April 29, 1952 S. M. DEL CAMP 2,595,188

TUBE SOCKET

Filed May 7, 1949

FIG. 1.

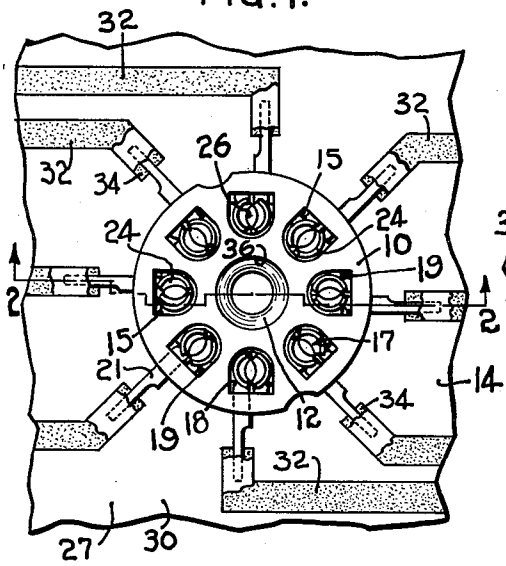


FIG. 2.

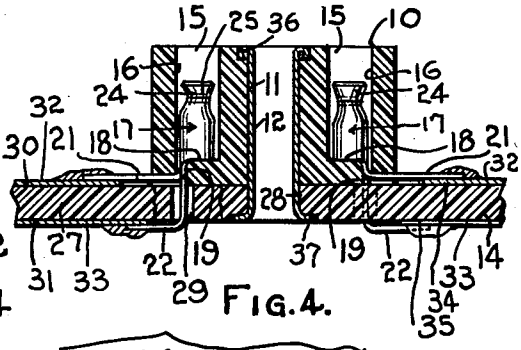


FIG. 4.

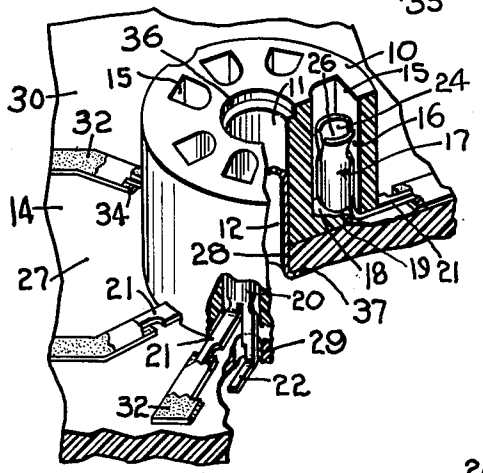


FIG. 3.

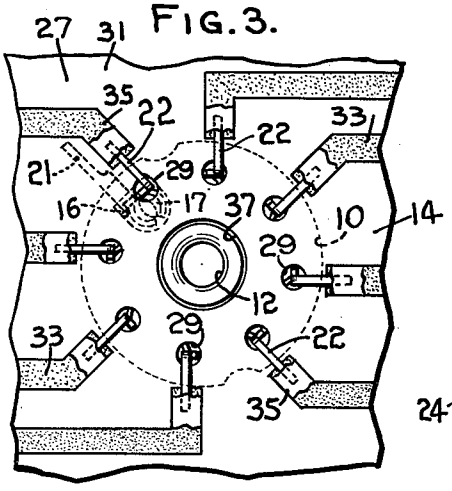


FIG. 5.

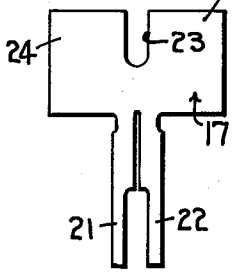


FIG. 6.

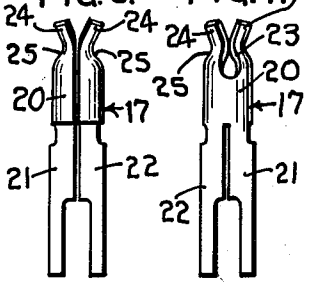
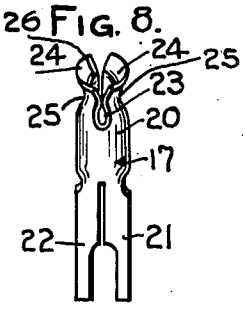


FIG. 7.

