

Dec. 8, 1936.

A. W. FRANKLIN

2,063,731

RADIO TUBE SOCKET

Filed Oct. 18, 1934

3 Sheets-Sheet 1

Fig. 1

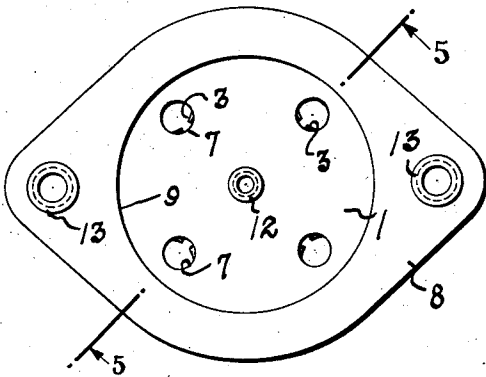


Fig. 8

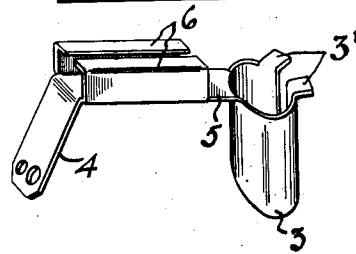


Fig. 2

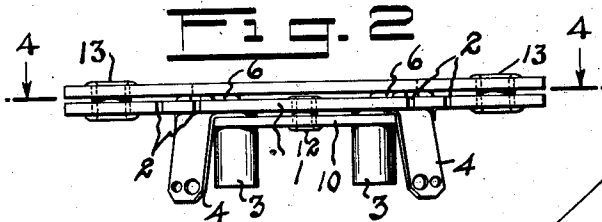


Fig. 4

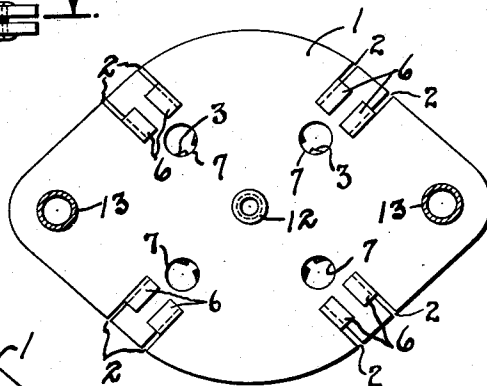


Fig. 3

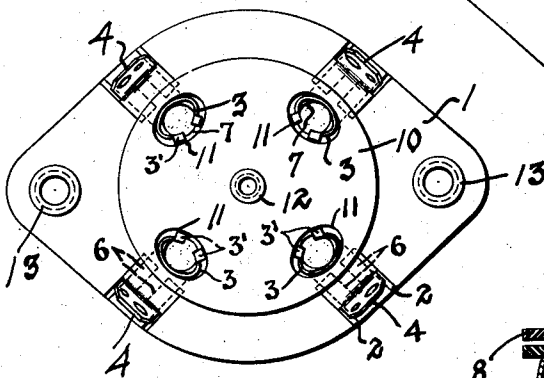
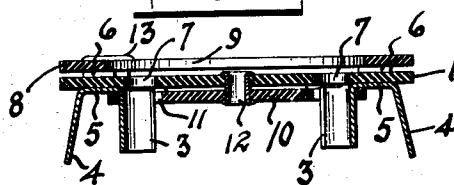


Fig. 5



INVENTOR.

Albert W. Franklin

BY

Darby & Darby

ATTORNEYS

Dec. 8, 1936.

