

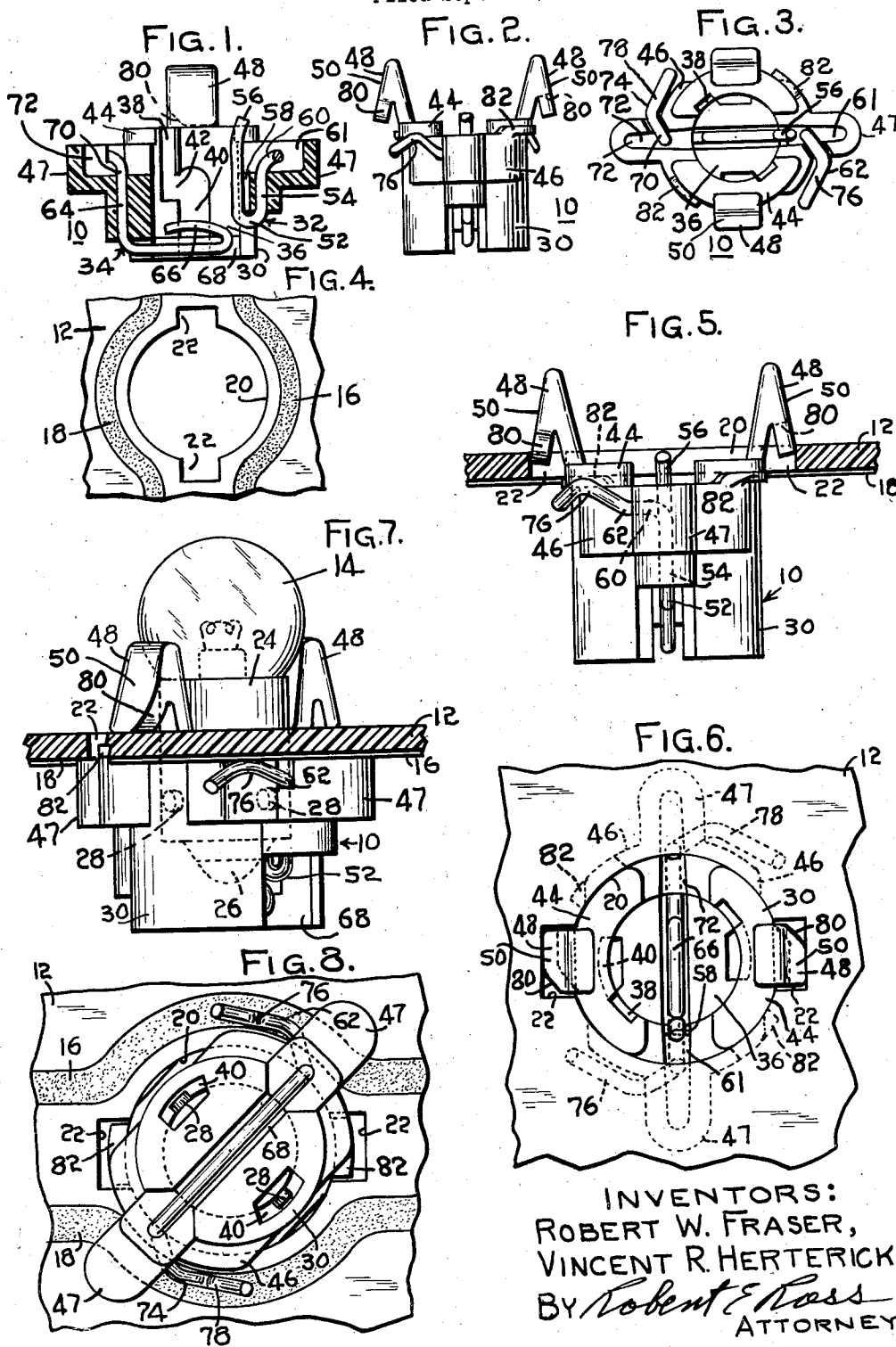
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R. W. FRASER ET AL

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LAMP SOCKET WITH PANEL MOUNTING

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LAMP SOCKET WITH PANEL MOUNTING

Robert W. Fraser, Waltham, and Vincent R. Herterick, Lexington, Mass., assignors to United-Carr Fastener Corporation, Boston, Mass., a corporation of Delaware

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5 Claims. (Cl. 339—17)

This invention relates generally to electrical apparatus and has particular reference to an electrical connector for attachment to a support having circuit continuing means disposed thereon.

Certain types of electrical apparatus are particularly adapted for construction by providing a support panel having circuit elements disposed on the surface by any of several methods, such as by printing with conductive material or by selective etching of a sheet of conducting material. Such methods of manufacture, while providing a rapid and economical method of manufacture of electric devices, have complicated the problem of making electrical contact to other devices, such as connector plugs or electric lamps. This problem has been particularly troublesome in the use of so-called printed circuit panels in the lighting of automobile dashboards where small lamp bulbs and connectors must be attached to the panel securely enough to prevent loosening by shock and vibration.