26 FIG. 8.



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TUBE SOCKET

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5 Claims. (Cl. 173—328)

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The present invention relates to tube sockets, such as sockets for radio and like pronged tubes and appliances, and aims generally to improve the construction of existing sockets as well as the contacts therefor.

One of the primary objects of the invention is the provision of a miniature tube socket which is particularly adapted for use with printed circuits.

A further objects of the invention is the provision of a socket which may be of one-piece molded construction and in which the terminals of the contact extend radially outwardly from the socket body.

A still further object of the invention is the provision of a contact terminal in which the end of the terminal is split to form integral tabs adapted to be bent so as to lie on opposite sides of a printed circuit chassis.

These and other objects and advantages of the invention will be apparent to persons skilled in the art from a consideration of the attached drawings and annexed specification illustrating and describing a preferred embodiment of the invention.

In the drawings:

Fig. 1 is a top plan view of the socket mounted on a printed circuit chassis;

Fig. 2 is a vertical cross-sectional view of the device taken on the line 2—2 of Fig. 1;

Fig. 3 is a bottom view of the device of Fig. 1;

Fig. 4 is a perspective view, partly in section, of the device of Fig. 1;

Fig. 5 is a plan view of the blank from which the contact terminal is formed;

Fig. 6 is a front view of the completed terminal;

Fig. 7 is a rear view of the completed terminal; and

Fig. 8 is a perspective view of the terminal.

Referring to the drawings, the socket member may be molded of suitable dielectric material, for example, a phenolic condensation product, and comprises a body portion 10 having a central aperture 11 for the reception of a sleeve 12. The sleeve 12 is preferably of metal and serves the dual function of a magnetic shield and of an attaching means for securing the socket to a supporting part 14 which may comprise a radio or like printed circuit chassis plate.

The upper surface of the body portion 10 is provided with a series of prong-receiving apertures 15 which are suitably arranged and spaced in matching configuration to the prongs of a tube to be mounted in the socket, and through

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which the tube prongs or leads may pass freely as will be understood in the art.

The body of the socket 10 is formed with a like series of contact-receiving openings or bores 16, preferably of the same diameter as the apertures 15 and disposed coaxially with and below the apertures 15. Said openings or bores 16 are designed to receive the socket contact members 17 which are in electrical contact with the tube prongs or leads, and preferably stop somewhat short of the bottom face of the socket body 10 to form bottom partitions 18. The partitions 18 are designed to support the main body portions of the contact members and are provided with slits or openings 19 through which the end portions of the contact members are threaded as will be more apparent hereinafter.

The contact member 17 is advantageously made from a single strip of suitable conducting metal cut in the form of a blank, as shown in Fig. 5, and then shaped in any suitable manner to form a split tubular body portion or sleeve 20 and terminal contact tabs 21 and 22. The body portion 20 is preferably slotted at its upper end, as at 23, to form a plurality of laterally yielding sections 24, each of the sections 24 being pressed inwardly, as at 25, to provide a constricted throat section 26. It will be apparent that when a tube prong is inserted into the constricted throat portion 26 the laterally yielding sections 24 will be forced apart and will frictionally engage the prong to hold it in place and make electrical contact therewith.

The terminal tabs 21 and 22 extend outwardly from the lower edge of the body portion 20 in prolongation thereof and are adapted to be threaded through the slits 19 in the bottom partitions 18 and then bent at right angles on opposite sides of the supporting part 14.

The supporting part 14 is exemplified herein as a portion of a radio chassis of the so-called printed circuit type and, as shown more particularly in Figs. 1 to 3, comprises an insulating panel 27 having an aperture 28 for alignment with the central aperture 11 of the body portion 10 and a plurality of apertures 29 conforming in number and arrangement to the prongs of the tube member to be used with the socket, and each adapted to receive one of the terminal tabs of the contact members 17. On both sides 30 and 31 of the panel 27 are applied a plurality of conducting strips 32 and 33. The metal strips 32 and 33 are preferably formed by spraying or painting metal particles on the panel in accordance with the process well known in the art. The strips 32 and 33 are

located on the panel in accordance with a predetermined circuit layout, but have their ends 34 and 35 disposed in predetermined positions with relation to the terminal tabs 21 and 22 of the contact members when the socket is secured to the panel.

