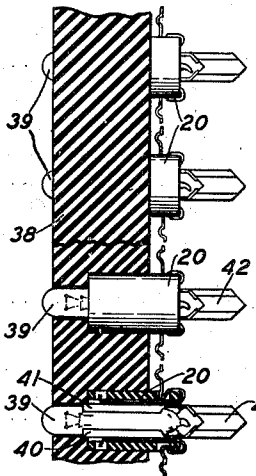
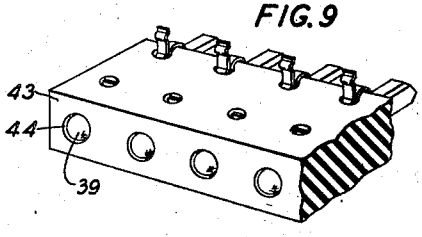


FIG. 9



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2,206,217

LAMP MOUNTING

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Application May 28, 1938, Serial No. 210,700

10 Claims. (Cl. 173—332)

This invention relates to lamp mountings and more particularly to a socket to receive a signal lamp for connection to a source of electrical energy.

An object of the invention is to provide a simple, durable and inexpensive socket which will permit the lamp to be readily inserted and removed therefrom.

A feature of the invention relates to the assembly of the socket without screws or other attaching parts.

A further feature of the invention relates to the mounting of the socket in a panel or other display surface merely by a friction fit.

A still further feature is the facility with which the lamp may be inserted and removed from the socket on either side of the panel or other display surface.

In accordance with the general aspects of this invention, an insulating member, preferably in the form of a sleeve, is provided with locking portions at opposite ends in uniformly spaced relation and resilient spring contacts are frictionally affixed to the sleeve by integral spring portions which register with the locking portions of the sleeve. This arrangement provides an inexpensive and durable socket or mounting for receiving a switchboard type lamp or similar side contact lamp.

In a specific embodiment of the invention, the socket is formed of a tubular insulator and a pair of leaf springs. The tubular insulator is provided with diametrically opposed apertures adjacent each end of the tube and the springs are bent in a manner to locate a longitudinal portion on the inside surface of the tube and a return bend portion extending around one edge of the insulator. The return bend portion is provided with a crimp or knee portion which extends toward the longitudinal portion and the end of the spring projecting from the crimp portion may be formed into a suitable terminal for making a solder connection to a battery circuit. The free end of the longitudinal portion is slightly curved in a direction toward the sleeve wall in order that the inner end of the spring is seated in the aperture at the top of the sleeve and the crimped portion fits into the aperture at the lower end of the sleeve. The flexibility of the spring and the cooperating bends therein readily register the spring in the apertures to frictionally support the spring in the tube without the aid of any attaching media, such as screws, rivets or staples.

It is readily apparent that the manufacturing assembly and mounting of the socket and its cooperating lamp are facilitated and simplified to the end that the device may be produced at a low cost.

Various modifications of the socket involve the insulating body in which the tube may be molded with protuberances at appropriate portions to lock the springs in operative relation or indentations or slots may be formed in the tube to frictionally support the springs.

The invention also contemplates the mounting of the socket in a panel or display surface without the aid of attaching elements to provide low cost installation.

An advantage of such an assembly is the ready access of the lamp in the mounting for replacement since the lamp may be inserted or removed from either side of the panel. Furthermore, the condition of the lamp may be observed from either side of the panel.

These and other features of the invention may be more clearly understood from the following description and the accompanying drawing in which:

Fig. 1 is a perspective view of one form of the socket made in accordance with this invention;

Fig. 2 shows the socket of Fig. 1 in partial cross-section with the spring contacts held in position therein;

Fig. 3 is a view in elevation showing the edges of the contacts engaging the edges of the openings in the socket;

Fig. 4 shows a modified form of the socket of this invention, partly in section, in which indentations are formed in the socket body to receive the contacts;

Fig. 5 shows a further modification in which saw slots lock the contacts in position;

Fig. 6 is a view, partly in cross-section, of another modification of the socket, in which the shell may be molded, and the associated spring contact;

Fig. 7 is a plan view in cross-section of the socket shown in Fig. 6 taken on the line 7—7;

Fig. 8 is an end view of a mounting panel showing a number of the sockets of this invention assembled therein, portions of the panel and the socket being shown in cross-section to clearly illustrate the simplicity of the assembly;

Fig. 9 illustrates in a perspective view another form of the invention in which the bank of sockets is provided in a molded unit; and

Fig. 10 is a cross-sectional view of the type of socket shown in Fig. 9.

