

July 31, 1934.

A. M. DRAVING

1,968,480

ELECTRICAL CONTACT

Filed March 23, 1931

Fig. 1.

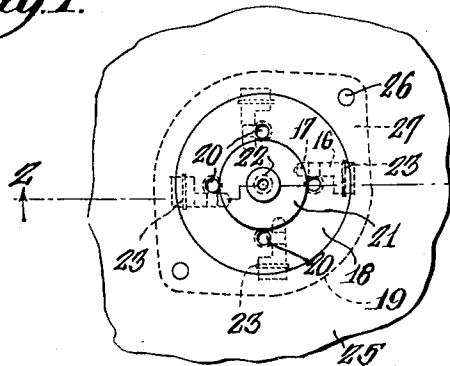


Fig. 9.

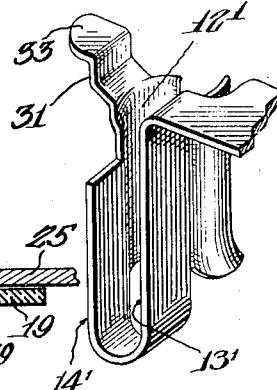


Fig. 2.

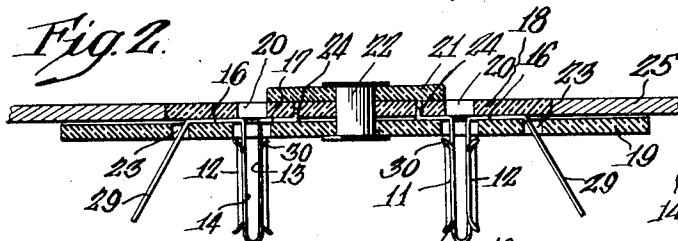


Fig. 3.

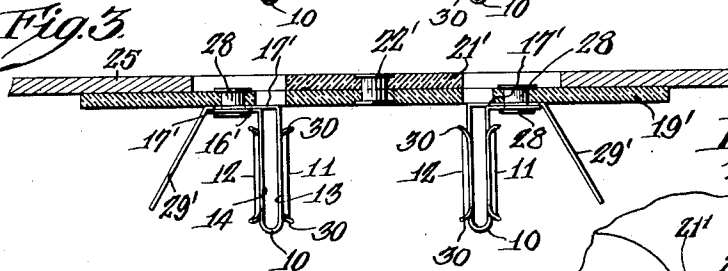


Fig. 7.

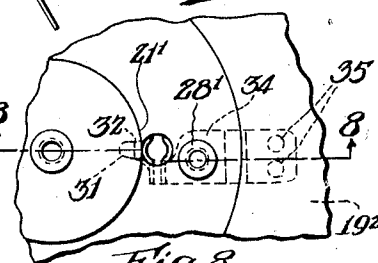


Fig. 4.

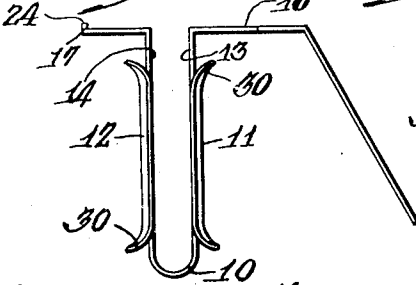


Fig. 6.

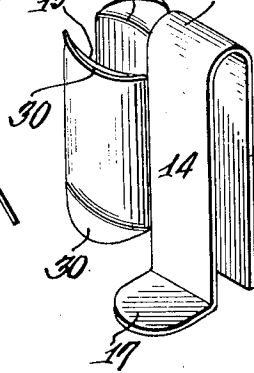


Fig. 5.

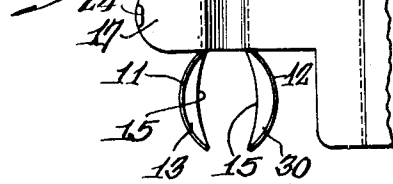
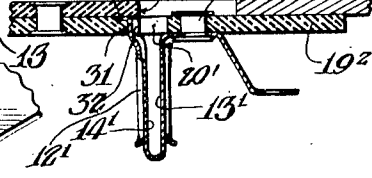


Fig. 8.



