Oct. 19, 1948. S. M. DEL CAMP 2,451,538

TUBE SOCKET FOR RADIO AND LIKE TUBES

Filed Aug. 16, 1944

Fig. 1.

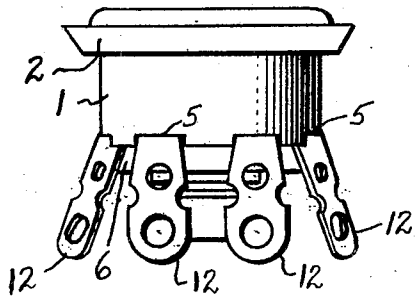


Fig. 2.

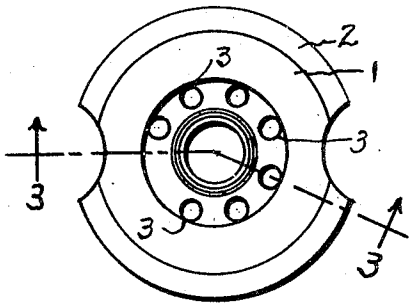


Fig. 3

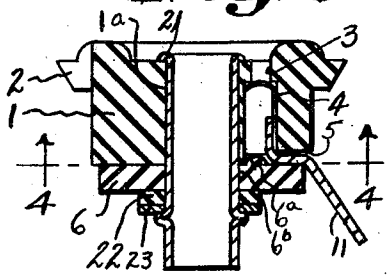


Fig. 4.

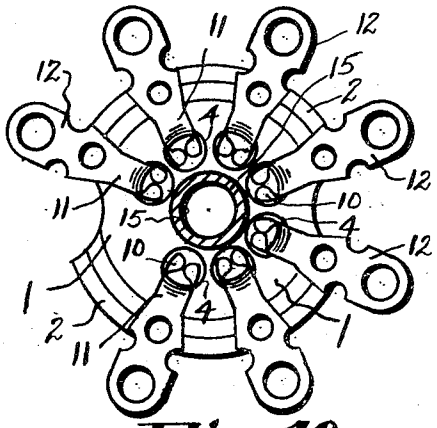


Fig. 5. Fig. 6. Fig. 7.

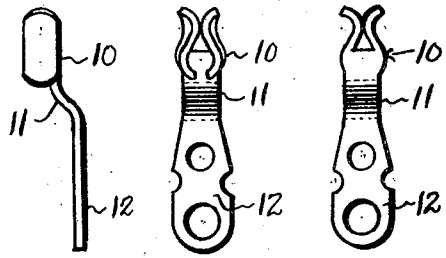


Fig. 8.

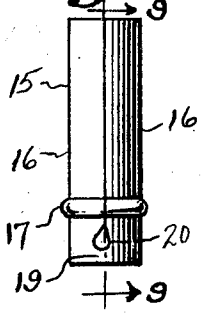


Fig. 9.

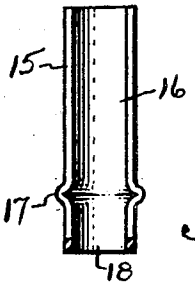
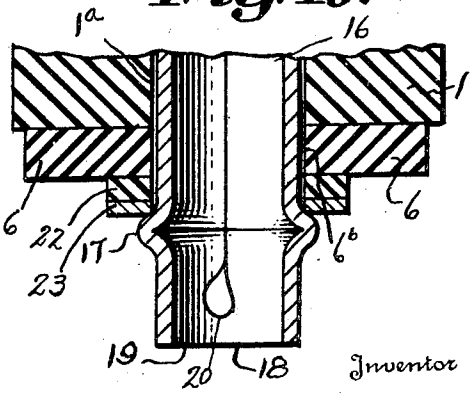


Fig. 10.



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TUBE SOCKET FOR RADIO AND LIKE TUBES

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3 Claims. (Cl. 173—328)

1

The present invention relates to electrical tube sockets, such as those employed for supporting pronged tubes which may be radio and like electronic tubes, and aims generally to improve existing sockets of this type.

