Aug. 14, 1962 J. B. CLARKSON 3,049,689

SOCKET

Filed April 13, 1959

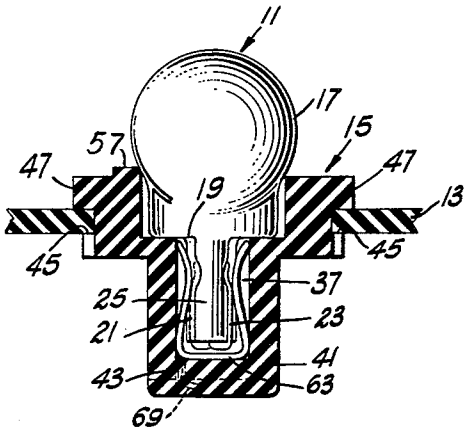


Fig. 1

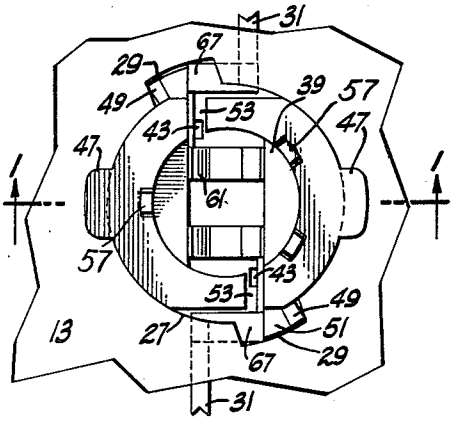
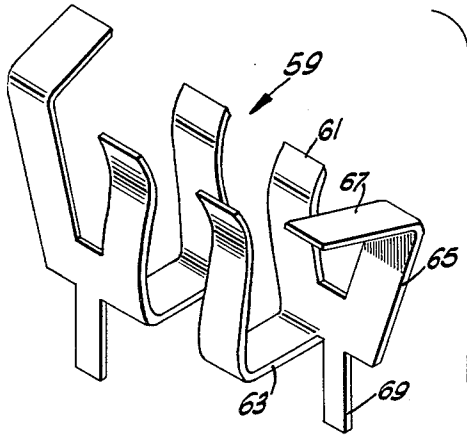


Fig. 2



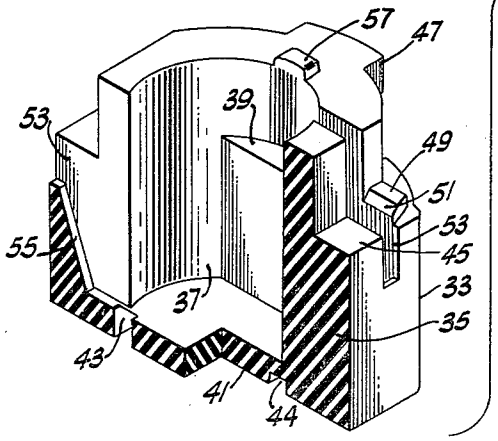


Fig. 3

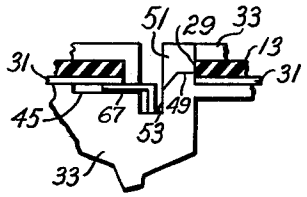


Fig. 4

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SOCKET

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This invention relates to a socket for an electrical device such as a lamp adapted to be used with a printed circuit chassis.

Generally, electric lamps which are used in chassis like those employed as instrument panels have a cylindrical base with locking lugs projecting therefrom. The base is inserted into a socket having a wall formed with substantially L-shaped openings for receiving the lugs. When installing the lamp, the base lugs are slid along the vertical leg of the L and then rotated along the horizontal leg to lock the lamp in position. In most instrument panel applications, the lamp dust hood or light filter is positioned forward of the panel. Therefore, in order to replace the lamp, it is necessary first to remove the filter.

A lamp and socket combination of the type described above is expensive to fabricate. It is difficult to mount such a socket on the instrument panel and unwieldy to replace the lamp due to the necessity of first removing the light filter.

Accordingly, an object of the invention is to afford easy removal of a lamp socket from the rear side of a chassis panel, thereby alleviating the need for dis-assembling the dust hood or filter.

A further object is to provide a small, compact, vibration and shock resistant mounting for lamps upon a printed circuit type chassis which affords excellent electrical contacts and allows easy removal and replacement of the lamp socket with the lamp attached.

The foregoing objects are achieved in one aspect of the invention by the provision of a socket formed with a spaced ledge and lug for rotatively clamping the socket to the printed circuit panel. Electrical contacts in the socket serve to interconnect the lamp leads wtih the panel conductors.

For a better understanding of the invention, reference is made to the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a sectional view of the panel and socket taken along line 1—1 of FIG. 2, with the addition of a lamp mounted in the socket;

FIG. 2 is a plan view of the socket and panel illustrating the manner in which they are mounted relative to one another;

FIG. 3 is an exploded perspective view of the socket partially cut-away to show the details of the socket housing and electrical contact clips; and

FIG. 4 is a side view illustrating the electrical contact between the socket clips and panel conductors.

Referring to the drawings, an electrical device or lamp 11 is shown mounted upon and electrically connected to a printed circuit panel or chassis 13 by means of socket 15. Lamp 11 is formed with a glass envelope 17 terminating in a shoulder 19. The filament leads 21 and 23 extend through header 25 and are folded back to lie upon the external sides of the header. Effectively, the base of lamp 11 is the header which is formed as a solid, relatively thick segment of the glass envelope.