In assembling the device the contact members 20 are placed in the bores 16 with the terminal tabs 21 and 22 thereof threaded through the slits 19 of the bottom partitions 18. The tabs 21 are then bent outwardly at right angles along the bottom of the body portion 10 and radially thereof so as to be in proper position for contacting the conducting strips 32 on the top of the panel 27. The terminal tabs 22 are then threaded through the apertures 29 and bent outwardly radially against the bottom of the panel 27 so that each tab 22 will come into contact with its corresponding conducting strip 33. The socket is then secured to the panel by upsetting the ends of the sleeve 12 in grooves 36 and 37 located respectively in the top of the socket 10 and in the bottom of the panel 27. The ends of the terminal tabs are then soldered to their respective conducting strips to complete the assembly.

From the above description it will be apparent that the present invention provides a highly effective, inexpensive arrangement of the socket unit, circuits and supporting panel. The invention presents particularly a simple and efficient method of effecting electrical engagement of the tube-engaging contacts with the electrical circuit of the radio set.

Although I have illustrated and described a preferred embodiment of my invention, I do not intend to be limited to the details thereof as the scope of the invention is best defined in the appended claims.

I claim:

1. A socket installation comprising a supporting member and a socket member, means securing the socket member to the supporting member, a plurality of bores in said socket member, each of said bores having a bottom wall provided with a slotted opening, said supporting member having a plurality of openings therethrough aligned with the slotted openings in said bottom walls, contact members disposed in said bores each having a pair of contact tabs extending through said slotted openings, one contact tab of each pair being bent outwardly along the bottom of said socket member to lie between the socket member and the supporting member, the other contact tab of each pair extending through the openings in said supporting member and being bent outwardly thereagainst to lie on the opposite side of said member from said first mentioned tabs.

2. A socket installation as set forth in claim 1 including printed circuits on opposite sides of said supporting member and having electrical contact with said tabs.

3. In an electrical socket installation, in combination with a supporting panel provided with a series of contact-receiving apertures and having printed electrical circuit conductors on opposite sides thereof one end of which terminates adjacent said apertures; of a socket member adapted to be secured to said supporting panel and provided with a plurality of contact-receiving bores,

adapted to be aligned with said contact-receiving panel apertures, each of said socket bores having a bottom wall provided with a restricted opening connecting said bores and contact-receiving panel apertures, a prong receiving contact member disposed in each of said bores and each provided with a tab extending longitudinally from one end thereof, said tab being of sufficient length to be extended through said restricted bottom wall openings and said contact-receiving panel apertures and adapted for soldered connection with one of said printed panel circuit connectors.

4. In an electrical socket installation, in combination with a supporting panel provided with a series of contact-receiving apertures and having printed electrical circuit conductors on opposite sides thereof one end of which terminates adjacent said apertures; of a socket member adapted to be secured to said supporting panel and provided with a plurality of contact-receiving bores, adapted to be aligned with said contact-receiving panel apertures, each of said socket bores having a bottom wall provided with a restricted opening connecting said bores and contact-receiving panel apertures, a prong-receiving contact member disposed in each of said bores and each provided with a tab extending longitudinally from one end thereof, said tab being of sufficient length to be extended through said restricted bottom wall openings and said contact-receiving panel apertures and being longitudinally divided for soldered connection to printed circuit conductors on opposite sides of said panel.

5. In an electrical socket installation, in combination with a supporting panel provided with a series of contact-receiving apertures and having printed electrical circuit conductors on opposite sides thereof one end of which terminates adjacent said apertures; of a socket member adapted to be secured to said supporting panel and provided with a plurality of contact-receiving bores, adapted to be aligned with said contact-receiving panel apertures, each of said socket bores having a bottom wall provided with a restricted opening connecting said bores and contact-receiving panel apertures, a tubular prong-receiving contact mounted in each of said bores, said contact provided with a soldering tab extending longitudinally beyond one end of said tubular contact along one side thereof and being of sufficient length to be extended through said restricted bottom wall openings and said contact-receiving panel apertures and adapted for soldered connection with one of said printed panel circuit connectors.

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