

April 14, 1970

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3,506,943

LAMP SOCKET ASSEMBLY

Filed Jan. 22, 1968

2 Sheets-Sheet 1

FIG. 2.

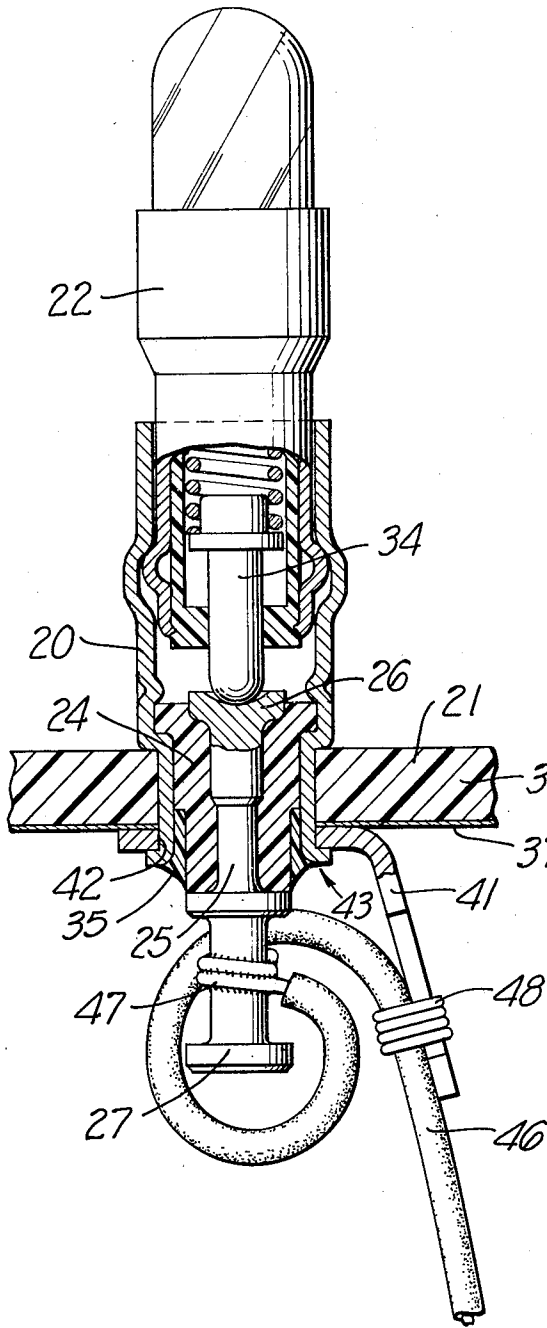


FIG. 1.

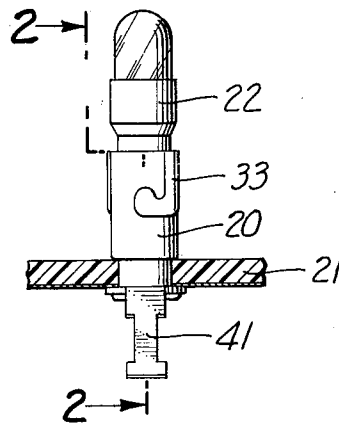
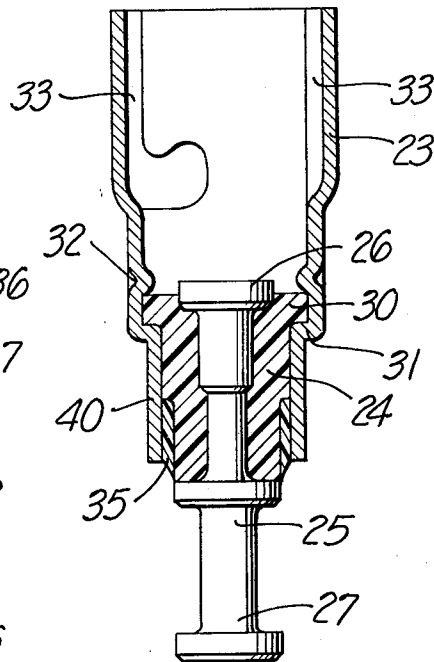


FIG. 3.



