

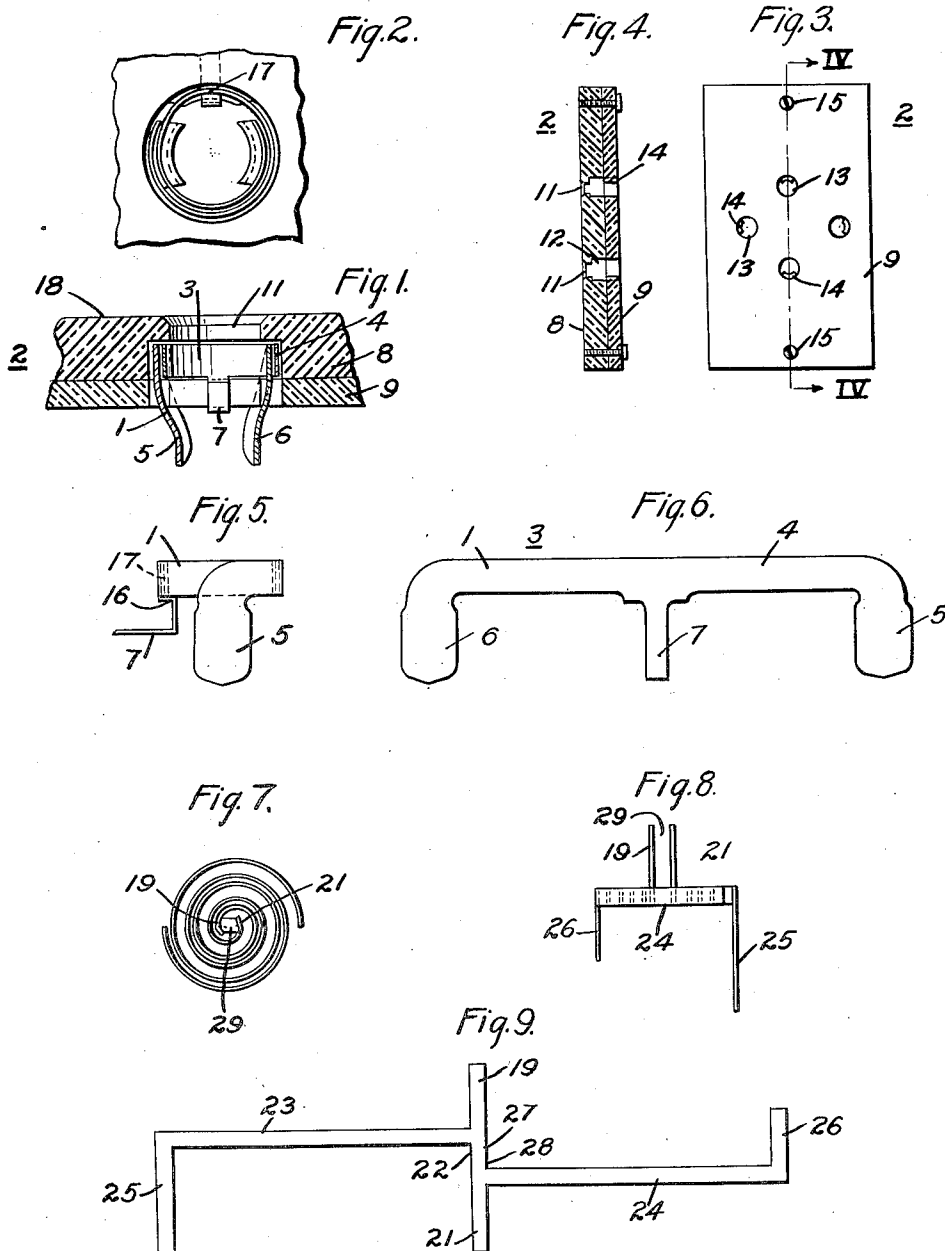
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BASE SOCKET AND METHOD OF MAKING THE SAME

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BASE SOCKET AND METHOD OF MAKING THE SAME

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My invention relates to socket devices and methods of making the same, having particular reference to base sockets adapted for use with vacuum tubes.

5 The principal object of my invention is to provide a socket device of compact and rugged design which lends itself to inexpensive quantity production, the several parts of which may be easily made with simple automatic machinery and may be readily assembled with a minimum expenditure of time and money.

10 Another object of my invention is to provide a socket device, wherein an exceptionally firm electrical contact and a smooth mechanical contact may be obtained with an engaging plug.

15 A further object of my invention is to provide a base socket for vacuum tubes which provides a resilient mounting for the same, thereby eliminating tube noises resulting from mechanical vibration of the tube.

20 According to my invention, I provide an improved socket device comprising a receptacle in the form of a flexible spiral spring having a pair of axially extending portions which serve as contact elements adapted to yieldingly engage a plug member disposed therebetween, and a third extension which serves as a terminal tab.

25 One particularly novel feature of the receptacle resides in the fact that the contact elements thereof, which are adapted to engage a plug disposed in contact therewith, are on a flexible spiral instead of the usual stiff cylinder or other surface of revolution heretofore employed.

30 With these and other objects and applications in view, my invention further consists in the details of construction and arrangement hereinafter described and claimed and illustrated in the accompanying drawings, wherein

35 Figure 1 is an enlarged fragmentary sectional view of one form of socket device embodying my invention adapted to be employed as a vacuum-tube base;

40 Fig. 2 is a top plan view of the structure of Fig. 1;

Fig. 3 is a front elevational view of the

supporting structure adapting my contact element to vacuum-tube socket devices;

Fig. 4 is a longitudinal sectional view on the line IV—IV of Fig. 3;

Fig. 5 is a side elevational view of a resilient contact element embodying my invention;

Fig. 6 is a view of a metal punching from which the resilient contact element of Figs. 1, 2 and 5 is constructed;

Fig. 7 and 8 are top plan and side elevational views, respectively, of a modified form of contact element;

Fig. 9 is a view of a metal sheet from which the contact elements of Figs. 7 and 8 may be constructed.

