

Oct. 6, 1936.

M. B. GROUT

2,056,268

SOCKET

Filed Jan. 29, 1926

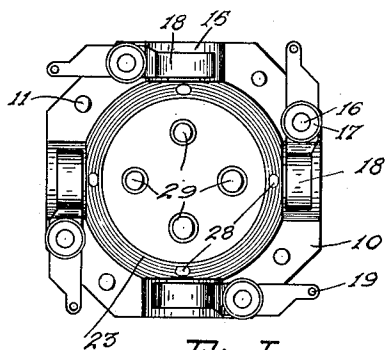


Fig. 1.

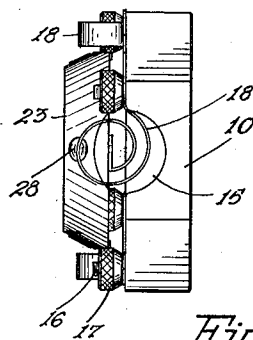


Fig. 3.

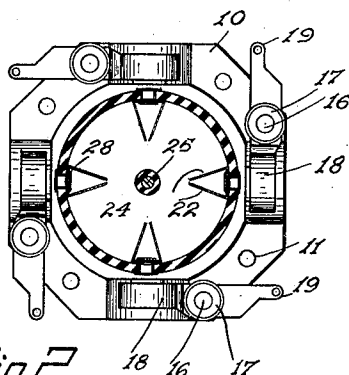


Fig. 2.

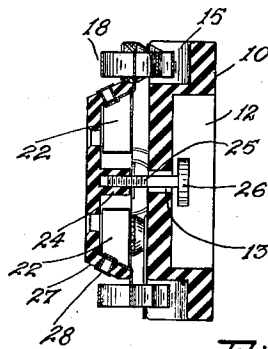


Fig. 4.

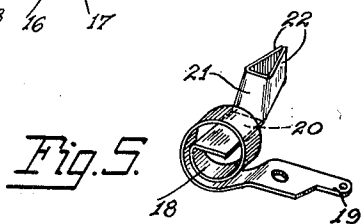


Fig. 5.

Inventor:
Martin B. Grout.
By S. a. Yankowski
Attorney.

UNITED STATES PATENT OFFICE

2,056,268

SOCKET

Martin B. Grout, Chicago, Ill., assignor to Kellogg
Switchboard and Supply Company, Chicago,
Ill., a corporation of Illinois

Application January 29, 1926, Serial No. 84,583

8 Claims. (Cl. 173—328)

This invention relates to improvements in sockets and particularly to sockets designed to receive the bases of audion or vacuum tubes.

In sockets of this character it has been found desirable to provide means to resiliently support the socket from the base whereby jars and vibrations will be absorbed to a great extent. These jars and vibrations, which it is desired to overcome, may take place in any direction.

The object of the present invention is, therefore, the provision of a tube socket provided with resilient supporting means permitting a yielding movement of the socket in all directions.

It is believed the further disclosure of the invention will be understood more readily from a detailed description thereof taken in connection with the accompanying drawing, in which:

Fig. 1 is a plan view of the socket;

Fig. 2 is a view similar to Fig. 1, with the top of the socket cut away;

Fig. 3 is a side view of the socket;

Fig. 4 is a vertical sectional view through the socket, and

Fig. 5 is a perspective view of one of the supporting springs detached from the socket.

Referring now to the drawing, in which like reference characters indicate the same parts in the several views, 10 is the base formed of some suitable insulating material and provided with holes 11 for the reception of screws by means of which the base may be secured to the mounting board. The base 10 will preferably be provided with the depression or recess 12 on the mounting board side thereof and centrally of the face with the opening 13.

The base 10 may be substantially octagonal in shape, as indicated in the drawing, or may be circular, or may be any desired form. The upper or outer surface of the base 10 will preferably be substantially flat, except it will be provided adjacent to the edge thereof with the substantially semi-circular depressions 15. Secured to the base 10 by means of the screws 16 and nuts 17 are the ends of the helical springs 18. Each of these springs will preferably terminate in a soldering terminal 19. The innermost turn of each of the springs 18 terminates in a laterally extending portion 20 and an upwardly extending portion 21, having the inwardly converging contact arms 22. The portion 20 will preferably be integral with the spring 18, although, it may be fixed thereto in any desired manner so long as it is electrically connected therewith.

The tube socket, in the present embodiment of the invention, is preferably saucer-shaped in

cross section, as clearly shown in Fig. 4, and is provided centrally with the inwardly extending threaded portion 24 which receives the threaded end of the screw 25 provided with a head 26. The upwardly extending portions 21, carried by each of the springs 18, are adapted to be secured within the rim 27 of the socket 23 by means of rivets 28.

The outer face of the socket 23 is provided with a plurality of openings 29, immediately under which are positioned the contact arms or springs 22. The openings 29 are adapted to receive the contact pins projecting from the bases of audion tubes, the inner end of each pin being arranged to resiliently enter between a pair of contact springs 22, whereby firm wiping contact is made. In forcing the contact pins of the tube into the openings 29 of the socket, the socket will be forced down against the base. Upon withdrawing the terminal pins of the tube from the openings 29 of the socket, the head of screw 26 will engage the under-side of the base and limit the outer movement of the socket member 23. The contact arms 22 not only complete the electrical circuit but also act firmly to hold the tubes in relation to the socket.

