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A. W. FRANKLIN

2,109,770

ELECTRIC SOCKET

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Fig. 1

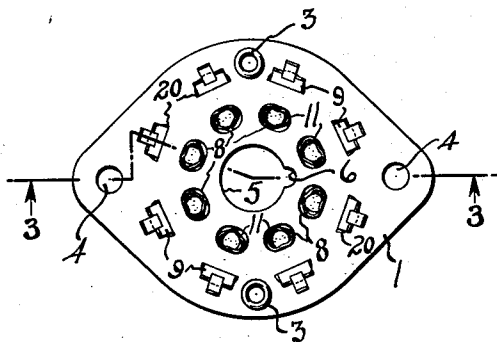


Fig. 2

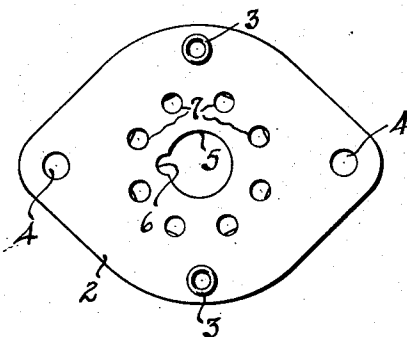


Fig. 3

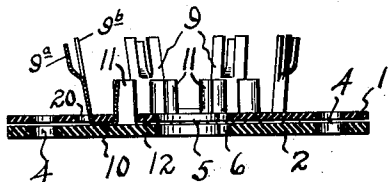


Fig. 4

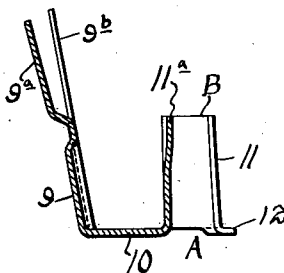


Fig. 5

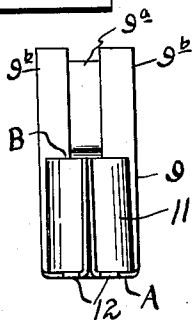


Fig. 6

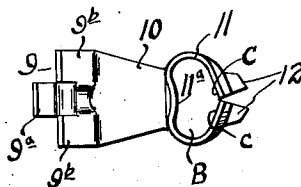
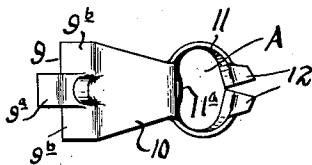


Fig. 7



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ELECTRIC SOCKET

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Application June 25, 1936, Serial No. 87,197

2 Claims. (Cl. 173—328)

This invention relates to improvements in sockets for receiving electrical devices of various forms of which the vacuum tube, such as employed in radio receivers and similar apparatus, is an example.

An object of this invention is to provide an improved form of prong receiving contact capable of repeated insertions and withdrawals of contact prongs without destroying the original relationship of the parts and the resiliency thereof.

A further object of the invention is to provide contact clips of this type which will insure a firm gripping of the contact prongs, insuring good electrical contact and a firm support for the device mounted therein.

These and many other objects, as will appear from the following disclosure, are secured by means of this invention.

This invention resides substantially in the combination, construction, arrangement, and relative location of parts, all in accordance with the following disclosure.

In the accompanying drawing—

Fig. 1 is a bottom plan view of a complete socket in accordance with this invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a cross-sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a vertical central cross-sectional view through one of the contact clips;

Fig. 5 is a bottom plan view thereof;

Fig. 6 is a front elevational view thereof; and

Fig. 7 is a top plan view thereof.

The complete structure comprises an upper supporting plate 1 and a lower supporting plate 2 disposed in superposed relation and secured thereto in any suitable manner, such as by means of the riveted eyelets 3. These plates may be made of any suitable insulating material adapted to the purpose and are provided with the aligned holes 4 by means of which the complete structure may be mounted on any suitable support. Both plates are provided with a substantially circular opening 5 provided with a more or less semi-circular notch 6 on one side to adapt the socket for use with the so-called metal audions or vacuum tubes in common use today. The so-called metal tubes are provided with a base having a cylindrical central prong which has a longitudinal substantially semi-circular ridge along one side thereof. The central prong snugly fits the opening 5 in the socket and the ridge thereon fits in the notch 6, insuring the mounting of the tube in the socket in the proper position.