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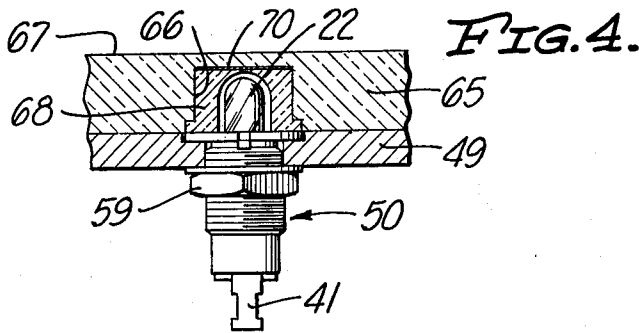
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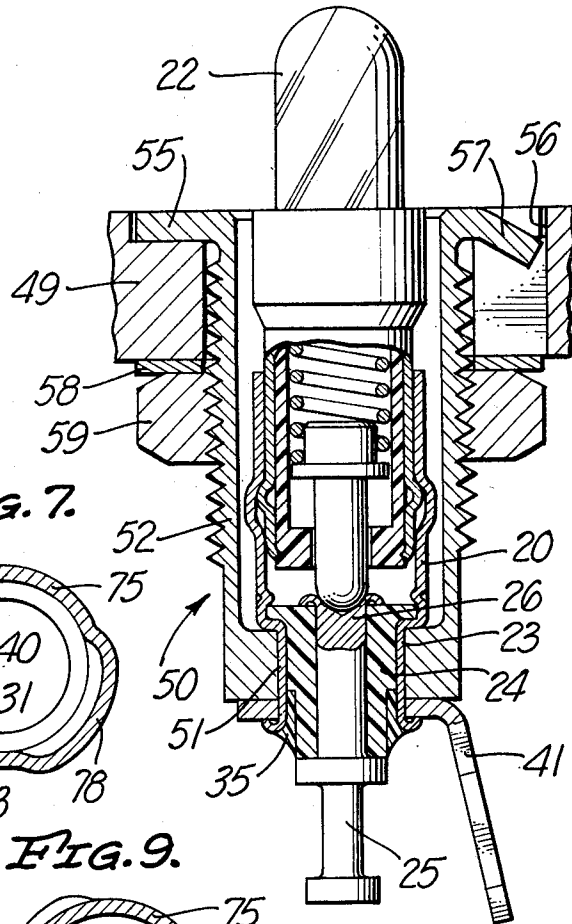
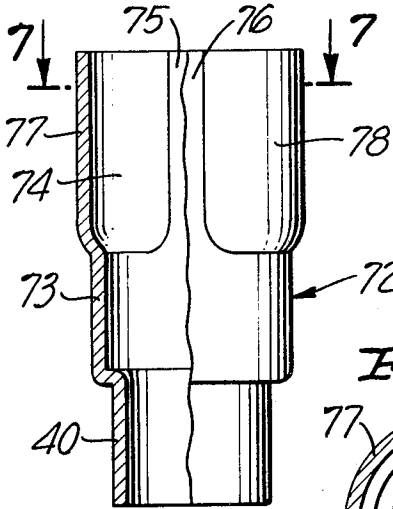
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2 Sheets-Sheet 2

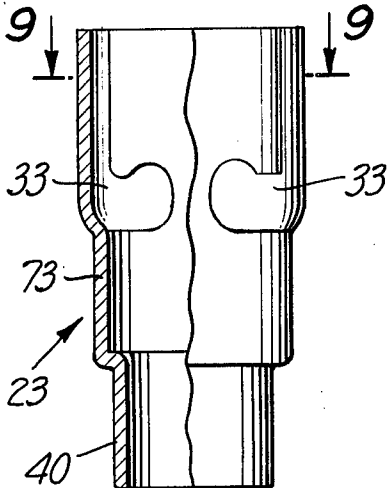


**FIG. 5.**

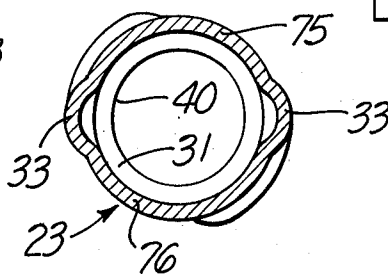
**FIG. 6.**



**FIG. 8.**



**FIG. 9.**



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**LAMP SOCKET ASSEMBLY**

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U.S. Cl. 339-17

3 Claims

**ABSTRACT OF THE DISCLOSURE**

A lamp socket having a center conductor pin fixed in the insulator and socket sleeve. An additional terminal in the socket assembly adjacent the center pin for tying the wire going to the pin. A socket assembly including an illuminated panel, color filter and heat sink. A method of forming a socket sleeve for bayonet base lamps.

This invention relates to sockets for electric lamps and in particular, to new and improved sockets and socket assemblies particularly adapted for use with lamps having spring loading moving contact pins.

It is an object of the invention to provide a new and improved lamp socket having no moving parts and having the center conductor pin sealed in the socket insulator providing a rigid assembly with no moisture paths there-through. A further object is to provide such a socket adapted for direct mounting on panels and the like and adapted for mounting in a housing which in turn can be installed in panels and other locations as desired.

It is an object of the invention to provide a new and improved lamp socket incorporating an additional terminal-like member at the socket base adjacent the center conductor pin for attachment of a wire to the pin and to the terminal member.