The object of this invention is to provide an electrical connector which is adapted for attachment to a support having circuit continuing elements on the surface thereof.

A further object of the invention is to provide a connector of the type described which is provided with an aperture for receiving an electrical device.

A further object of the invention is to provide a lamp socket of the type described in which contact members projecting into a lamp receiving aperture are provided with forwardly projecting portions for making contact with circuit continuing elements on the support panel.

Other objects of the invention will be apparent to one skilled in the art from the following description of a specific embodiment of the invention.

In the drawing:

Fig. 1 is a view in side elevation partly in section of a lamp socket embodying the features of the invention;

Fig. 2 is a view of the socket of Fig. 1 as seen from the right side;

Fig. 3 is a top plan view of the socket of Fig. 1;

Fig. 4 is a plan view of a support panel having circuit elements disposed thereon, and an aperture shaped to receive the socket of Fig. 1;

Fig. 5 is an enlarged elevational view of the socket of Fig. 2 associated with a support panel, shown in cross-section, in the inserting position of the socket through the opening in the panel;

Fig. 6 is a top plan view of the assembly of Fig. 5;

Fig. 7 is a side elevational view of the assembly with the panel partly in section to show a recess adjacent to the socket receiving aperture and the socket in final assembly with the panel and a locking stop nib in the recess.

Fig. 8 is a view of the assembly of Fig. 7 as seen from the bottom.

Reference is made to our co-pending application, Serial No. 611,022, filed September 20, 1956.

Referring to the drawing, there is illustrated a lamp socket 10 which is adapted for assembly with a support

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panel 12 to receive and complete an electric circuit to a lamp bulb 14.

The support panel 12 may be of the type having conductive elements, such as so-called printed circuits, disposed thereon as a part of the panel, two of which have semi-circular portions 16 and 18 disposed about a socket-receiving aperture 20. The aperture 20 is provided with a pair of oppositely disposed notches 22 for a purpose to appear hereinafter.

The lamp bulb 14 for which the socket 10 is adapted for use as shown in Fig. 7, has a base 24 with a conductive shell and a center contact 26 protruding from the end of the base. One or more pins 28 protrude from the sides of the base to lock the base in the socket into which it is assembled.

The lamp socket 10 comprises a body portion 30 which may be formed of a single piece of molded plastic and a pair of contact members 32 and 34 assembled therewith.

In the illustrated embodiment the body 30 is provided with a central aperture 36 opening to the forward end thereof for receiving the base 24 of the bulb. The walls of the aperture are provided with a pair of pin-receiving means disposed on opposite sides thereof, each one of which comprises a pair of slots 38 and 40 extending longitudinally from opposite ends of the body. The slots 38 and 40 are circumferentially spaced and extend slightly past one another intersecting near the ends to provide a channel 42. The slot 38 opens to the forward end of the body to receive a bulb pin 28, and for convenience in molding, the slot 40 opens to the rear of the body so that the slots may be formed when the body is molded by two core pins entering from opposite ends. The channel 42 enables the bulb to be assembled into the body by entering the pins 28 into the slots 38 and then rotating the body so that the pins pass through the channels 42 and seat in the forward ends of the slots 40.

The body 30 is provided with a forwardly projecting portion 44 which is adapted to enter the panel aperture 20 to position the socket, a laterally extending flange portion 46 to bear against the panel, laterally extending wing portions 47 for a purpose to appear hereinafter, and a pair of forwardly extending resilient legs 48 having outwardly inclined rearwardly extending portions 50 for snapping engagement with the panel in the notches 22.

The contact 32, as shown in Fig. 1, has a U-shaped portion 52 having a retaining leg 54 disposed in a suitable aperture in the body, and a free resilient leg 56 disposed in a slot 58 in the wall of the bulb aperture and projecting into the aperture for contact with the shell of a lamp bulb, a laterally extending portion 60 disposed in a slot 61 in one wing portion 47, and a forwardly projecting portion 62 which protrudes from the forward end of the body.

The contact 34 has a retaining portion 64 disposed in a suitable aperture in the wall of the body, a resilient portion 66 disposed in and projecting forwardly from a slot 68 in the body at the rear of the bulb aperture, a laterally extending portion 70 disposed in a slot 72 in one wing portion, and a forwardly projecting portion 74 which protrudes from the forward end of the body.

The forwardly projecting portions 62 and 74 are each bent to extend laterally in a direction generally circumferentially of the end of the socket, and are provided with forwardly bowed medial portions 76 and 78 respectively for resilient contact with the circuit continuing elements as will appear hereinafter.

The socket 10 is adapted for assembly with the panel by inserting it into the aperture 20 and rotating it into a predetermined angular relation with the panel. To this

end the resilient legs 48 are provided with inclined camming surfaces 80 and forwardly projecting nibs 82 are provided on the forward end of the socket to cooperate with the recesses 22 to provide a stop during rotation of the socket to position it in the proper angular relation to the panel. The forward sides of the nibs are substantially perpendicular to provide a positive stop, and the rear sides are inclined to facilitate reverse rotation of the socket to remove it from the panel.