A. W. FRANKLIN

2,063,731

RADIO TUBE SOCKET

Filed Oct. 18, 1934

3 Sheets-Sheet 2

Fig. 7

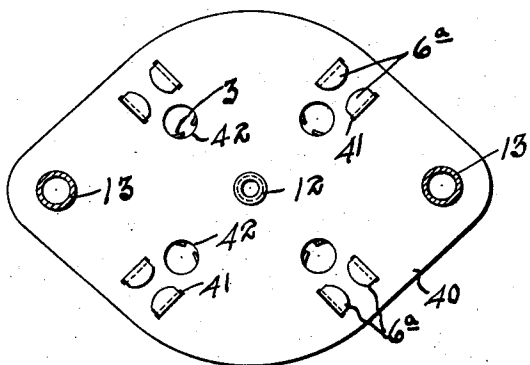


Fig. 8

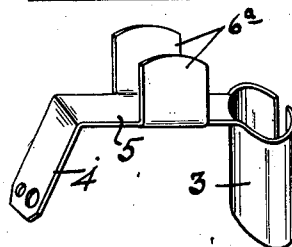


Fig. 9

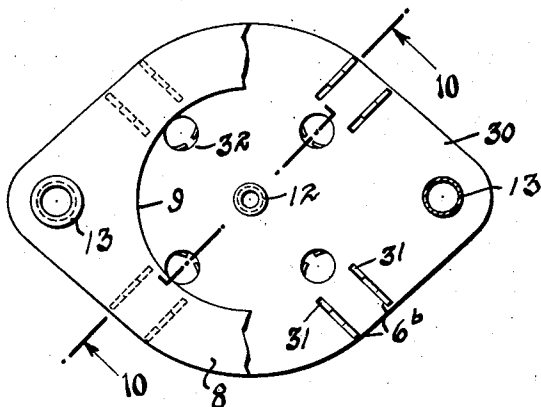


Fig. 11

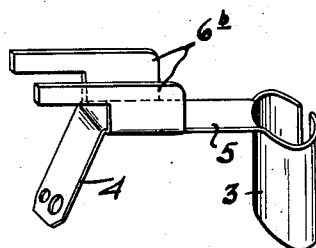
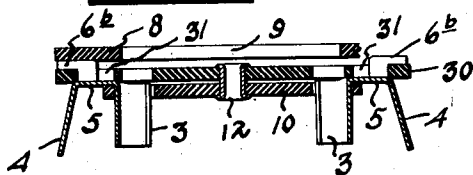


Fig. 10



INVENTOR.
Albert W. Franklin
BY *Darby & Darby*
ATTORNEYS

Dec. 8, 1936.