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UNITED STATES PATENT OFFICE

1,968,480

ELECTRICAL CONTACT

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Application March 23, 1931, Serial No. 524,435

2 Claims. (Cl. 173—328)

My invention relates to electrical sockets and more particularly to spring contact terminals for receiving the prong terminals of a vacuum tube, loud speaker plug or the like.

In accordance with my invention, a punched U-shaped spring member is provided with laterally offset portions from the parallel sides thereof adapted to firmly grip the prongs throughout a considerable length and give an improved electrical and mechanical contact.

Further in accordance with my invention the upper ends of the U-shaped member are provided with angular extensions which cooperate mutually and with the socket member in a novel manner.

Still further in accordance with my invention, a plate-like socket member composed of one or more laminæ of insulation material has combined therewith contact terminals of elongated structure extending downwardly from the plane of said plate-like socket member.

Further purposes will appear in the specification and in the claims.

I have elected to show one main form only of my invention, showing however a minor modification and selecting a form that is practical and efficient in operation and which well illustrates the principles involved.

Figure 1 is a top plan view of a socket for use with the prong terminals of a vacuum tube or the like and having contact members that embody my invention.

Figure 2 is a section taken upon the line 2—2 of Figure 1.

Figure 3 is a section generally similar to Figure 2 but showing a somewhat different form.

Figure 4 is an enlarged side elevation of one of the contact members shown in Figure 2.

Figure 5 is a fragmentary top plan view of Figure 4 and Figure 6 is an inverted perspective view of the structure shown in Figures 4 and 5.

Figure 7 is a fragmentary top plan view showing a somewhat different form that has in practice proved particularly satisfactory.

Figure 8 is a section taken upon the line 8—8 of Figure 7.

Figure 9 is a broken perspective view of the contact member of Figure 7.

Like numerals refer to like parts in all figures. Describing in illustration and not in limitation and referring to the drawing:—

My invention is directed to providing an inexpensive and effective contact member that can be confined in small space and still give a snappy spring action. While it is applicable to different

pin terminals, I have illustrated it embodied in a multiple socket for a radio tube.

Each connector 10 includes contact elements 11 and 12 that extend laterally from the flat side portions 13 and 14 of a U member, preferably from an intermediate portion of the sides of the U, the contact elements and the U together comprising the integral punched metal connector 10.

The opposing contact elements 11 and 12 are thus maintained by their supporting U portions 13 and 14 and are normally spaced from one another a distance somewhat less than the diameter of the pin terminal with which they are to operate.

The contact surfaces are concaved at 15 parallel to the lengths of the U branches to register with the convex surface of the pin terminal which is preferably inserted for somewhat more than the full length of the contact elements and during insertion pushes the elements apart by a slight twisting strain upon the sides of the U.

The connectors are provided with tail extensions 16 and 17 at the outer ends of the U branches.

These extensions are bent initially at right angles to the branches carrying the contact elements and are used for supporting the connector and also for providing a terminal for easy connection to an electric circuit.

The tail ends may be bent in opposite directions from the branches of the U as indicated in Figure 2 or may be bent in the same direction as indicated at 17' in Figure 3. In that case one tail end then passes across the intermediate space between the U branches to overlap the other tail.

Obviously the tail bends may be widely variant in form to best suit the many different kinds of mounts with which they may be used, the mounts usually comprising single socket or multiple socket receptacles.

In the embodiment shown in Figures 1 and 2, the metal strip U members are mounted in registry with the pin terminals of a radio tube, the tail portions 16 and 17 of the connectors being clamped between perforated insulation plates 18 and 19, and extending between the plates in opposite directions away from the body of the connector.

The inlet perforations 20 that pass the pin terminals to the space between the contact elements 11 and 12 are coaxial with these spaces and are preferably ranged around the circumference of a washer and pin guide member 21. A rivet 22 holds the washer and the inner and outer plates together.

The outer tail portions 16 of the connectors extend downwardly through perforations 23 in the lower plate and afford easy connection to the respective electric circuits of the tube, not shown.

Desirably the inner ends 24 of the right bends 17 are bent upwardly into suitable holes in the upper plate 18 in order to more definitely register the connectors in their proper positions.