Referring to the drawing, and Figs. 1 to 3, par-

ticularly, the lamp socket of this invention consists of a hollow insulating body 20 and a plurality of resilient metal contact members 21 and 22. The body 20 may be formed of standard fiber tubing or other suitable insulating material to form a sleeve-like receptacle for a signal lamp, such as a switchboard lamp. The tube or sleeve is provided with spaced apertures or openings 23 and 24 adjacent the upper end, in the form of drilled holes, and similar openings 25 and 26 adjacent the lower end and aligned with the openings 23 and 24, respectively. These apertures or openings form locking portions for the cooperating spring contacts 21 and 22 and enable the contacts to be frictionally supported and held in operative engagement with the insulating sleeve members 20.

The contacts 21 and 22 are formed of resilient metallic strips, such as phosphor bronze or similar conducting material, and are bent or shaped to provide a long yielding portion 27 which extends laterally along the inner surface of the sleeve, a return bend portion 28 which extends around the lower edge of sleeve 20, a crimped or knee portion 29 which is seated in the lower opening, such as 25, and a terminating portion 30 to which a wire connection may be soldered for supplying electrical energy to the lamp in the mounting. The end of the contact adjacent the long portion 27 is also curved toward the sleeve. The relationship of the outer crimped portion 29 to the inner length of the contact and the opposing bends in the contact in relation to the position of the openings adjacent the opposite ends of the sleeve promotes a locking engagement between the contacts and the sleeve merely by slipping the spring contacts through one end of the sleeve in alignment with the openings. The frictional grip of the contacts on the edges of the openings, as shown in Fig. 3, provides an assembly in which additional fastening elements are avoided thereby materially decreasing the cost of manufacture. Furthermore, the counteracting force of the opposed bends in the one piece contact on the sleeve openings prevents disengagement of the contact from the sleeve.

In Fig. 4 the socket is modified by providing indentations 31 and 32 in the inner and outer surfaces of the sleeve 20 to form locking seats for the springs. This arrangement facilitates assembly costs since the indentations may be provided during the molding process of the sleeve. The spring contacts as previously described may be assembled merely by slipping the contacts along the surface of the sleeve until the bends snap into the indentations to frictionally lock the contacts in operative position.

This form insures a rigid socket having high dielectric properties and presents a smooth exterior surface for insertion in a panel mounting.

The modification shown in Fig. 5 is similar to Fig. 1 except the openings are slots 33 and 34 cut in the ends of the sleeve, these slots extending at right angles to the axis of the sleeve. The spring contacts 21 and 22 may be frictionally secured to the sleeve by locking the bent portions thereof in the narrow slots.

Figs. 6 and 7 illustrate another form of the socket of this invention in which the molded insulating sleeve 20 is provided with protuberances or embossments 35 and 36 on the inner and outer surfaces, respectively, and in aligned relation as shown in Fig. 7. The bent end of the longitudinal portion 27 of the contact is seated on the upper edge of the inner embossment 35 and the crimped portion 29 is seated on the upper edge of the outer embossment 36 to frictionally secure the contact to the socket body. These embossments are also undercut approximately the width of the contact, as shown in Fig. 7 at 37, to prevent lateral movement of the spring.

The mounting of the socket of this invention and the associated signal lamp in a panel is shown in Fig. 8. The panel 38 is provided with countersunk openings in which the socket is supported merely by inserting the insulating sleeve 20 into the larger diameter portion of the panel which is usually toward the rear of the panel. A switchboard type lamp 39 or other side contact lamp may be inserted into the socket from the front of the panel, i. e., through the smaller diameter opening 44 or it may be inserted into the socket from the rear of the panel. This advantage is secured by the tubular form of the socket of this invention since there are no obstructions in the path of the lamp. The side contacts 40 and 41 of the lamp engage the resilient contacts of the socket and support the lamp in the panel. Another advantage of this construction is the ease with which the defective lamp may be detected from the rear of the panel due to some light being transmitted by the lamp adjacent the insulating base 42 of the lamp so that replacements may be made in the panel.

While the construction of the socket of this invention heretofore described is desirable for signal lamp mountings in a display or demonstration panel, such as a map or traffic indicator for police or airplanes, where the socket must be mounted individually at strategic points on the map or indicator, it may also be desirable to form the socket into a unit, such as a gang strip, preferably employed in telephone switchboards.

