

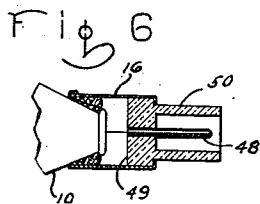
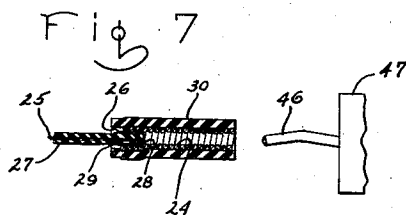
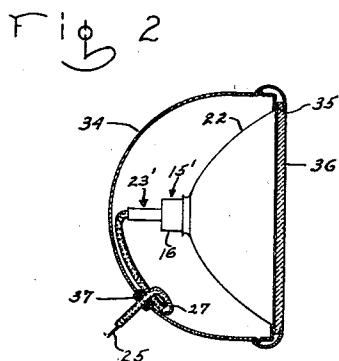
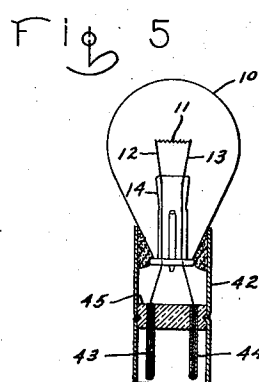
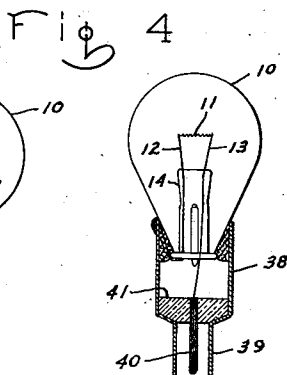
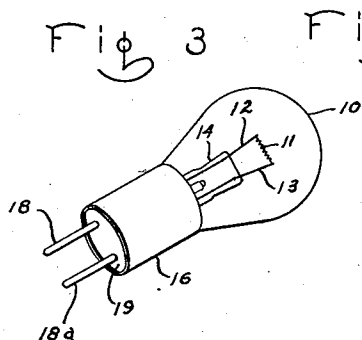
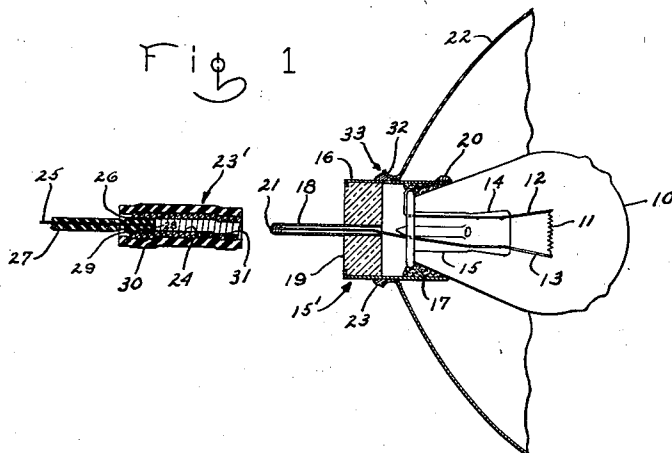
Oct. 15, 1935.

T. W. FRECH ET AL

2,017,714

ELECTRIC LAMP MOUNTING AND CURRENT SUPPLY CONNECTION

Filed March 30, 1933



INVENTORS
THEODORE W. FRECH
WALTER J. GEIGER
BY *Charles E. Tuller*
THEIR ATTORNEY

UNITED STATES PATENT OFFICE

2,017,714

ELECTRIC LAMP MOUNTING AND CURRENT
SUPPLY CONNECTION

Theodore W. Frech, Shaker Heights, and Walter
J. Geiger, Cleveland Heights, Ohio, assignors
to General Electric Company, a corporation of
New York

Application March 30, 1933, Serial No. 663,518

6 Claims. (Cl. 240—41)

Our invention relates to the mounting and current supply connections of electric incandescent lamps and similar devices, and includes bases for such lamps. We aim to provide efficient and inexpensive means of electrical connection for this purpose, and to secure other advantages that will become apparent hereinafter.