In the illustration, the upper plate 18 fits in an opening in a front sheet 25 which may be the metal cover of a radio cabinet and the lower insulation plate 19 overlaps the plate 25. The composite socket is fastened to the plate 25 by suitable bolts or rivets 26 through the extensions 27 of the lower plate.

In the form shown in Figure 3 I have bent the tail ends of the connector members in the same direction, radially outwardly at right angles to the branches of the U so that the right angle bends 16' and 17' of each connector overlap one another adjacent the outer leg 12 of the U and I have held each composite connector in place upon the insulation plate 19' by a single tubular rivet 28. One of the right angle bends is extended and bent downwardly at 29' to provide connection into the radio circuit.

As in the Figures 1 and 2, I provide the top of the plate with a raised boss 21' for guiding the prongs of the tube into their sockets.

The ends of the contact elements preferably flare away from one another at one end to permit more easy entry and aligning of the prong terminal and at the other end to insure easy withdrawal of the terminal in the event that the end of the terminal should have one or more raised portions, which in practice has not infrequently been the case with the terminals of some commercial vacuum tubes.

The embodiment shown in Figures 7 and 8 has in practice proven very convenient and desirable and to some extent combines desirable features of the other forms.

The outer leg 13' of the U is provided with an outward right bend underneath the plate 19² where it is fastened in place by a suitable rivet 28'.

The inner leg 14' is not attached directly to the plate 19², but the contact element 12' has an inwardly offset vertical portion 31 that seats at the inner edge of an inward notch 32 in the plate 19² and has an end 33 bent horizontally inward so as to be between the top of the plate 19² and the bottom of the guiding boss 21².

The notches 32 extend inwardly from the inner sides of the perforations 20' for admitting the pin terminals of the radio socket to the contact members. The perforations 20' are placed so as to adapt the outside circumference of the boss to use as a guide for securing easy entry of the pins into the perforations through the plate to the contact members.

The notch 32 thus extends inwardly from the outer circumference of the boss 21² so that the vertical offset portion 31 is wholly underneath the guide member.

It will be seen that the U is thus supported separately and securely upon inner and outer sides of the perforations 20', and that the mount includes only two of the fiber sheet members.

The terminal portion of the outer leg 13' is widened at 34 in order to provide adequate metal around the rivet 28' that fastens the leg to the plate 19², and is desirably perforated at 35 for more convenient connection to a terminal conductor of the circuit with which the member is used.

As will be seen the otherwise free ends of the U are secured by engagement with the support to which the contact device is attached and the outer ends of the U are supported by cross connection to one another at the bridge of the U. This greatly stiffens the sides so that for the same strength they can be made of narrower or thinner material than would otherwise be required. At the same time it permits very compact construction to secure the strength that is required, and in particular, gives good side support to the contact pieces by which the pin is engaged. The result is that a torsional action is obtained, the contact members 11 and 12 bending about the sides 13 and 14 respectively of the U as axes. This prevents spreading of the U or a permanent set in the region of 10.

In view of my invention and disclosure variations and modifications to meet individual preference or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and I, therefore, claim all such in so far as they fall within the reasonable spirit and scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A contact clip of spring metal comprising a U-shaped member, contact pieces extending laterally from the arms of the U and internally concaved to fit the pin of a contact member along a considerable portion of the length of the pin and terminals for attachment purposes supporting respectively the two sides of the U one of the ends of the U being extended for electrical connection to the contact clip, the said pin terminal to be inserted generally parallel to the arms of the U and the said contact pieces making integral connections with the arms along a major portion of the length of one side of the said pieces and having free edges along their sides opposite the lines of connections with the said arms.

2. A spring metal contact member comprising a U strip adapted to be supported at the otherwise free ends of the U, the ends of the U being bent at right angles for attachment purposes and one end of the U being extended to serve as an electrical connection to the contact, and parallel, lateral extensions from the two arms of the U inwardly concave longitudinally of the branches of the U and spaced to engage a contact pin along a considerable portion of the length thereof, the said pin terminal to be inserted generally parallel to the arms of the U and the lateral extensions making integral connections with the arms along a major portion of the length of one side of the extensions and having free edges along the sides of the extension opposite the lines of connection with the said arms.

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