May 30, 1950 C. J. ADAMS 2,509,406

SOCKET

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Fig. 1.

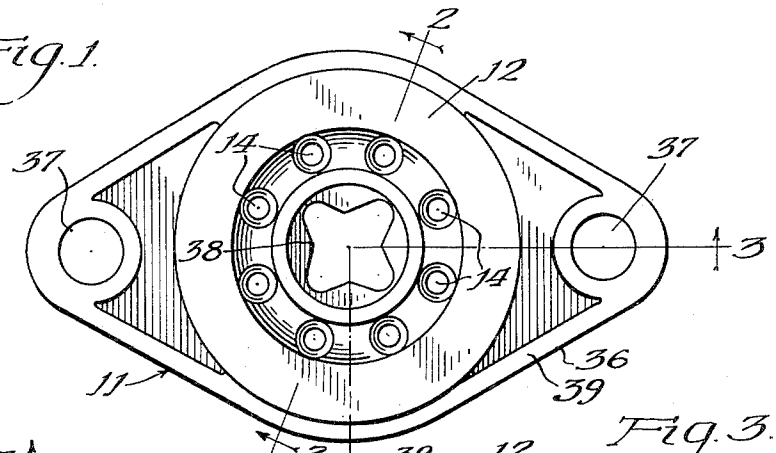


Fig. 3.

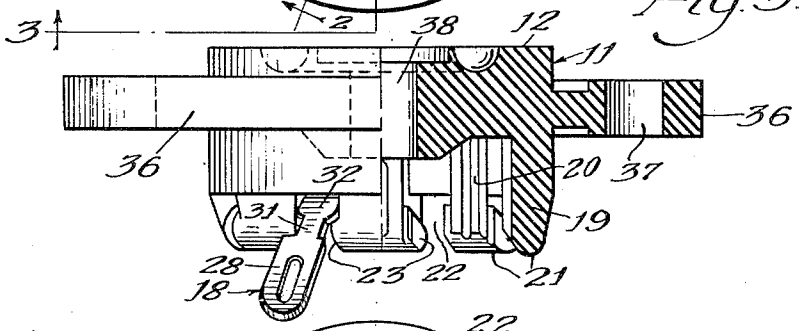


Fig. 4.

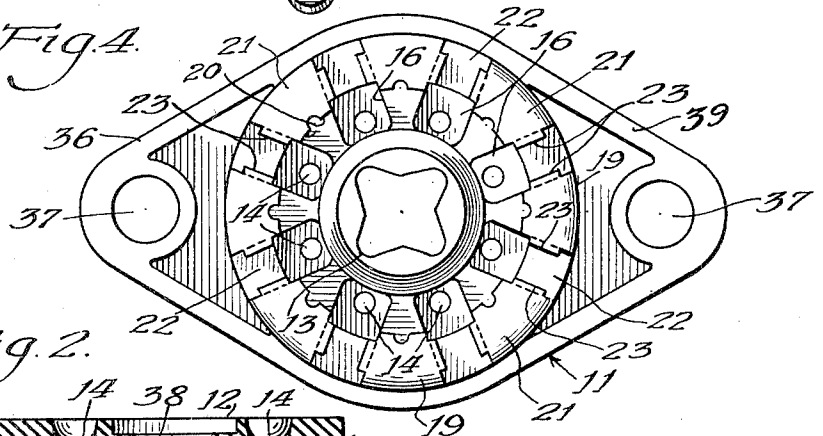
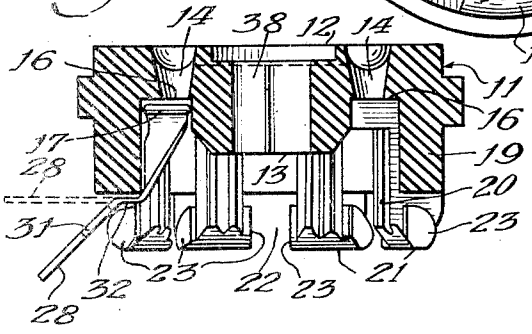


Fig. 2.



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Fig. 8.

