Jan. 23, 1962 W. E. BARRE, JR., ETAL 3,018,462

SOCKET

Filed June 20, 1957

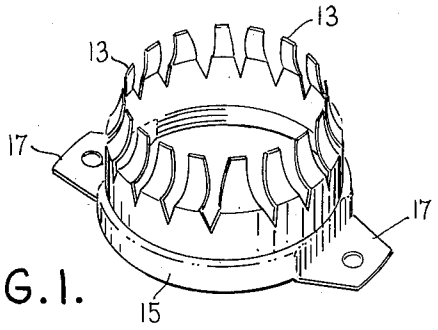


FIG. 1.

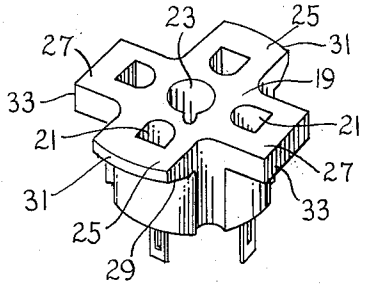


FIG. 2.

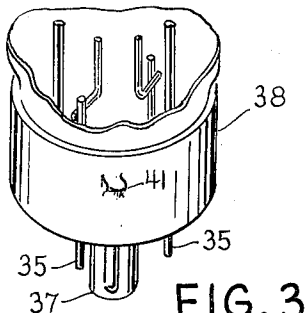


FIG. 3.

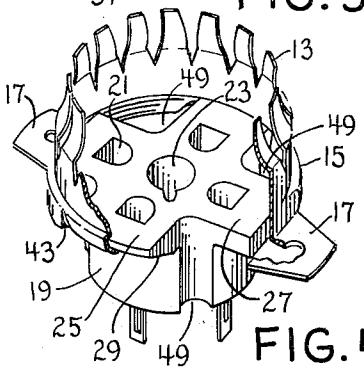


FIG. 4.

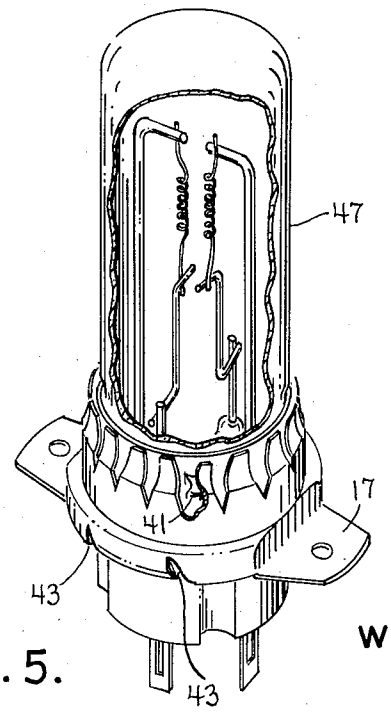


FIG. 5.

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SOCKET

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1 Claim. (Cl. 339—112)

This invention relates generally to connectors or sockets for receiving connection prongs of an electrical device and more specifically to a socket for supporting and making connections with an electrical device having relatively high thermal radiation loss.

Many electrical devices having high thermal radiation loss such as, for example, projection lamps, must be rigidly positioned in a socket to avoid displacement due to vibration or other external force. At the same time such devices must be relatively easy to cool.

Prior art sockets which answer the positioning requirement have heretofore been formed in such manner as to impede the passage of cooling air adjacent the inner surface of the socket and the outer surface of the electrical device held therein. Such a socket is shown in copending United States Patent application Serial Number 553,367 filed December 15, 1955 in the name of William H. Morgan, Jr. As a result relatively expensive means have been deemed necessary in the form of cooling aids for dissipating heat from the socket as well as the saddle.

Therefore it is an object of this invention to allow cooling of an electrical device and connection means in an economical manner.

It is also an object of this invention to firmly position an electrical device relative to electric contacts and a support structure so as to allow relatively rapid dissipation of any heat developed internal the electrical device.

For a better understanding of the present invention, together with other and further objects, advantages and capabilities thereof, reference is made to the following disclosure and appended claim, in connection with the accompanying drawings in which:

FIGURE 1 shows an embodiment of a socket saddle, and

FIGURE 2 shows an embodiment of a socket body portion, and

FIGURE 3 shows a portion of a typical electrical device to be positioned in a socket, and

FIGURE 4 shows the saddle of FIGURE 1 and socket body portion of FIGURE 2 in assembly, and

FIGURE 5 shows an electrical device positioned in the assembly of FIGURE 4.