According to our invention, we provide a lamp (or its base) with one or more pins which serve as electrical terminals therefor, and effect connection to such pins by means of a connector mounted on the end of a conductor. The connector comprises a helical spring which is deformed so that the axis thereof is not a straight line. The preferred form of connector comprises a helical spring having a portion thereof offset to insure firm contact with one of said pins. Instead of offsetting the spring connector, it is also possible to distort the axis of the pin and use a symmetrical helical spring connector. Such constructions are particularly adaptable for use on vehicle headlight lamps, especially when the lamp and reflector are made as a fixed unit as described hereinafter, and the conventional socket thus dispensed with. Our invention affords an improved electrical connection to the lamp as compared with the conventional connection, in which a button on the base of the lamp makes contact with the end of a pin in the socket: e. g., our connection with its low resistance entails a voltage drop of only about one-tenth volt, as compared with a drop of about one-half volt at each contact in the conventional type of socket connection, an advantage of considerable consequence on the usual low voltage lighting circuits of motor vehicles. Further features and advantages of the invention will appear from the following description of species thereof, and from the drawing.

In the drawing, Fig. 1 is a side view in section of one form of lamp and connector comprised in our invention; Fig. 2 is an elevation, partially in section, of a headlight assembly comprising our invention; Fig. 3 is a perspective view of a modified form of lamp; Figs. 4, 5 and 6 are elevations in section of further modifications; and Fig. 7 is a partially sectioned elevation of a modified terminal and connector assembly.

Referring to Fig. 1, the lamp comprises a bulb 10 having a filament 11 therein mounted on leading-in wires 12—13. Portions of said leading-in wires 12—13 are sealed in the press 14 of a stem tube 15. The base 15' is open at one end to receive the lamp bulb 10, and comprises a tubular metal shell 16 which is held fast on the neck

portion of the bulb 10 by cement 17. A tubular pin terminal or connector 18 projecting beyond the end of the shell 16 is mounted in insulating material 19 fixed in the end of said shell, said material 19 preferably being glass in which a portion of the pin 18 is embedded. The leading-in wire 12 is connected to the shell 16, as by solder 20, while the wire 13 is brought through the tubular pin 18 and connected to the end thereof, as by solder 21. The lamp is shown 10 mounted in a reflector 22 which may be fixedly united thereto by solder 23.

The connector 23' for cooperating with the pin 18 comprises a helical spring 24 mounted at one end on a flexible conductor comprising a plurality 15 of strands of wire 25. Preferably, the spring 24 is clamped unto a metal tube 26 which is mounted on the end of an insulating covering 27 surrounding said strands of wire 25. The ends 28 of said wires 25 are bent back over the end of 20 said covering 27 before the tube 26 is applied, so as to lie in contact with the interior of the tube 26. The end 28 of the tube 26 is crimped inward into the covering 27. A tubular insulating cover 30, preferably of soft rubber, surrounds the 25 spring 24 to prevent external contact therewith. The spring 24 is deformed so that the axis thereof is not a straight line. In the preferred form the end turns 31 of the spring 24 are deformed (bent or offset) sidewise with respect to the re- 30 mainder thereof, so that when the said spring is slipped over the end of the pin 18, the axis thereof will be brought back to a straight line and the turns thereof will firmly grip the said pin with an elastic pressure all along its length, pro- 35 viding a very efficient electrical contact.

As shown in Fig. 1, the reflector 22 is mounted and secured directly on the lamp base 15', without the intervention of a socket. For this purpose, the reflector 22 has a rear opening for the 40 base with a rearward extending and flared (beaded) flange or lip 32 that fits the base fairly closely, yet allows it to be slightly tilted in the opening for the purpose of focusing, as well as to be shifted axially for the same purpose. After 45 focusing, the base is fixed and secured to the reflector 22 by soldering the rear edge of the lip 32 to the base shell 16 at 33, or by any other method of fused metal attachment. The fuses or soldered joint 33 is made at a point sufficiently behind the basing cement 17 to obviate possible 50 fusion of the latter and dislocation of the lamp 10 in the base. The pin 18 extends rearward from the insulation 19, behind the reflector 22. 55

Referring to Fig. 2, the connecting means comprising our invention is shown as applied to one form of a vehicle headlight wherein the reflector 22, mounted on the base 15' of a lamp, is located 5 in a housing 34. The said reflector is fastened immovably by flange 35 and screws (not shown) to the housing 34, and is covered by a lens 36. The conductor 25 extends through an insulating washer 37, mounted in a hole in the housing 34, 10 to the switching and battery equipment.