A. W. FRANKLIN

2,063,731

RADIO TUBE SOCKET

Filed Oct. 18, 1934

3 Sheets-Sheet 3

Fig. 12

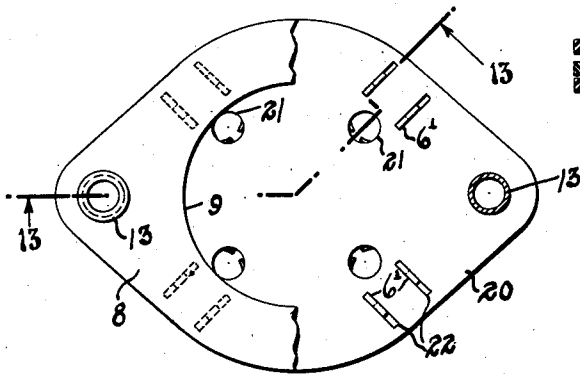


Fig. 13

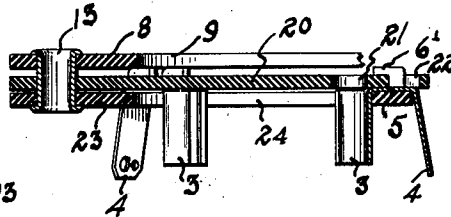


Fig. 14

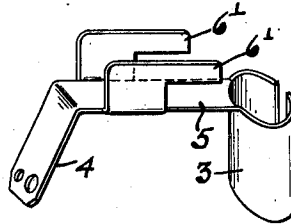


Fig. 15

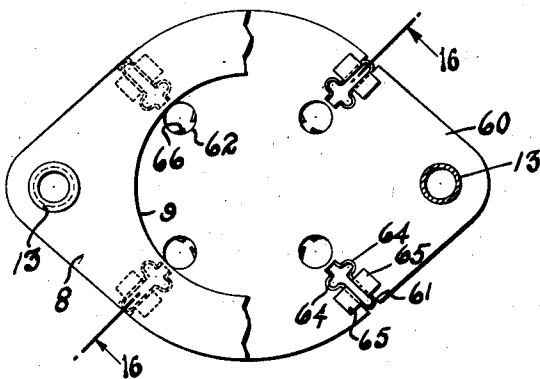


Fig. 17

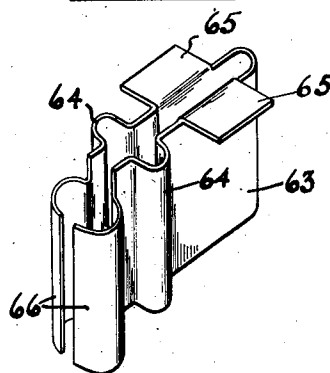
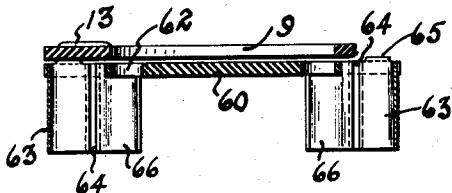


Fig. 18



INVENTOR.
Albert W. Franklin
BY *Darby + Darby.*

ATTORNEYS

UNITED STATES PATENT OFFICE

2,063,731

RADIO TUBE SOCKET

Albert W. Franklin, New York, N. Y., assignor of one-half to Edwin R. Berger, West Long Branch, N. J., and Jacob Poster, Brightwaters, N. Y., jointly

Application October 18, 1934, Serial No. 748,872

7 Claims. (Cl. 173—328)

This invention relates to improvements in the construction of radio tube receptacles or sockets whereby an extreme simplicity of structure and economy of manufacture is secured.

An important object of this invention is to construct a radio tube socket with a minimum number of parts and requiring a minimum amount of material, which parts may be rapidly assembled into a completed structure.

The detailed objects of this invention will become apparent from the following description in connection with the attached drawings.

This invention resides substantially in the combination, construction, arrangement and relative location of parts, all as will be described in detail below.

In the drawings,

Fig. 1 is a top plan view of one form of radio tube socket in accordance with this invention;

Fig. 2 is a side elevational view thereof;

Fig. 3 is a bottom plan view thereof;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a perspective view of one of the contacting and connector clips;

Fig. 7 is a cross-sectional view similar to that of Fig. 4, of a modified form of socket;

Fig. 8 is a perspective view of the terminal and connector clip thereof;

Fig. 9 is a top plan view with the ring or guide plate partly broken away showing a second modification in accordance with this invention;

Fig. 10 is a cross-sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a perspective view of terminal and connector clip thereof;

Fig. 12 is a top plan view of the guide ring partially broken away of a third form of structure;

Fig. 13 is a cross sectional view taken on the line 13—13 of Fig. 12;

Fig. 14 is a perspective view of the terminal and connector clip thereof;

Fig. 15 is a top plan view of a fourth modification showing the guide ring partly broken away;

Fig. 16 is a cross sectional view thereof taken on the line 16—16 of Fig. 15;

Fig. 17 is a perspective view of the terminal and connector clip thereof.

The general combination of the socket of this invention consists of a supporting plate upon which the prong receiving clips of a vacuum tube or the like are mounted, a locking member for holding the clips in place on the supporting mem-

ber, and a guide ring for facilitating the introduction of the terminal prongs of the tube into the clips of the socket, all of which parts are permanently fastened together.