It is an object of the invention to provide a new and improved lamp socket for mounting in an instrument panel or the like, with the socket fixed in one panel with the lamp therein projecting into an adjacent light conducting panel. A further object is to provide such a panel installation including a color filter and a heat sink mounted in the light conducting panel around the lamp to provide various colors of illumination as desired.

It is a particular object of the invention to provide a new and improved method of forming socket sleeves for receiving bayonet base type lamps.

The novel combinations and arrangements of the invention will more fully appear in the course of the following description. The drawings merely show and the description merely describes preferred embodiments of the present invention which are given by way of illustration or example.

In the drawings:

FIGURE 1 is a side view of a lamp and socket mounted in a panel and incorporating a preferred embodiment of the present invention;

FIGURE 2 is an enlarged view partly in section taken along the line 2-2 of FIGURE 1;

FIGURE 3 is a sectional view of the socket of FIGURE 2 prior to installation in the panel;

FIGURE 4 is a view similar to that of FIGURE 1 showing an alternative embodiment of the invention;

FIGURE 5 is an enlarged view partly in section of the lamp and socket of FIGURE 4;

FIGURE 6 is a side view, partly in section, showing a partially formed socket sleeve;

FIGURE 7 is a sectional view taken along the line 7-7 of FIGURE 6;

FIGURE 8 is a view similar to that of FIGURE 6

showing the socket sleeve following the next step in its manufacture; and

FIGURE 9 is a sectional view taken along the line 9-9 of FIGURE 8.

Referring to the structures of FIGURES 1, 2 and 3 a lamp socket 20 is mounted in a panel 21 and a lamp 22 is installed in the socket. The socket includes a metal sleeve 23, an insulator 24, and a metal pin 25. The insulator 24 is molded about the pin 25, with the inner end 26 of the pin exposed and with the outer end 27 of the pin projecting from the insulator. The insulator 24 is positioned within the sleeve 23 with a shoulder 30 of the insulator engaging a mating shoulder 31 of the sleeve. The sleeve may be crimped or dimpled at 32 to retain the insulator and pin. The pin and insulator may also be fastened in the sleeve by cementing, as at 35.

The lamp 22 has a bayonet type base and the sleeve 23 is provided with opposed J-shaped protrusions 33 for receiving and retaining the lamp. The socket is particularly adapted for use with lamps having a spring loaded moving contact pin, such as is described in applicant's co-pending application Ser. No. 650,518, filed June 30, 1967. The moving pin 34 of the lamp 22 engages the end 26 of the pin 25 of the socket.

The panel 21 typically may be a relatively thick plastic sheet 36 with a thin metal layer 37 on one face. The socket sleeve as illustrated in FIGURE 3 has an annular section 40 which is positioned in an opening in the panel 21. An elongate terminal-like member 41 has an opening 42 at one end thereof. This member 41 is positioned over the section 40 of the sleeves and the socket is fixed in the panel, as by spinning over or swaging the end of the sleeve, as illustrated at 43 in FIGURE 2. The socket may be soldered to the metal sheet 37 for additional security.

A wire 46 is fastened to the socket by wrapping the bare end 47 around the pin end 27 and soldering the parts together. The conductor 46 is also fastened to the member 41, as by tying with a cord 48.

The lamp 22 is electrically energized via the metal sheet 37 and the socket sleeve 23, and via the wire 46 and socket pin 25. Typically, the metal sheet 37 will be the ground side and the wire 46 will be the hot side.

The pin 25 is fixed in the socket 20 so that there is no movement of any portion of the socket when a lamp is installed or removed. This absence of moving parts and motion in the socket eliminates most problems arising from connection of the flexible wire 46 to the pin 25 of the socket 20. Also, since the pin is fixed in the socket, there are no openings through the socket and no moisture paths exist from one side of the panel to the other. The structure incorporates an additional safety feature by providing for tying down of the wire 46 closely adjacent the solder connection so that if for any reason the connection comes loose or the wire breaks at the solder joint, the hot wire will not be free to move around. Of course, the terminal member 41 may be used for a wire conductor to the socket sleeve, if desired.

An alternative form for the lamp socket is illustrated in FIGURES 4 and 5, wherein elements corresponding to those of FIGURES 1 through 3 are identified by the same reference numerals. A socket 50 is mounted in a panel 49 and a lamp 22 is carried in the socket. The panel 49 may be similar to the panel 21 or may be a metal panel as illustrated. The socket 50 may be an assembly comprising the sleeve 23, the insulator 24 and the pin 25 mounted in an opening 51 in the bottom of a housing 52, with the member 41 clamped to the housing 52 by the spun over end of the sleeve 23. The sleeve 23, insulator 24 and pin 25 may be the same as that comprising the socket 20 of FIGURE 3. In an alternative form of construction,

the insulator 24 may be a machined item with the pin 25 positioned in a central opening thereof and fixed by peening or rolling at the inner end 26.