To assemble the socket with the panel, the bulb may first be assembled into the socket, and the socket may then be inserted into the aperture with the resilient legs 48 disposed in the recesses 22 as shown in Fig. 5. When the socket is rotated, the camming surfaces 80 on the legs permit them to ride up over the edge of the panel, drawing the socket toward the panel and forcing the bowed medial portions 76 and 78 tightly against the circuit continuing elements on the panel. Rotation is continued until the nibs 82 are snapped into the recesses 22 as shown in Figs. 7 and 8.

Although in the illustrated embodiment the socket is provided with two contacts for completing a circuit to a single bulb with a single filament, it will be understood that more contacts may be provided if necessary.

Since certain other obvious modifications may be made in this device without departing from the scope of the invention, it is intended that all matter contained herein be interpreted in an illustrative and not in a limiting sense.

We claim:

1. An electrical connector for attachment to a support having circuit-continuing conductive elements disposed on the surface thereof, said connector comprising a body formed of insulating plastic material, said body having an aperture for receiving an electrical device therein, a pair of forwardly extending resilient arms for entering a panel opening, said arms having rearwardly facing inclined surfaces whereby rotation of the connector in the opening causes said inclined surfaces to ride over appropriately positioned portions of the panel adjacent to the opening to retain the connector in assembly with the panel, and a pair of elongated conductive connector members assembled with the body, each of said connector members having a medial portion retained by the body, a resilient end portion projecting into the aperture for contact with an inserted electrical device, and a forwardly projecting end portion extending from the forward end of the body between the arms, said latter end portion being turned to extend generally laterally and being rearwardly resilient to making a tight contact against a circuit continuing conductive element on the panel.

2. An electrical assembly, comprising a non-conductive panel having a notched aperture and at least one conductive element affixed to one face of the panel adjacent the aperture, a rotary attached connector comprising a body of insulating plastic material having a pair of integral, resilient, forwardly extending arms having rearwardly extending portions with inclined surfaces facing the panel passing through the notched aperture and disposed in positive engagement with the panel adjacent the aperture, said body having means adapted to receive an electrical device, and conductors associated with said means, said conductors each having a portion retained by the body, a resilient end portion associated with said electrical device receiving means, and a forwardly facing resilient portion opposite the conductive element on the panel rotatable with the socket body and making only a wiping, sliding, bearing contact against a conductive element on said panel.

3. An electrical assembly, comprising a non-conductive panel having a notched aperture and at least one conductive element affixed to one face of the panel adjacent the aperture, a rotary attached connector com-

prising a body of insulating plastic material having a pair of integral, resilient, forwardly extending arms having rearwardly extending portions with inclined surfaces facing the panel passing through the notched aperture and disposed in positive engagement with the panel adjacent the aperture, said body having means adapted to receive an electrical device, and conductors associated with said means, said conductors each having a portion retained by the body, a resilient end portion associated with said electrical device receiving means, and a forwardly facing resilient portion opposite the conductive element on the panel rotatable with the socket body and making only a wiping, sliding, bearing contact against a conductive element on said panel, and a locking nib on said connector body engaging in the notched part of the panel aperture to prevent the unintentional rotation of the connector after it has been rotated into place on said panel.

4. An electrical assembly, comprising a non-conductive panel having a notched aperture and at least one conductive element affixed to one face of the panel adjacent the aperture, a rotary attached connector comprising a body of insulating plastic material having a pair of integral, resilient, forwardly extending arms having rearwardly extending portions with inclined surfaces facing the panel passing through the notched aperture and disposed in positive engagement with the panel adjacent the aperture, said body having means adapted to receive an electrical device, and conductors associated with said means, said conductors each having a portion retained by the body, a resilient end portion associated with said electrical device receiving means, and a forwardly facing resilient portion opposite the conductive element on the panel rotatable with the socket body and making only a wiping, sliding, bearing contact against a conductive element on said panel, and a locking nib on said connector body engaging in the notched part of the panel aperture to prevent the unintentional rotation of the connector after it has been rotated into place on said panel, the said connector body, resilient arms, and locking nib being molded as a one piece unit.

5. An electrical assembly, comprising a non-conductive panel having a notched aperture and at least one conductive element affixed to one face of the panel adjacent the aperture, a rotary attached connector comprising a body of insulating plastic material having a pair of integral, resilient, forwardly extending arms having rearwardly extending portions with inclined surfaces facing the panel passing through the notched aperture and disposed in positive engagement with the panel adjacent the aperture, said body having means adapted to receive an electrical device, and conductors associated with said means, said conductors each having a portion retained by the body, a resilient end portion associated with said electrical device receiving means, and a forwardly facing resilient portion opposite the conductive element on the panel rotatable with the socket body and making only a wiping, sliding, bearing contact against a conductive element on said panel, the said resilient arms of the connector being located on one side of the panel and the conductive elements and forwardly facing resilient portions of said conductor located on the other side of the panel.

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