Thus, in the arrangement of Figs. 1 to 6 inclusive, the socket comprises a supporting plate 1 of insulating material, having a plurality of pairs of slots extending inwardly from the edge thereof towards the center, as indicated at 2. The supporting plate is provided with holes or apertures 7 therethrough adjacent the inner ends of the slots through which the prongs of the tube pass. The prong receiving clips comprise a pair of arms 3 and 4 connected together by means of an intermediate portion 5 integral with the arms. The intermediate portion 5 is provided with a pair of integral L-shaped arms 6. As will be apparent from Fig. 6, this clip is preferably formed from a single strip of suitable metal. The prong receiving portions 3 are preferably of elliptical form and longitudinally slotted, so as to form a resilient structure which has a transverse width in cross section slightly less than the diameter of the prong, so that when the prong is forced thereinto, the prong receiving portion will frictionally engage the prong, establishing a firm contact therewith. The lugs 3' are engaged by the locking disc as will appear later, forming a seat therefor and serving to aid in supporting the portion 3. The arm 4 provides the terminal portion to which the circuit wire is attached, usually by soldering.

As is clear from the drawings, these clips are attached to the supporting member 1 by sliding the arms 6 into the slots 2, so that they seat against the ends thereof. The clips are attached to the supporting member so that the prong receiving portions 3 and the connector arms 4 project below the supporting member 1 when the device is in use. As is clear from the figures, the prong receiving portion 3 is in substantial alignment with the apertures 7 in the supporting member. The guide ring 8 is of insulating material, and is substantially the same shape as the supporting member 1, but is provided with a central opening 9 of a diameter, as is clear from Fig. 1, greater than the distance between the outside points of any pair of diametrically opposed openings 7. The guide ring member 8 is applied over the top face of the supporting member 1 and riveted thereto by means of the eyelets 13. The member 8 engages the ears 6 to lock the clips in place.

The clips are held in the supporting member 1 by means of a disc 10 which has apertures 11

therein positioned so that the disc may be slipped over the prong receiving portions 3 of the clips. The radius of the outside points of these apertures is such as to frictionally engage the clips and lock them at the inner ends of the slots 2. The apertures 11 are of such size as to permit of the extension of the prong receiving portions 3 when the prongs are inserted therein, and yet small enough to prevent distortion of the portions 3.

The disc 10 is provided by the material removed from ring 8 in forming the central opening 9.

As is well known in this art, these clips are usually made of a soft metal such as copper, which has a limited amount of resiliency, but which will remain sprung if extended beyond its elastic limit. Thus, the apertures are so proportioned that the prong receiving portions 3 may not be sprung sufficiently to distort them. The disc 10, therefore, not only locks the clips in place, but protects the portions 3 thereof and serves to strengthen them and support them. The disc 10 is attached to the supporting member 1 by means of a riveted eyelet 12. The completed socket may be attached to a chassis or other supporting member by means of screws or rivets passing through the eyelets 13. The guide ring 3 facilitates the alignment of the prongs with the apertures 7 by guiding them as the tube is rotated to insure that the prongs drop into the apertures.

The disc 10 has another important function which is referred to by itself to give it emphasis. This disc locks the clips in the slots 2 against radial movement.

In the modification of Figs. 7 and 8 the clips are of generally similar construction in the parts 3, 4 and 5, but in this case the prongs 6^a are in the form of straight tabs. The insulating support member 40 in this case is provided with slots 41 which are formed inwardly of the edge of the supporting member. The tabs 6^a are inserted therethrough and then bent over to lock the clips against all movement, especially in a radial direction.

The guide ring member 8, not shown in these figures, is attached over the bent down tabs 6^a by means of the riveted eyelets 13, as before. In this case a locking member such as the member 10 of the previously described construction is not necessary since the tabs 6^a, passing through slots within the inner edges of the member 40, lock the clips against radial movement. However, as indicated by the riveted eyelet 12, such a supporting disc may be employed with this construction because of the added advantage of strengthening and supporting the prong receiving portion 13 of the clips.

In the modification of Figs. 9, 10, and 11, the insulating supporting member 30 is again provided with suitably placed slots 31 occurring within the edges thereof, similar to the arrangement of Fig. 7. In this case the intermediate portion 5 of the clips is provided with upstanding L-shaped extensions 6^b proportioned so that they may be slipped through the slots 31 and then slid outwardly in a radial direction in the slots until they contact with the ends thereof. A disc 10, as before, is then slipped over the portions 3 of the clips, and riveted in place to hold the clips against radial movement in either direction. In this case the ends of the tabs 6^b are not bent over but serve as supports for the guide ring 8, which

is riveted against the edges thereof, as is clear from Fig. 10.