More particularly, the invention aims to provide an improved construction of tube socket for the miniature type tube, the component parts of the socket being economical to manufacture and quickly and readily assembled.

Other aims and advantages of the invention will be apparent to those skilled in the art from a consideration of the accompanying drawings and annexed specification illustrating and describing one preferred form of the invention.

In the drawings:

Fig. 1 is a side elevational view of a preferred form of my improved socket;

Fig. 2 is a top plan view of the socket;

Fig. 3 is a vertical sectional view of the socket as taken on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 3, the soldering lugs of the contacts being flat and the bottom face of the socket body being shown in plan;

Fig. 5 is a side elevation of an improved form of contact;

Fig. 6 is a rear elevation thereof;

Fig. 7 is a front elevation thereof;

Fig. 8 is a side elevation of the connector pin;

Fig. 9 is a central vertical sectional view thereof as taken on the lines 9—9 of Fig. 8; and

Fig. 10 is an enlarged detail sectional view similar to a portion of Fig. 3, illustrating the manner of connecting the component parts of the socket together.

The socket member of the present invention consists essentially of a socket body member in which are floatingly mounted a plurality of electrical contact members, and a retaining plate or cover with improved means to secure the body member and retaining member together. The socket body member and the retaining cover member are preferably formed of suitable molded insulating material, such as ceramic insulating material and the construction provides a highly efficient and economical socket for such prong type radio and like tubes.

The socket body may be of any approved design and preferably comprises a one-piece molded body 1 of suitable insulating material, such as porcelain or like ceramic material, and advantageously is cylindrical in form, provided with an annular bead or rim 2 for engagement by an attaching saddle (not shown) by means of which

2

the socket may be secured to a suitable support such as a chassis part of a radio or like apparatus.

The socket body 1 is formed with a circular series of tube prong-receiving apertures 3, opening through its upper surface for the reception of the contact prongs of electronic tubes as will be well understood by those skilled in the art. These apertures 3 are of relatively short length and preferably do not extend materially below the plane of the lower edge of the bead 2, where they communicate with enlarged axially disposed contact-receiving bores 4 opening through the lower face of the body 1. The contact-receiving bores 4 are disposed inwardly of the peripheral face of the body 1, but communicate therewith by lateral outwardly flaring recesses 5 in the marginal peripheral portion of the bottom of the body 1.

Each of the contact-receiving bores 4 is adapted to loosely or floatingly receive and house the prong-receiving portion of a contact member 10 of suitable design and which preferably is of less axial, radial and circumferential dimensions than the bore 4 as to be freely and readily shiftable therein. The contact member may have an angular extension 11 loosely housed and shiftable in the recesses 5 and an apertured end portion 12 disposed outside of the socket body 1 and providing a wiring terminal for connection with one of the circuits of the apparatus in which the socket is used. The shiftability or floatability of the contacts is highly desirable as it materially facilitates insertion of the tube prongs in the socket because it eliminates undue pressure that would be exerted upon the tube prongs when said prongs are slightly out of alignment as is frequently the case.

The contact members 10 are retained in the socket body 1 by means of a retainer plate 6, preferably of a diameter corresponding to the body so as to underlie the bores 4 and lateral recesses 5. This cover plate may be formed of any suitable dielectric material, such as molded ceramic material, and is retained in assembled relation with the socket body 1 by suitable means, for example an eyelet 15 of novel construction. The cover plate 6 also is provided with bosses 6a (Fig. 3) at properly spaced intervals so that they may project into the lower end of the bores 4 and support the bottom ends of the contact members. By holding the contacts farther up into the bores 4 there is a barrier increase near where the body 1 and cover plate are joined. This construction reduces the possibility of arcing between the con-

tacts. It also increases the voltage breakdown over what it would be if the contacts rested against a flat surface of the retainer 6 at the face of contact with the body of the socket.