Chassis 13 comprises an insulating board formed with an internal wall 27 defining an opening having recesses 29. Electrical conductors 31 lie on the underside of the chassis and extend to wall 27. These conductors serve to couple the filament power supply (not shown) to filament leads 21 and 23 of lamp 11 through the socket.

Socket 15 comprises an insulating housing 33 having a side wall 35 defining an internal centrally disposed nest or cavity 37 formed to receive header 25. A shelf 39 is provided internally of side wall 35 to serve as a seat for lamp shoulder 19. Bottom wall 41 is formed with apertures 43 arranged on opposite sides thereof. Grooves 44 register with apertures 43 and extend along the outside surface of wall 41. Projecting externally from side wall 35 is a ledge 45 and spaced from the ledge are two oppositely disposed lugs 47. The ledge has stops 49 formed thereon provided with beveled trailing edges 51. Ledge 45 and nest 37 are interconnected by slots 53 which are closed along a portion of their outer side by tapered columns 55. A plurality of protuberances 57 are spaced about the top surface of wall 35 to lend stability to envelope 11.

Two spring contact clips 59 are formed to be mounted within nest 37 and serve to couple filament leads 21 and 23 with conductors 31. Each clip is formed with a substantially U-shaped strap 61 having a relatively broad base 63. Connected to the strap is an arm 65 having a flap 67 extending from one end and a bottom tab 69 extending from the other. Tabs 69 pass through apertures 43 in bottom wall 41 and are folded to lie along the outside surface of the wall within grooves 44. Therefore, the folded tabs and the abutting relationship of broad base 63 on the inside of wall 41 affords a secure mounting for the spaced clips 59 in a longitudinal direction.

Arms 65 are tapered outwardly in accordance with the taper of column 55. The arms pass through slot 53 so that flaps 67 are positioned exterior to side wall 35 and above ledge 45. The flaps are disposed in opposite directions and lie intermediate the spaced planes of ledge 45 and lugs 47. A secure lateral mounting is provided for clips 59 due to the abutment between the edges of arms 65 and columns 55 and the abutment of the inside edges of flaps 67 on the outside surface of wall 35.

Lamp 11 may be easily installed or removed from socket 15 by applying pressure in the appropriate longitudinal direction. The resilient spring clips expand to straddle header 25 during insertion so that each clip contacts one of the filament leads 21 or 23. The lamp fits snugly within nest 37 and cannot readily be dislodged by vibration and shock.

FIG. 2 illustrates the socket position from the front of the chassis panel. In practice, lamp 11 and a light filter (not shown) would be mounted forward of the socket. When it is desired to replace the lamp, the socket 15 with the lamp still in position is removed from the back of chassis 13. This removal is accomplished by rotating socket 15 to a position whereat lugs 47 register with recesses 29 and then sliding the socket backward until it clears the chassis. It can be seen from FIG. 1 that when the socket is mounted upon the chassis, the spaced lugs 47 and ledge 45 clamp the socket to the edge of the chassis board surrounding wall 27.

When installing socket 15 and lamp 11, the lugs 47 are first threaded through recesses 29 until the back surface of the chassis contacts flaps 67 and stops 49. The socket is then rotated counterclockwise, FIG. 2, until the leading edges of stops 49 abut the edges of recesses 29. At this position, flaps 67 are pressed into electrical contact with conductors 31 as shown in FIGS. 2 and 4. The resiliency of flaps 67 tends to provide a pressure on the panel so that the ledge 45 and lugs 47 firmly hold the socket on the panel. The surface of ledge 45 positioned opposite lugs 47 is raised above the surface disposed adjacent flaps 67 by approximately the thickness of the flaps to insure a secure mounting of the socket on the panel when they are in the assembled position shown in FIGS. 2

and 4. The tapered end 51 of stop 49 prevents the edges of recesses 29 from chipping when the socket is rotated for removal.

A socket formed in accordance with the invention may be easily assembled and dis-assembled from the rear of an instrument panel, thereby alleviating the need for removal of the light filter. The socket and lamp mounting is rugged and the electrical contacts are excellent. In addition, the electrical leads are positioned in such a manner that an operator cannot normally be exposed to the lamp voltages.

Although one embodiment of the invention has been shown and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the scope of the invention as defined by the appended claim.

What is claimed is:

A socket for an electrical device having an external base header with a lead lying along the side thereof adapted to be mounted upon a chassis of a given thickness with an electrical conductor formed thereon comprising an insulating housing having a side wall and an apertured bottom wall defining an internal centrally disposed nest for the electrical device base header, a ledge

projecting externally from said side wall, a plurality of lugs projecting externally from said side wall spaced from the ledge at least the distance of said given thickness to allow reception of said chassis therebetween, said ledge and said nest being interconnected by a slot formed in said side wall, and a substantially broad based U-shaped spring contact clip disposed in the nest with the broad base abutting said bottom wall, said clip being formed to straddle the external base header and contact the lead and having an arm passing through said slot formed to provide a resilient end flap positioned intermediate the planes of said ledge and said lugs for contacting the conductor on said chassis and a bottom tab passing through the aperture in said bottom wall folded to lie upon the external wall thereof to sustain mounting of the spring clip within said nest.

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