In the modification of Figs. 12 to 14 inclusive, the only difference over the arrangement just described is that the tabs 6^c formed on the intermediate portion of the clips pass in the opposite direction, so that they are locked in the slots 22 in the insulating support 20 by moving them inwardly in a radial direction. The clips are locked in this position by means of a plate 23 of insulating material having a hole 24 therethrough of a diameter so as to snugly fit around the outside of the clips. The plates 20 and 23 and the ring 8 are then all clamped together by the riveted eyelets 13, as before.

As will be clear from Fig. 13, the ends of the tabs 6^c are not bent to one side, although they may be, if desired.

In the arrangement of Figs. 15 to 17 inclusive the insulating support 60 is provided with single radial slots 61 with recesses near their inner ends to receive a clip of the form illustrated in Fig. 7. In this case the clip comprises a U-shaped portion 63 having integral bent over tabs 65. The ends of the arms of the U portion 63 extend into the transverse pits 64 and then terminate in the prong receiving portion 66. The pits 64 are of the same shape and cross-section as the recesses at the end of the slot 61, so that the clips are slipped down into the slots and locked in place against radial movement by the engagement of the pits 64 in the recesses. The guide ring plate 8 is employed as before to cover up the ends of the clips and hold them against axial movement. In this case the structure is simplified by the elimination of a third insulating member.

From the above description it will be apparent that this invention resides substantially in the principles of construction which may be employed in other physical forms without departure from the scope thereof. I do not, therefore, desire to be strictly limited to the disclosure as given for purposes of illustration, but rather to the scope of the appended claims.

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

1. A device as described comprising a supporting member, a plurality of radiating slots formed therein, contact terminals slidably mounted in said slots and an apertured plate, said contact terminals forming portions lying in the apertures of the plate to hold the contact terminals against radial movement in the slots.

2. A socket device as described comprising a supporting insulating member having a plurality of radial slots formed therein, terminal clips mounted to move radially in said slots and an insulating plate through which said clips project to hold them against radial movement in the slots.

3. A socket device as described comprising a supporting member having a plurality of pairs of radially extending slots, prong receiving terminal clips having pairs of integral tabs slidable radially in said slots but locked against movement at right angles to the direction of radial movement, and a plate encircling portions of the clips for preventing radial movement of the tabs in the slots.

4. A radio tube socket as described comprising an insulating support having a plurality of slots extending inwardly from the outer edges thereof, said support having holes therethrough adjacent the inner ends of the slots, contact clips mounted in said slots for sliding movement

in a radial direction in the slots, said clips having prong receiving portions aligned with said holes and a disc of insulating material having apertures fitting over said prong receiving portions to prevent radial movement of the clips.

5 5. A radio tube socket as described comprising a supporting member having radial arms formed on its periphery, prong receiving clips having channels in which said arms fit by radial movement of the clips, said member having apertures therethrough aligned with the prong receiving portion of the clips and a disc of insulating material secured to said member and having portions locked behind said clips to hold them
10 15 against radial movement.

6. A radio socket as described comprising a thin plate of insulating material having a plurality of radial slots therein and holes adjacent the inner ends of the slots, contact members having ears lying in said slots and movable radially therein and contact portions extending at right angles to the plate in alignment with said

holes, a disc of insulating material having holes, through which said contact portions project to prevent radial movement of the contact members and means for securing the plate and disc together.

7. A radio socket as described comprising a thin plate of insulating material having a plurality of radial slots therein, and apertures adjacent the inner ends of the slots, contact members having ears lying in said slots and movable radially therein and contact portions extending at right angles to the plate in alignment with said apertures, a disc of insulating material having apertures through which said contact portions project to prevent radial movement of the contact members, a cover plate contacting said ears and having holes in alignment with holes in the thin plate and means in said holes for securing the cover plate and the thin plate together.

ALBERT W. FRANKLIN.