The housing 52 has an annular flange 55 which may rest in a counter-bore 56 of the panel 21 to provide a flush installation for the socket. An anti-rotation tab 57 may be provided in the flange 55 for engaging the panel and locking the socket in place. The socket is held in the panel opening by a washer 58 and nut 59 engaging the threaded outer portion of the housing.

Another panel 65 may be positioned against the panel 49, with an opening 66 for receiving the lamp 22. The panel 65 typically may be of a clear plastic providing for light conduction therethrough and the upper surface 67 may have an opaque coating with characters cut therein to provide a lighted display. When desired, a sleeve or cup shaped member 68 may be positioned in the opening 66, with the lamp 22 projecting into the interior of the member 68. The member 68 typically may be of colored plastic selected to provide a desired color for the illumination in the panel 65. A metal plate 70 may be positioned at the bottom of the opening 66 between the panel 65 and the member 68 to serve as a heat sink aiding the dissipation of heat from the lamp 22. The size and configuration of the opening 66 may be varied depending on whether or not the member 68 is to be utilized. The metal plate 70 also aids in dispersing the illumination from the lamp and prevents a high intensity spot over the lamp.

The metal sleeve 23 with the J-shaped protrusions 33 is formed from an intermediate sleeve 72, illustrated in FIGURE 6. The intermediate sleeve 72 has the annular section 40, another larger annular section 73, and an end section 74. The end section 74 has opposed segments 75, 76 of the same radius as the section 73, and opposed segments 77, 78 of a greater radius. The intermediate sleeve 72 may be produced by various conventional manufacturing processes, such as by eyeletting from sheet stock, by expanding from tubular stock, by rolling and seaming from sheet stock, and the like. The protrusions 33 are then formed by pressing a portion of the segments 77, 78 inward to the radius of the section 73. This may be performed by inserting a mandrel into the sleeve and externally applying compression forces with dies. This method of forming the protrusions 33 for receiving the bayonet base of the lamp 22 permits simple, accurate and inexpensive sleeve manufacture at high production rates.

Although exemplary embodiments of the invention have been disclosed and discussed, it will be understood that these embodiments may be subjected to various changes, modifications and substitutions without necessarily departing from the spirit of the invention.

I claim:

1. A lamp socket comprising:
  - an electrical conducting sleeve having a lamp receiving zone adjacent one end thereof;
  - an electrical insulator fixed in said sleeve adjacent the other end thereof; and
  - a rigid electrical conducting pin fixedly mounted in said

insulator coaxial with said sleeve and exposed at both ends.

2. A socket assembly comprising:
  - a panel with an electrical conducting surface and having an opening therethrough;
  - a socket having a sleeve with a lamp receiving zone adjacent one end thereof and a reduced diameter section adjacent the other end thereof positioned in said opening and engaging said conducting surface, an electrical insulator fixed in said sleeve adjacent said other end thereof, and a rigid electrical conducting pin fixedly mounted in said insulator coaxial with said sleeve with the inner end of the pin exposed for engaging the lamp and with the outer end of the pin projecting from said insulator; and
  - an elongate terminal member having an opening at one end positioned over said sleeve reduced diameter section;
  - with said sleeve deformed to clamp said member and socket to said panel and with said terminal member disposed adjacent said pin outer end for attachment of a conductor to said terminal member and said pin.
3. A socket assembly comprising:
  - an electrical conducting tubular housing including means adjacent one end for mounting in a panel opening and having a socket receiving opening adjacent the other end thereof; and
  - a socket within said housing and having an electrical conducting sleeve with a lamp receiving zone adjacent one end thereof and a reduced diameter section adjacent the other end thereof positioned in said housing opening, an electrical insulator fixed in said sleeve adjacent said other end thereof, and a rigid electrical conducting pin fixedly mounted in said insulator coaxial with said sleeve with the inner end of the pin exposed for engaging the lamp and with the outer end of the pin projecting from said insulator; with said sleeve deformed to clamp said socket to said housing.

#### References Cited

##### UNITED STATES PATENTS

1,485,932	3/1924	Kerwin	339—130	XR
1,606,152	11/1926	Douglas	240—8.16	
1,928,581	9/1933	Watts.		
2,992,403	7/1961	Hawk	339—17	XR
3,005,039	10/1961	Abrams	339—220	XR
2,093,037	9/1937	Douglas.		
2,664,548	12/1953	Hall	339—188	XR

##### FOREIGN PATENTS

537,661 7/1941 Great Britain.

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U.S. Cl. X.R.

113—119; 240—8.16; 339—131, 188, 220