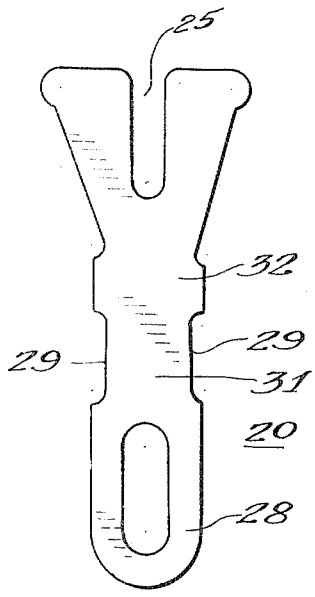
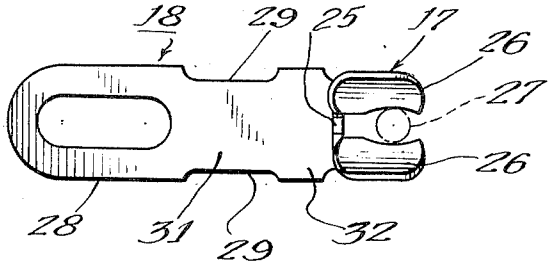


Fig. 5.



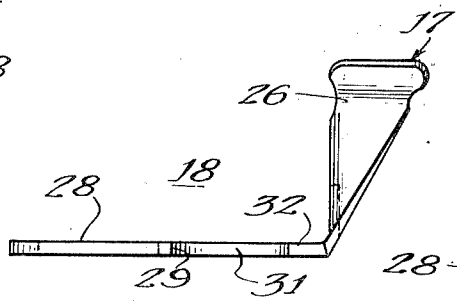


Fig. 6.

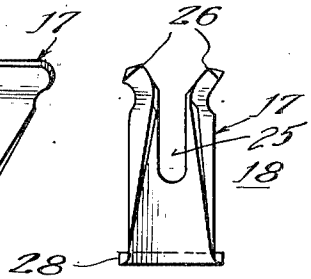


Fig. 7.

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UNITED STATES PATENT OFFICE

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SOCKET

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3 Claims. (Cl. 173—328)

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This invention relates to improvements in sockets of the type employed for the reception of plug-in devices such as radio tubes, and has for an object the provision of an improved socket construction adapted for high frequency use with electronic tubes, coils and other plug-in devices.

Sockets of this type have heretofore been formed of dielectric materials, such as Bakelite, Steatite, and Styrene to provide a plurality of relatively deep pockets to receive and substantially enclose metallic contact elements. The electrical characteristics of the socket were thus dependent upon the dielectric properties of such insulating material. The present invention contemplates the provision of a socket which is constructed to employ as much air as possible as the dielectric between the metallic contacts in place of the dielectric material heretofore employed, and to thereby provide a socket having improved electrical characteristics for use with electronic tubes, or other push-in devices. By eliminating a dielectric material of relatively high value and replacing it with air between contacts and between contacts and a center shield, a lower value of inter-electrode capacity is obtained. As capacity is a function of plate area in a condenser, this invention further contemplates the removal of superfluous metal from the contact body in order to lower the inter-electrode capacity.

This invention further contemplates the provision of a socket provided with a plurality of relatively shallow pockets in the rear face thereof to receive the inner ends of metallic contact members. An annular rearwardly extending flange is formed on the socket to enclose contact portions of the metallic contacts, and means are provided on the annular flange for locking the metallic contacts in assembled relation upon the socket.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawings wherein:

Fig. 1 is a top plan view showing a socket embodying features of this invention.

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1, showing the means employed for securing the metallic contact elements against displacement from the socket.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1, showing one of the metallic contacts mounted in position on the socket.

Fig. 4 is a bottom view of the socket.

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Fig. 5 is a detail plan view showing the improved metallic contact element.

Fig. 6 is a side elevational view of same.

Fig. 7 is an end view of same.

Fig. 8 is a plan view of a blank for forming the metallic contact element.

Referring now to the drawings for a better understanding of this invention, the socket is shown as comprising a body portion 11 formed with a front face 12, a rear face 13 and a plurality of openings 14 arranged in spaced relation about the longitudinal axis of the body portion 11 to receive cooperating plug elements of electronic tubes or other push-in devices, not shown. Relatively shallow pockets 16 are formed in the rear face of the body portion to receive and engage the inner ends of contact portions 17 formed on metallic contact members 18. A rearwardly extending annular wall 19 is formed on the body portion 11 to enclose the metallic contact elements 18, and a plurality of posts 21 are formed on the annular wall 19 to extend rearwardly in spaced relation to define terminal receiving slots 22. The sides of the posts defining the terminal slots 22 are formed with bosses 23. A plurality of parallel ribs 20 are formed to extend rearwardly along the inner walls of the annular wall 19 and posts 21 to increase the voltage leakage path between contacts 18.