While the spring 18 in the present embodiment of the invention is shown as a flat helical spring, it is to be understood that any convolute spring will have a similar function, in that it will permit substantially universal yielding movement of the tube socket. Also means other than the pair of contact arms shown may be provided for making electrical engagement with the projecting ends of the contact pins of the tubes. As a matter of fact, the present manner of resiliently supporting the tube socket for universal movement may be applied to tube sockets differing entirely in detail from that herein shown.

It is well understood that the various jars and vibrations which injuriously affect the operation of a radio tube may take place in any direction, either vertically, laterally or diagonally. The present expedient of providing a plurality of convolute springs between the base and the socket supplies a supporting means which permits yielding movement in any and all directions between the base and the socket.

While four supporting springs are shown in the drawing, but three springs need be supplied to support the sockets of tubes which have but three contact terminal pins at the base thereof, although, in the preferred form of the invention, there preferably will be as many supporting springs as there are contact pins in the tube base.

It is to be understood that many modifications in the details of the invention are contemplated. The invention, therefore, should be limited only by the scope of the appended claims.

5 Having thus described my invention, what I claim is new and desire to secure by Letters Patent of the United States is:

1. In combination, a tube socket having a downwardly extending portion, a base for said
10 socket, means extending through said base and secured to said downwardly extending portion and abutting said base at one extreme end of the travel of said socket, and a plurality of springs
15 each having a convolute portion and having one end secured to said base and the other end secured to said socket whereby said socket is yieldingly supported from said base to move in either a vertical or horizontal direction, and a pair of flexible contact arms carried by each of said
20 springs and extending at an angle to said springs.

2. In combination, a tube socket having a downwardly extending portion, a base for said socket, means extending through said base, secured to said downwardly extending portion and
25 abutting said base at one extreme end of the travel of said socket, and a plurality of convolute springs substantially equidistantly spaced about said socket, each of said springs having one
30 end secured to said base and the other end secured to said socket whereby said socket is yieldingly supported from said base, and a pair of flexible contact arms carried by each of said springs and extending sidewise from said convolute portion of said springs.

3. In combination, a tube socket having a downwardly extending portion, a base for said socket, means extending thru said base and secured to said downwardly extending portion and
40 abutting said base at one extreme end of the travel of said socket, and a plurality of helical springs, each of said springs having one end secured to said base and the other end secured to said socket whereby said socket is yieldingly supported from said base, and a pair of
45 flexible contact arms carried by each of said springs and extending sidewise from said helical portion of said springs.

4. In combination, a tube socket having a downwardly extending portion, a base for said
50 socket, means extending thru said base and secured to said downwardly extending portion and abutting said base at one extreme end of the travel of said socket, a plurality of springs, each of said springs having a convolute portion and an
55 inclined raised portion and having one end secured to said base and having said inclined raised portion secured to said socket, whereby said socket is yieldingly supported to move in any direc-

tion, and a spring contact arm carried by each of said springs having a pair of flexible members arranged to engage a contact pin of a tube placed in said socket.

5. In combination, a tube socket provided with
5 a downwardly extending rim, a base for said socket, a plurality of springs, each of said springs having a helical portion and having one end secured to said base and the other end having an inclined raised portion secured to said down-
10 wardly extending rim, whereby said socket is supported from said base and free to move in various directions, and a spring contact arm integral with each of said springs and in a different vertical plane arranged to engage a contact pin of a
15 tube placed in said socket.

6. In combination a tube socket provided with a downwardly extending rim, a base for said socket, a plurality of springs each having a helical portion, each of said springs having one
20 end secured to said base, an outwardly extending portion at the other end of each of said springs, means for securing said outwardly extending portions to the said rim of said socket, said socket being provided with a plurality of openings to re-
25 ceive the terminal contact pins of tubes associated therewith, a contact arm carried by each spring within said socket and in a different vertical plane than said helical portion and arranged below the said openings, respectively,
30 whereby electrical engagement is made with the contact pins of tubes placed in said socket.

7. In combination, a tube socket provided with a downwardly extending rim, a base for said
35 socket, a plurality of helical springs, each of said springs having one end secured to said base, an outwardly extending portion at the other end of each of said springs, means for securing said outwardly extending portions to the said rim of said socket, said socket being provided with a plu-
40 rality of openings to receive the terminal contact pins of tubes associated therewith, a pair of spaced contact arms integral with each spring and in a different vertical plane than said spring placed within said socket and arranged below
45 the said openings, respectively, whereby electrical engagement is made with the contact pins of tubes placed in said socket.

8. A receptacle for receiving a delicate electrical device, said receptacle having a downward-
50 ly extending rim, means comprising a plurality of helical springs each having a contact arm in a different vertical plane than said spring and secured to said downwardly extending rim for supporting said receptacle so that it may move either
55 sidewise or vertically.

MARTIN B. GROUT.