The eyelet 15 may advantageously be formed from a single piece of thin sheet metal and composed of two semi-cylindrical sections 16, each having an integral semi-circular bead 17 thereon. The semi-cylindrical sections may be folded together about an apertured central section 18 to provide an elongated tubular eyelet composed of the semi-cylindrical sections 16 connected at one end by a continuous annular band 19. In folding the sections 16 together about an apertured section 17 side openings 20 are formed in the eyelet at the inner ends of the meeting edges of the sections 16, which openings may be utilized for attaching a wire or conductor when a grounded circuit with the socket is desired. In folding the sections 16 together the semi-circular beads 17 are brought into registry to provide an annular bead for the tubular eyelet.

The socket body 1 and retainer member 6 are secured together with the contacts assembled therebetween, by means of the eyelet 15 passed upwardly through apertures 6^b of the retainer 6 and apertures 1^a of the socket body, the upper end of the eyelet being upset as at 21 over the upper face of the body to secure the parts between the upset portion 21 and the annular bead 17. As the ceramic body and retainer are apt to fracture or crack when subjected to pressure sufficient to upset the end of the eyelet, a cushioning washer 22 of suitable material, such as rubber, cork and the like is preferably interposed between the bead 17 and retainer 6. In order to insure a satisfactory holding surface between the small bead 17 and the cushioning washer 22, a thin metal washer 23 is interposed between the washer 22 and the bead 17. This metal washer has a bearing surface on the cushioning washer 22 and is preferably a spring washer so that it may take up some of the shock.

The socket member above described is essentially of two-part construction comprising the body 1 and the retainer 6, which parts may be readily molded to precise dimensions.

In assembling the socket the contact members 10 are first assembled in the bores 4 with the extensions 11 disposed in the recesses 5 of the socket body 1. The retaining plate is then applied to the body to retain the contact members 10 therein and the assembled parts are connected together by passing the tubular eyelet 15 upwardly through the apertures 6^a of the retainer and 1^a of the socket and then upsetting the upper end of the eyelet over the upper surface of the socket body.

While I have illustrated and described the invention with reference to a socket body and retainer formed of ceramic material, it will be understood that the advantage of the floating or shiftable mounting of the contacts is equally applicable to sockets made from other plastic materials which are not so subject to breakage. Furthermore, it will be understood that the several novel features of the invention are not restricted to the particular form of contacts illustrated, as the scope of the invention is best defined in the appended claims.

I claim:

1. An electrical socket for prong type tubes and the like comprising a socket body of insulating material formed with a central opening and a surrounding series of prong-receiving apertures with

underlying communicating axial bores and lateral recesses opening to the peripheral face of said body, a prong-engaging contact for each prong-receiving aperture and shiftable relative thereto, a centrally apertured retainer member of insulating material underlying the bores and recesses of said body, and an elongated tubular eyelet formed with an annular bead adjacent an outer face of one of the assembled parts of insulating material and having a terminal end upsettable over the outer face of the other part, a cushioning means interposed between said eyelet and one of said parts, said cushioning means including a washer of compressible material and a metal spring washer.

2. An electrical socket for connection with prong type tubes and the like comprising a socket body formed with a plurality of prong-receiving apertures opening through the upper face and contact-receiving bores below and communicating with said prong-receiving openings, a prong-engaging contact loosely and shiftably mounted in each of said bores, and a retainer member engaging the lower face of said socket body and underlying said bores for retaining said contacts therein, said retainer member having bosses extending into the contact-receiving openings to hold the contact members in positions to increase the barrier between adjacent contact members thereby increasing the voltage breakdown of the socket.

3. An electrical socket for connection with prong type tubes and the like comprising a non-conducting socket body formed with a plurality of prong-receiving apertures opening through the upper face and enlarged contact receiving bores below and communicating with said prong-receiving apertures, a prong-engaging contact mounted in each of said bores, a non-conducting retainer member underlying said bores at the lower face of said body, said retainer member having projections entering into said contact-receiving bores adapted to hold the contact members in positions an appreciable distance within said bores so as to increase the barrier between adjacent contact members thereby increasing the voltage breakdown of the socket, and a fastening member extending through said socket body and said retainer member and formed with an annular bead adjacent an outer face of one of the assembled parts and having a terminal end upsettable over the outer face of the other part, and a washer of cushioning material interposed between said fastener member and one of said parts.

SCIPIONE M. DEL CAMP.

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