This form of the invention is shown in Figs. 9 and 10 in which the lamp strip or body 43, of molded insulation, is provided with a plurality of parallel sight openings 44 which communicate with individual elongated cavities 45 extending toward the rear of the strip. These cavities may be grouped in one hollow portion of the strip with skeleton separators to serve as guides for the lamp. The strip is also provided with pairs of apertures or openings similar to the opening in the sleeve 20 in Fig. 1, these apertures being in alignment with each sight opening 44. The spring contacts 21 and 22 are frictionally secured in parallel relation in the strip within each cavity 45 so that the lamp 39 may be inserted in the gang strip through the rear of the switchboard.

The various forms of the socket described represent some applications of the improved lamp mounting of this invention and it is obvious that other modifications and uses can be evolved employing the main concepts of the assembly herein set forth. Therefore, the invention should be construed in accordance with the scope of the appended claims.

What is claimed is:

1. A lamp socket comprising a tubular body having opposed perforations at opposite ends thereof, and bowed metallic leaf springs extending along the inner surface of said body between said perforations, said springs having inwardly curved portions at one end thereof and having the inner ends and curved portions seated in said perforations.

2. A lamp socket comprising an insulating sleeve having apertures at opposite ends, and

flexible contact springs held in said sleeve solely by curved portions thereon entering said apertures from opposite surfaces of said sleeve, said springs having bowed resilient portions spaced from the inner surface of said sleeve.

3. A lamp socket comprising an insulating sleeve having an upper and a lower aperture, and a flexible contact spring having a bowed portion within said sleeve and a return bend portion exterior to said sleeve, the bowed portion having its end extending into said upper aperture and said return bend portion having an inwardly bent portion extending into said lower aperture from the exterior of said sleeve.

4. A lamp socket comprising a tubular insulating member having indentations on opposite sides and at opposite ends thereof, and a pair of flat resilient spring members having a longitudinal portion within said tubular member, the ends thereof being seated in the inside indentations, and sharp bend portions exterior to said tubular member, said bend portions being seated in the indentations on the outside and at the opposite end of said tubular insulating member with respect to said inside indentations.

5. A lamp socket comprising a tubular insulating member having indentations on opposite sides and at opposite ends thereof, and a pair of flat resilient spring members having a longitudinal portion within said tubular member, the ends thereof being seated in the inside indentations, a sharp bend portion exterior to said tubular member being seated in the indentations on the outside and at the opposite end of said tubular insulating member, and a bowed portion extending around one edge of said tubular member.

6. A lamp socket comprising a tubular sleeve having apertures at opposite ends thereof, and resilient leaf contact springs having a long portion within said sleeve and a short return bend portion extending around the lower end of said sleeve, the return bend portion having a crimped section seated in said lower aperture and the free end of said long portion seated in said upper aperture.

7. A lamp socket comprising an insulating sleeve having upper and lower apertures, and resilient leaf contact springs having a long portion within said sleeve and a short return bend portion extending around the lower end of said sleeve, the return bend portion having a crimped section seated in said lower aperture and the free end of said long portion seated in said upper aperture, the width of said springs being comparable with the apertures.

8. A lamp socket comprising an insulating sleeve having apertures at opposite ends, and resilient contact springs associated with said sleeve, said springs having a long portion substantially parallel and adjacent to the inner surface of said sleeve and a return bend portion adjacent to the lower end of said sleeve and exterior to the outer surface thereof, said springs having other portions projecting into said apertures from the respective inner and outer surfaces of said sleeve to frictionally hold the contact springs in operative relation.

9. A lamp socket comprising an insulating sleeve having pairs of apertures oppositely disposed adjacent each end thereof, and resilient contact springs, each spring having a bowed portion longitudinally arranged within said sleeve with the bow projecting towards the axis of said sleeve and a return bend portion extending outside said sleeve, said bend portion being provided with a knee portion projecting inwardly toward the outer wall of said sleeve, the free ends of said bowl portion and said knee portion being located in said apertures to frictionally secure said contact springs to said sleeve.

10. A lamp socket comprising an insulating sleeve having pairs of apertures oppositely disposed adjacent each end thereof, and resilient contact springs, each spring having a long bowed portion longitudinally arranged within said sleeve with the bow projecting towards the axis of said sleeve and a return bend portion extending outside said sleeve, the free ends of said bowed portion and said return bend portion being located in said apertures to frictionally secure said contact springs to said sleeve and the edges of the lower end of said sleeve adjacent said apertures forming fulcrum points for spaced areas of said return bend portion of said springs.

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