To briefly consider one aspect of the invention, there is provided a socket or connector having a generally tubular support saddle formed to provide a plurality of support fingers on one end and an annular flange on the other end suitable for crimp connection to the laterally depending portions of the socket body which are formed to extend beyond the socket body portion ultimately covered by the electrical device positioned in the socket.

Referring to FIGURE 1, there is shown one embodiment of a generally tubular shaped saddle having a plurality of resilient positioning fingers **13** and an annular flange portion **15**. Laterally extending mounting ears **17** may be provided for fastening the socket body and saddle to a mounting chassis.

In FIGURE 2 there is shown one embodiment of a socket body having a relatively thick or deep central portion **19** formed to provide a plurality of contact receiving apertures **21** and a central aperture **23** for receiving the aligning key of an electrical device to be positioned in the socket.

Laterally extending or radial lugs **25** and **27** are circumferentially spaced about the central portion **19** of the socket body, with lugs **25** preferably but not necessarily provided with a beveled lower surface **29** and an outer edge portion **31** of arcuate shape. The remaining laterally extending lugs **27** may be provided with relatively square edges **33** as shown.

In FIGURE 3 there is shown a cut away version of a typical electrical device base having contact or support pins **35** and an aligning key **37**. The cylindrical base portion **38** may be provided with one or more outwardly extending bumps or protuberances **41** over which the positioning fingers **13** of a socket saddle may snap to hold the device in the socket once positioned therein.

The complete socket embodiment, shown in FIGURE 4, being made up of the saddle of FIGURE 1 and the socket body of FIGURE 2, is suitable for receiving the base of the electrical device shown in FIGURE 3. In joining the saddle of FIGURE 1 to the socket body of FIGURE 2 it can be seen that the laterally extending lugs **25** and **27** are positioned in the annular flange **15**, and then the annular flange is crimped in such manner as to place the inner surface of the annular flange portion, intermediate points **43**, tightly against the edge and lower beveled surface of laterally extending lugs **25**. In addition, the annular flange portion adjacent the edges of laterally extending lugs **27** may be flattened to hold the saddle more firmly on the socket body so as to help avoid rotation of the saddle relative to the socket body.

The projection lamp **47** shown in FIGURE 5 is a typical electrical device, having considerable thermal radiation loss which, when used in picture projectors, should be maintained in a fixed position and at the same time have as much surface area as possible available to a stream of cooling air. Referring back to FIGURE 4, it can be seen that the openings or grooves **49** left between the circumferentially spaced lugs will allow cooling air to be fed against the lower portion of the base **38**, along the outer periphery of the base **38** and on through the openings provided between saddle fingers **13**. It will be noted that the circle of apertures **21** runs close to the grooves whereby the cooling effect on the base and sides of the tube as described above takes place. In addition, it is usually possible to provide additional cooling air through extra socket body apertures **21**. For example, the projection lamp **47** shown in FIGURE 5 requires only two contacts; however, four apertures **21** are provided in the socket body. Thus additional cooling air may be fed through the extra contact apertures by omitting contacts, and if necessary in any particular structure by enlarging the width and depth of the cooling apertures over and above that used in the contact holding apertures.

Thus it can be seen that circumferentially spaced socket body lugs which preferably extend beyond the sides of the base of the supported electrical device, can not only be formed so as to economically hold a positioning saddle but also can be formed to allow cooling air to flow around the electrical device for dissipation of thermal radiation.

While there has been shown and described what is at present considered the preferred embodiment of the present invention, in view of this disclosure it will become obvious to those skilled in the art that various changes and modifications may be made without departing from the invention as defined in the appended claim.

Having thus described our invention, we claim:

A socket for holding electrical devices including devices having thermal radiation energy loss comprising a body of insulating material of given thickness having a plurality of contact holding apertures arranged in the circumference of a circle in a central portion of the socket

and a plurality of circumferentially spaced radial saddle connection lugs extending from the central portion, with a vertical groove in the central portion between each pair of adjacent lugs, the circumference of the circle which passes through the circumferentially arranged apertures in the central portion running close to the grooves, whereby cooling air may pass up through the grooves and onto the lower face of the base of a tube inserted in said socket and thence alongside the sidewalls of the tube, a generally tubular saddle terminating on its upper end in a plurality of resilient finger members and terminating at its lower end in a generally annular flange having sufficient diameter and depth to receive said socket body lugs, said saddle being attached to said socket body by crimping said annular flange adjacent at least two of said socket body lugs.

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