Referring to Fig. 3, the lamp shown therein is the same as the lamp in Fig. 1, except that it has two pins 18, 18a, the leading-in wires 12, 13 being respectively connected thereto.

15 The lamp in Fig. 4 is similar to the lamp in Fig. 1 except that the base shell 38 comprises a lower tubular skirt portion 39 of smaller diameter than the main body portion, but large enough to afford ample clearance or room for the connector 23' around the pin 40, which is thus exposed inside the skirt 39. The skirt 39 protects the pin 40 from lateral bending stresses sufficient to over- 20 strain and deform it. Said shell portion or skirt 39 surrounds and protects the pin 40, a portion of which is embedded in the insulating material 41, which is fixed in the shell 38 against the shoulder due to the reduction in the diameter of the shell portion 39. The leading-in wire 12 is connected to the shell 38, while the wire 13 is con- 25 nected to the pin 40.

The lamp in Fig. 5 is similar to the lamp in Fig. 3 except that the tubular base shell 42 extends slightly beyond the ends of pins 43, 44, portions of which are embedded in insulating material 45 35 fixed in the mid-region of the shell, the shell portion beyond the insulation 45 forming the protective skirt. The lead wires 12, 13 are connected to pins 43, 44 respectively.

In the lamp shown in Fig. 6, a pin 48 is embedded in insulating material 49 fixed in the end 40 of the base shell 16. The said insulating material comprises a depending tubular protective skirt portion 50 surrounding the pin 48 in the same manner as the tubular metal portion 39 in 45 Fig. 3 surrounds the pin 40. The insulating material 49 may be, for example, bakelite, durite or glass.

In Fig. 7 is shown a modified form of connector and terminal wherein the active length of the helical spring 24 is symmetrical throughout and 50 the pin 46, on the base 47, engaging therewith is deformed or distorted sidewise, being bent in the middle in the form shown in the drawing.

What we claim as new and desire to secure by 55 Letters Patent of the United States is:

1. The combination of an electrical device comprising a bulb and a base, said base having a terminal pin extending from the end thereof and an elongated protective skirt surrounding the entire length of said pin, and a current supply conductor having an elastic connector surrounding said pin within said skirt so that said pin is protected from sidewise pull on the conductor.

2. An electrical device comprising a bulb and a base, said base having a terminal pin extending 10 from the end thereof and an elongated protective skirt surrounding the entire length of said pin and spaced therefrom to provide clearance for a connector.

3. An electrical device comprising a bulb and a 15 base, said base comprising a cylindrical metal shell mounted at one end on said bulb, and a terminal pin mounted in insulating material within said shell and spaced therefrom and extending toward the opposite end thereof, said end of said 20 shell forming a protective skirt around the entire length of said pin.

4. An electrical device comprising a bulb and a base, said base comprising a cylindrical metal shell reduced in diameter at one end, the enlarged 25 end of said shell being mounted on said bulb, a body of insulating material in said shell at the shoulder formed by the reduced portion, and a terminal pin having one end embedded in said insulating material and disposed within and 30 spaced from said reduced shell portion, said reduced shell portion forming a protective skirt around said pin.

5. An electrical device comprising a bulb and a base, said base comprising a metal shell and a 35 body of insulating material mounted in the end thereof, said body of insulating material comprising a tubular skirt portion extending outward from said shell, and a terminal pin having one end mounted in said insulating material and dis- 40 posed within and spaced from said tubular skirt portion.

6. In a vehicle headlamp, the combination of a housing having an opening at the front thereof, a reflector in said housing having a peripheral 45 flange secured to the front of said housing and also having an opening therein, a lamp comprising a base mounted in said opening and secured directly to said reflector, said base having a terminal pin extending from the end thereof behind 50 said reflector, and a current supply conductor having an elastic connector gripping said pin.

THEODORE W. FRECH.
WALTER J. GEIGER.