The metallic contact element 18 is formed from a blank 20 of resilient metal, illustrated in Fig. 8, to provide a pair of resilient opposing contact arms 26 for tight contact engagement with a cooperating plug contact member 27, and it will be noted that the side arms 26 are formed substantially triangular, as viewed from the side in Fig. 6, to eliminate superfluous metal from the contact and thereby lower the inter-electrode capacity. By providing an elongated recess 25 between the side arms 26 an increase in the length of the spring base is effected. The contact element is also formed with a terminal portion 28 which is cut away at 29 to provide a relatively narrow neck portion 31 for insertion between the bosses 23 defining restricted opening for the slots 22.

The metallic contact elements 18 are mounted on the socket by inserting the inner end of the contact portion 17 into one of the shallow pockets 16, the end 17 being canted at an angle to the axis of the pocket. In this position the necked portion 31 will be disposed adjacent the opposite bosses 23. The portion 28 is then moved inwardly toward the axis of the socket a short distance, slightly springing the right angle bend formed in the member 20, until the necked portion 31

registers with the bosses 23. The entire member 20 is then rocked until the end 17 assumes a position in contact with the base of the pocket 16, at which time the portion 18 will assume the position shown in dotted lines in Fig. 2. The terminal portions 28 are then bent rearwardly, as illustrated in Figs. 2 and 3, to position the relatively wide portion 32 thereof in locking engagement under the bosses 23. It will be noted that the relatively wide portion 32 of the contact 18 is formed to extend the full width of its slot 22.

A flange 36 is formed around the base portion 11 and provided with holes 37 to receive mounting bolts, rivets, etc., not shown. In order to prevent breakage of the flange 36 during mounting of the socket body, a rib 39 is formed on each face thereof.

It will be noted that the central opening 38 is formed non-circular and extends from the front face 12 to the back face 13 of the socket body, thereby removing as much high dielectric material as possible from contact with a center shield (not shown). By eliminating dielectric material of high value and replacing it with air between the contacts and the center shield, a lower value of interelectrode capacity is obtained.

In the type of socket construction thus shown and described, it will be noted that air is principally employed as the dielectric to improve the electrical characteristics of the socket. In addition to the improvements in electrical characteristics, this type of socket construction is of relatively light weight and may be manufactured at a reduced cost.

By providing a plurality of shallow pockets in the rear face of the base portion and a plurality of restricted openings 22 in the annular flange 19, it will be noted that the contact members 18 may readily be mounted in position on the socket and held against displacement therefrom by merely bending the terminal portion 28 rearwardly.

While this invention has been shown in but one form, it is obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit and scope of the claimed invention.

I claim as my invention:

1. In an electrical connector, a socket body, a plurality of contacts having contact portions and relatively flat terminal portions, said socket having front and rear faces and a rearwardly extending annular marginal flange formed with radially disposed slots to receive the terminal portions of said contacts, the rear face of said socket body being formed with a plurality of relatively shallow pockets to receive the inner end of the contact portion of said contacts, means formed on said flange for locking engagement with the terminal portion of said contacts to retain same in assembled relation when said terminal portion is bent rearwardly, said means comprising opposing bosses disposed in spaced relation to form restricted openings for their respective slots, the terminal portion of each socket contact having a relatively narrow neck portion for insertion between the ends of their respective opposing bosses.

2. In an electrical connector, a socket body, a plurality of contacts having contact portions and relatively flat terminal portions, said socket body having front and rear faces and a rearwardly extending annular marginal flange formed with radially disposed slots to receive the terminal portions of said metallic contacts, the rear face of said socket body being formed with a plurality of relatively shallow pockets to receive the inner end of the contact portion of said contacts, means formed on said flange for locking engagement with the terminal portion of said contacts to retain same in assembled relation when said terminal portion is bent rearwardly, said means comprising opposing bosses disposed in spaced relation to form restricted openings for their respective slots, the terminal portion of each contact having a relatively narrow neck portion for insertion between the ends of their respective opposing bosses, and shoulders formed on said terminal portions for locking engagement under said bosses.

3. In an electrical connector, a substantially cup-shaped socket body having a base comprising front and rear faces and a rearwardly extending marginal flange, said base being provided with a plurality of apertures for the reception of a male contact element, the rear face of said base being provided with a plurality of shallow pockets in alignment with said apertures, a plurality of contacts carried by said socket body, said contacts having contact portions positioned in said shallow pockets for the reception of said male elements and relatively flat terminal portions, said marginal flange being provided with marginally spaced slots in substantial alignment with said apertures and pockets, and means upon said marginal flange projecting into said slots for engaging said terminal portions to lock the same in position upon said socket body, said terminal portions being provided with oppositely disposed notches for insertion past said projecting means to position said contact in position to be locked.

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