In Figs. 1 and 2 is shown, in detail, a vacuum-tube base socket comprising resilient contact elements 1 and a supporting structure 2 therefor.

The resilient contact element 1 is originally constructed from a punching 3 preferably of phosphor-bronze and of the shape shown in Fig. 6. The punching 3 is provided with a longitudinally extending section 4 and a pair of laterally extending sections 5 and 6, the latter being adapted to serve as contact elements. A third lateral extension 7 is disposed between the pair just mentioned, and is adapted to serve as a terminal tab. The resilient contact element may be formed by so bending the longitudinal section 4 into the form of a spiral as to bring the pair of lateral extensions 5 and 6 into diametrically opposed positions in order to admit of their serving as contact elements adapted to yieldingly engage a plug member (not shown).

The supporting structure 2 may comprise a main supporting member 8 and a cover plate 9. The main supporting member 8 is provided with a plurality of unsymmetrically located perforations 11 countersunk to form recesses 12 adapted to contain the spiral portions of the contact elements. The several recesses are in diameter slightly larger than that of the spiral portions of the contact elements to admit of the lateral expansion of the latter upon engagement of the contact portions 5 and 6 with a plug element (not shown), and in depth substantially

equal to the width of the longitudinally extending portion 4 of the blank 3, shown in Fig. 5.

The cover plate member 9 is provided with a plurality of similarly located perforations 13 of irregular outline to provide shoulders 14, the several perforations 13 being of such diameter as to admit of the axially extending contact portions 5 and 6 extending there-through. The two members 8 and 9 may be bound together by means of screws or rivets 15. The terminal tab 7 may be transversely bent at two points to form a shoulder 16 adjacent the spirally bent portion 4 in order to conform to the shoulder 14 of the cover plate 9.

The spring 1 is so disposed relative to the main supporting member that the shoulder 14 of the cover plate engages the edge of a central portion 17 of the spring 1, rigidly supporting the same at that portion. By means of such construction, it is seen that the contact portions 5 and 6 of the spring 1 are associated with the supporting portion 17 through a flexible spiral, hence providing for lateral and longitudinal resiliency in the engaging members 5 and 6.

In operation, it will be noted that the plug elements of a vacuum-tube device (not shown), coacting with my socket device, are first actuated into engagement with the contact portions 1, entering the base from the top surface 18 thereof. The plug or pin elements are thus held by the contact element 1 in sliding contact therewith.

In Figures 7, 8 and 9 is shown a modified form of contact device embodying my invention.

Referring to the punching shown in Fig. 9, it is seen that a pair of longitudinally extending, laterally offset sections 23 and 24 are connected by a section 22 having lateral extensions 19 and 21. Opposite ends of the sections 23 and 24 are provided with lateral extending end portions 25 and 26 which may serve as terminal tabs. In order to form the contact element of Figs. 7 and 8, the connecting portion 22 is bent downwardly at the points 27 and 28 to form a receptacle 29, as shown in Figs. 7 and 8. The longitudinally extending sections 23 and 24 are then spirally wound around the central receptacle 29, as shown in Figs. 7 and 8. The completed spring may be mounted in any approved type of supporting structure (not shown) and is preferably supported from the tabs 25 and 26 in order to insure adequately resilient connection between an engaging pin and the receptacle 29.

Among the several advantages characteristic of the socket device embodying my invention are minimum capacitance, ease of manufacture by automatic machinery, elimination of sharp ends, decrease in the amount of scrap in punching the blank, ease of assem-

bling in a supporting structure and many other advantages, as will be evident to those skilled in the art.

While I have shown my invention as specifically applied to contact devices adapted to be employed with vacuum tubes, it is apparent that it is applicable to various other applications. Furthermore, various modifications may be made in the arrangement and mounting of the resilient contact terminals without departing from the spirit and scope of my invention and I desire, therefore, that only such limitations shall be imposed thereon as are demanded by the prior art or specifically set forth in the appended claims.

I claim as my invention:

1. In a socket device, a resilient spiral member subtending more than 360 circular degrees, attached at its mid-point to said socket and having axially extending portions adapted to yieldingly engage a member extending along the axis of said spiral.

2. In a socket device, a resilient spiral member subtending more than 360 circular degrees and having axially extending portions adapted to make resilient electrical contact with a member disposed therebetween and having an additional extension adapted to support it from said socket.

3. In a base socket, a spiral spring member having a pair of axially extending portions adapted to laterally and axially yieldingly engage a plug member disposed therebetween and having a third integral extension adapted to serve as a terminal tab, and a perforated countersunk member adapted to receive said spring member and support it from the portion thereof provided with the terminal tab.

4. In a base socket, a spiral spring member having a pair of axially extending portions adapted to laterally and axially yieldingly engage a plug member disposed therebetween and having a third integral extension adapted to serve as a terminal tab, a perforated countersunk member, said spring being disposed in the countersunk portion thereof, and a perforated cover plate, said cover plate being so disposed relatively to said countersunk member and said spring as to bind the latter securely in position, said pair of extensions extending through said cover-plate perforation.

In testimony whereof, I have hereunto subscribed my name this 10th day of April, 1922.

GEORGE M. EATON.