May 11, 1943. M. ALDEN 2,318,912

ELECTRICAL SOCKET

Original Filed Dec. 18, 1939

Fig. 1.

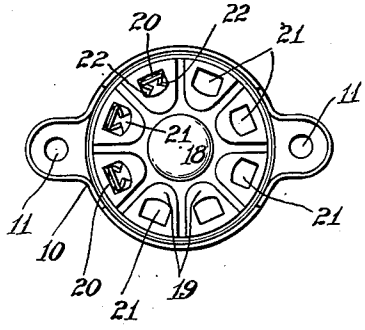


Fig. 2.

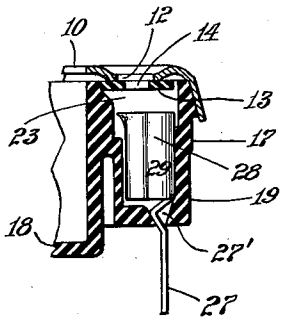
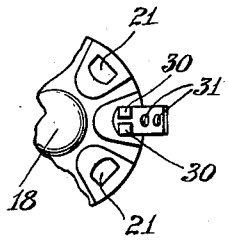
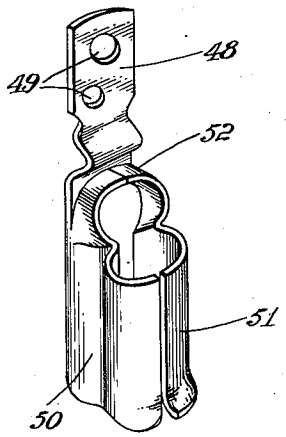


Fig. 4.

Fig. 3.





INVENTOR
Milton Alden

BY

ATTORNEY

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2,318,912

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2,318,912

ELECTRICAL SOCKET

Milton Alden, Brockton, Mass.

Original application December 18, 1939, Serial No. 309,777. Divided and this application April 27, 1942, Serial No. 440,622

2 Claims. (Cl. 173—328)

This application is a division from my application Serial No. 309,777, filed Dec. 18, 1939, issued as Patent No. 2,294,880, September 8, 1942.

The present invention relates to sockets and more particularly to sockets for the reception of the bases of radio tubes or for the reception of plugs used for the connection of radio or other circuits to devices equipped with such sockets.

One object of my invention is to provide a compact reliable and simple socket, having durable contacts which may be made cheaply and yet will be efficient.

Another object of one form of my invention is to close the lower portion of the contact members in such fashion as virtually to seal the lower portion of the prong passages in which they lie, in order that solder, flux or dirt may not accidentally enter such passages when conductors are soldered to the externally projecting portions of these members.

Another purpose of one form of the present invention is to provide in such sockets a contact member having a shield which will deflect solder from accidentally reaching portions of the contact or the prong passages where it is not desirable or where it might interfere with a prong entering into proper engagement with the contact.

Another purpose of this invention is to provide in a socket of the character described, contact retaining means which shall allow the easy insertion of female contact members into the body of the socket and yet at the same time shall firmly grip such members when they have once been inserted therein, so that they will not easily become dislodged while conductors or other parts are being welded or soldered thereto, or while a plug is engaging or disengaging the socket.

Another purpose of the instant invention is to provide a socket wherein the contact members shall have a certain degree of looseness or float at their upper portions, so that they may readily adapt themselves to the entrance of prongs which are not exactly positioned relative thereto, and also to provide contact members which shall not be permanently distorted by the entrance thereinto of prongs which may be bent, have excess solder thereupon, or be over the normal size as to their diameter.

Another purpose of this invention is to provide a socket into which several different shapes of contact members may be inserted, to meet differing requirements as to the form of such members.

Another object of this invention is to provide a novel method of forming a female contact member and the recess of the socket body within which it is to be lodged, so that such member may be easily inserted into the body, and yet may retain its position therein when once lodged, in resistance to movement of a prong in engagement with such contact member.

Referring now to the accompanying drawings in order better to illustrate my invention:

Fig. 1 is a bottom plan view of one form of socket embodying my invention.

Fig. 2 is a fragmentary sectional detail of a socket showing an alternative form of contact which may be employed with my invention.

Fig. 3 is a bottom plan view of part of a socket showing seated in place another form of contact which may be employed therewith.

Fig. 4 is a perspective view of an alternative type of contact having a solder trap.