The contact clips are of metal, in accordance with the usual practice, and comprise a flat central portion 10 having the terminal portions 9 and 11 extending from the central portion in the same direction. The terminal portion 9 provides the well known "fish-tail" of the contact and in the form shown has a struck out central tab 9^a, thereby forming the pair of tabs 9^b. The terminal portion 11 is formed up into a hollow section which is slightly converging from the end A to the end B. The end B is of generally oval form of rounded shape at the base angles. The back wall at the end B is inwardly curved, as indicated at 11^a. This inwardly curved portion, as is clear from Fig. 4, only extends a part of the way from the end B towards the end A. The more or less flat sides, resulting from the formation of the terminal end 11, approach each other to form a slot, as is clear from the various figures, which is slightly divergent from the end B to the end A. The end A is more nearly circular, as is clear from Fig. 7, and is slightly larger in area than the end B. On the end A the sides are provided with a pair of short ears 12 adjacent the longitudinal slot.

The supporting plate 1 is provided with a series of substantially oval openings 8, each of which is radially aligned with openings 20 of a suitable size and shape to receive the "fish-tail". The contacts are threaded on to the support 1 by passing the terminal ends 9 and 11 of the clips through the holes 20 and 8, respectively. The other supporting plate 2 is then placed over plate 1 so as to engage the portions 10 of the contact clips and eyelets 3 are then installed, binding the parts together and firmly supporting the terminal clips thereon and therebetween. As is clear from Fig. 3 the tabs 12 lie between the plates 1 and 2.

The advantages of this construction will now be set forth. By reason of the form of the clips and the manner of mounting them on the supporting plates the prong receiving portions 11 are firmly braced and supported by the tabs 12 and the portions 10. The tabs 12 may slide between plates 1 and 2 as the prong receiving portions 11 expand and contract when a prong is inserted and withdrawn. The plates 1 and 2 are not bound together by the eyelets 3 strongly enough to prevent this movement. These tabs 12 strengthen the contacts and permit guided movement of the free edges along the slots.

The ends A of the portions 11 are adjacent the apertures 7 in the plate 2, which is on the top of the socket, and from which side the tube is

inserted. Thus the rounded ends of the terminal prongs engage the prong receiving portions 11 of the clips at the larger end, which is more nearly rounded, so that the rounded ends of the terminal prongs may easily enter and start the spreading of the portions 11. As the prongs move down into the portions 11 they reach the point where they engage the portion 11^a representing the slightly inwardly bent parts. The prongs naturally tend to spring the parts 11^a outwardly, tending to draw the sides C of the clip firmly against the sides of the prongs. This provides a three line contact between the portions 11 and the prongs along the highest point of the portions 11^a and along the portions C slightly in back of the edges of the metal at the slot.

The particular advantage of a construction of this type is that the prong receiving portions are not permanently distorted when used with commercial tubes, the prongs of which in practice vary somewhat in diameter from the standard size. The standard diameter of the prongs of the modern vacuum tube is of the order of 0.091 to 0.093 inch, but commercial tolerance permits of the use of tubes having terminal prongs which vary from 0.090 to 0.098 inch. This relatively wide variation in diameter of the prongs which is normally encountered in the commercial art, is a cause for the rapid deterioration of the ordinary contact clips which when expanded by the oversize prongs do not make good contact when later used with tubes having standard or undersize prongs. The device here disclosed will withstand many insertions and withdrawals of prongs of tubes normally encountered in commercial use. They will grip these prongs firmly, making good electrical contact, even when used with undersize prongs after being used with oversize prongs. Because of the inward curve at 11^a the sides C are drawn firmly back against the opposite side of the prongs to insure a firm three line contact. This particular shape of prong also in-

sure greater resiliency in the prong receiving portion, insuring a firm grip on the prongs. The life of the prong is also increased by reason of the presence of the tabs 12. The tabs 12 also supplement the support given by the portion 10 of the clips to maintain the prong receiving portions in a substantially right angle position with respect to the supporting plates. Finally, by reason of the fact that the end A is larger and more nearly round, it is expanded but very little upon the insertion of the prongs which prevents the metal of the prong receiving portion from taking a permanent set when a prong, and especially an oversize prong, is inserted therein.

From the above description it will be apparent to those skilled in the art that this invention resides in certain features of construction which can be employed in other physical forms without departure from the true scope of the invention. I do not, therefore, desire to be limited to the disclosure, as given for purposes of the disclosure, but rather to the scope of the appended claims.

What I seek to secure by United States Letters Patent is:

1. A contact clip as described, comprising a piece of metal terminating in a contact portion of hollow section, made up of a back wall and a pair of approaching side walls terminating at a slot extending longitudinally of the hollow section, said back wall being curved inwardly.
2. A contact clip as described, comprising a piece of metal terminating in a contact portion of hollow section, made up of a back wall and a pair of approaching side walls terminating at a slot extending longitudinally of the hollow section, said back wall being curved inwardly, said hollow section being tapered longitudinally so that one end is smaller than the other, the larger end being more nearly circular than the smaller end and the smaller end being substantially triangular.

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