In Figs. 1 and 2 there is shown a metal shielding cap 10, provided with suitable apertures 11—11 for fastening it to the mounting support. Of course any other suitable means of fastening it to the support may be employed in lieu of these holes. In this cap are also provided a group of other apertures 12—12, which furnish entrances for the respective prongs of a plug or tube base into the socket body. Lying immediately beneath the cap 10 is a washer 13 of insulating material. In this washer are located other apertures 14, each lying beneath a corresponding aperture 12, these apertures 14 being respectively of slightly smaller diameter than the apertures 12, so that the prongs which have started to enter these smaller apertures will no longer be in contact with the metal cap 10, thereby avoiding accidental mutual interconnection of the prongs, which might lead to the occurrence of undesired short-circuits.

The socket body 17 of Fig. 1 is provided with a central chamber 18, preferably closed at the bottom, for the reception therein of the guide pin of the plug. The body is formed with integrally molded legs 19, each one of which provides a housing for a single contact 20 and has a passageway 21 and provides for the closure therein of the individual circuit derived from a single prong only of an entrant plug. It can be seen that the leakage path from any contact member 20, emerging from the rear of any individual passageway 21, to an adjacent contact, will be a very lengthy one, thus serving to minimize leakage between the rear portions of such contacts, which, due to the soldering of wires thereto, often become contaminated with solder, soldering flux, and the dirt which these latter materials tend to retain thereupon. The contacts 20 may be retained in place within the individual legs 19,

by the action of relatively small bulges or ridges 22 upon the contacts in Fig. 1.

In Fig. 2 I have shown an alternative form of contact and an alternate form of leg portion closed at the bottom except for narrow slits 27' and showing an individual aperture 23 within which the upper end of the contact lies. The contact 28 is in this form held within the socket body by means other than exterior bulges upon the contact member. In this form, the upper, or contact-making portion of the member 28, is connected to the lower or wire-connecting portion of the member 27, by means of a portion 29 which is integrally formed with the rest of the contact, and is bent somewhat into a V-shape, as clearly shown in the drawing. This portion snaps into place over the insulating walls of the narrow opening through which it emerges from the contact chamber, thus substantially closing the chamber almost entirely, at the bottom thereof. This almost complete closure of the posterior openings of the contact chambers also serves to prevent or hinder the entrance of surplus solder or flux, along the surface of the soldering tabs and into the chambers themselves, which entrance would make possible undesired leakage paths between various contacts of the structure.

Fig. 3 displays another form of contact which accomplishes the bottom closure of the contact holding chambers which may have openings 21, large in relation to the contact terminal portion as shown in Fig. 1, by the provision along the contact body of two tabs 30—30 which are bent inwardly as shown, thus tending to close up the entrance to the contact chamber at its posterior portion. The wire-connecting portion of this contact may optionally be provided with holes 31, as shown in the drawing, for the insertion therein of a wire or wires which are to be connected to the contact member.

Fig. 4 shows an alternative type of contact which may be used in this socket. Soldering terminal 48 has holes 49 to receive a wire therein. Body 50 has a contact receiving portion 51 formed as a split cylinder, similarly to the contact shown in Fig. 6 of said patent. At 52 is indicated a solder shield in the form of a substantially complete semi-circular member. When soldering takes place, any excess solder will be deflected by this shield and prevented from entering the main portion of the contact proper, which lies within the socket body.

According to this invention it is possible to make the outlet 21 considerably larger in cross section than the end 27 of the sheet metal contact member so as to facilitate insertion of the contact member. The lugs 30, 30 and 52 serve to close off the balance of the outlet 21.

I claim:

1. A radio socket comprising a molded body with recesses, each of which has an open top and an opening in the bottom, a tubular contact member insertable into each of said recesses from the open top thereof, an insulating washer above the recesses and having perforations leading to the contact members for guiding the prongs of a radio plug and a soldering lug integral with each contact member and having a flat free end extending through an opening in the bottom for partially closing said opening and having a portion integral with said contact member formed to fit said opening in the bottom for completely closing the remainder of the opening whereby solder is prevented from entering said tubular contact member from the outside.

2. A radio socket comprising a molded body having a recess therein with a tapered slot in the bottom of said recess leading to the exterior of the body, an elongated resilient slitted tubular contact member for receiving the prong of a tube in said recess and an elongated terminal lug forming an extension of said tubular member and projecting through the slot in said recess to the exterior of the body for partially closing said slot, said terminal lug being formed with an offset part immediately adjacent the lower end of the tubular member and resiliently positioned in said tapered slots for entirely closing the same and preventing vibration of the contact member.

MILTON ALDEN.