May 19, 1931. H. M. OLSEN 1,805,783

SOCKET

Filed Dec. 6, 1926

Fig. 1.

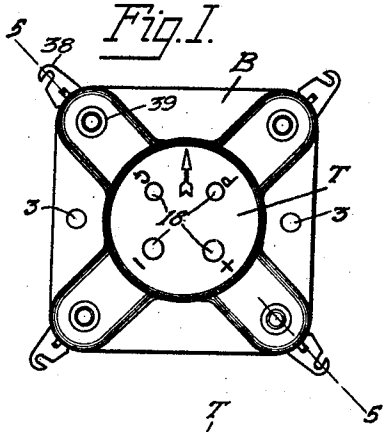
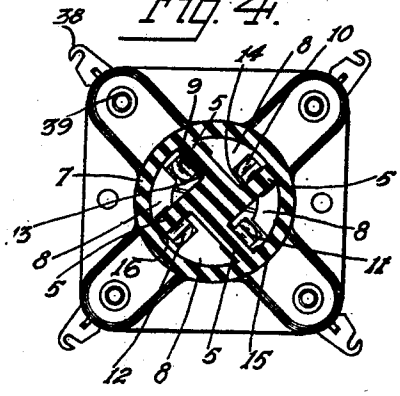


Fig. 4.



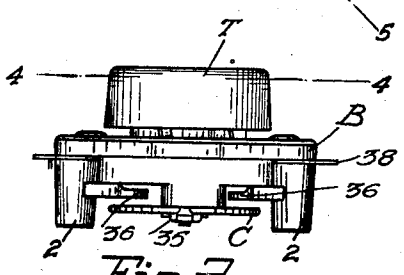


Fig. 2.

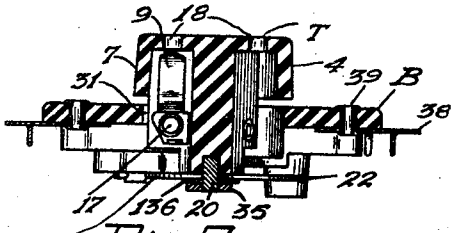


Fig. 5.

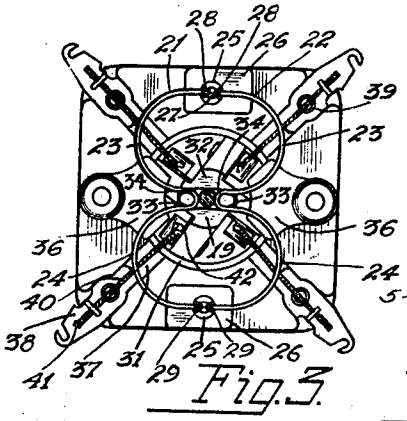


Fig. 3.

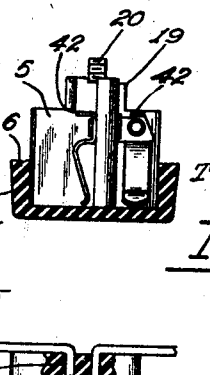


Fig. 6.

Fig 9



Fig. 8.

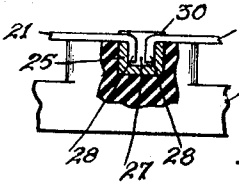


Fig. 7.

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Patented May 19, 1931 1,805,783

UNITED STATES PATENT OFFICE

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SOCKET

Application filed December 6, 1926. Serial No. 152,737.

My invention relates to sockets and more particularly to sockets adapted to receive and support audion tubes or the like, and an object of my invention is the provision of a socket of the above type for resiliently supporting an audion in order that vibrations and shocks will be absorbed without materially affecting the elements of the audion tube.

A feature of my invention is the provision of a pair of spring members forming resilient means, by means of which the tube supporting member of the socket is resiliently supported from the base to permit the supporting member to yieldingly move in all directions.

Another feature of my invention is the provision of a novel tube supporting member and spring contact members secured thereto with which the prongs of an audion tube are associated when supported in said supporting member.

Still another feature of my invention is the method of associating the resilient means with the supporting member and the method of securing the said resilient means to the base of the socket.

The above features of my invention as well as others not specifically pointed out, will be more fully described in the ensuing specification.

For a more complete understanding of my invention reference may be had to the accompanying drawing in which like reference characters in the several views denote like parts, and in which:

Fig. 1 is a plan view of the socket of my invention;

Fig. 2 is a side elevation of the socket;

Fig. 3 is a bottom view of the socket with parts broken away to more clearly illustrate its construction;

Fig. 4 is a sectional view along the line 4—4 of Fig. 2;

Fig. 5 is a sectional view along the line 5—5 of Fig. 1;

Fig. 6 is a view of the tube supporting member partly in section to more clearly illustrate its construction and also illustrate the method of securing the contact springs which are engaged by the terminal pins or prongs thereto;

Fig. 7 is an enlarged fragmentary view of the base, illustrating one of the methods employed for securing the respective ends of the resilient members to the base of the socket;

Fig. 8 is an enlarged fragmentary view of the base, illustrating an alternate method of securing the respective ends of the resilient members to the base of the socket, and

Fig. 9 is a bottom view of the tube supporting member.

Referring now more in detail to the drawings, the socket of my invention as illustrated comprises a base B of suitable moulded insulating material, having supporting legs 2, on the bottom side thereof, the said legs 2 being provided with orifices 3 for the reception of screws by means of which the socket base B and its supported parts may be secured to a mounting base or sub-panel.

The tube socket supporting member T comprises an inverted cup shaped member 4 provided with four integrally formed downwardly extending fins or ribs 5 positioned at right angles to each other and extending below the rim 6 of the inverted cup shaped member 4 and the ribs 5 and the wall 7 of the same form substantially triangular orifices 8. Spring contacts 9, 10, 11 and 12 are secured to the respective faces 13, 14, 15 and 16 of the ribs 5 by suitable rivets 17 and the free ends of the springs 9, 10, 11 and 12 extend up into the triangular orifices 8. The inverted cup shaped member 4 is provided with orifices 18 which are adapted to receive the contact terminal pins or prongs projecting from the base of an audion tube to engage the free ends of the contact springs 9, 10, 11 and 12. A substantially cylindrical member 19 integrally formed with the ribs 5 and depending therefrom is provided with a threaded stud 20 which is secured thereto during the moulding operation of the member 4 for purposes as will presently be described.

Attached to the bottom face of the base B is a resilient cushion member C comprising a pair of spring members 21 and 22 of suit-

able wire such as spring brass. Each member is formed of two semi-circular loops 23 and 24 and the two members 21 and 22 when positioned on the base B as illustrated form a figure 8. Studs 25 are secured to projecting lugs 26 on the base B, and orifices 27 in the respective studs 25 are adapted to receive the depending free ends 28 and 29 of the respective members 21 and 22. The studs 25 are provided with slots 30 which receive the end portions of the respective semi-circular loops 23 and 24 of the members 21 and 22, and by means of a suitable tool the metal adjacent to the slots 30 in the respective studs 25 is burred over to secure the members 21 and 22 against displacement.

The base B is provided with a central orifice 31 which is adapted to loosely receive the projecting ribs 5 of the member T, and when thus positioned the face 32 of the cylindrical portion 19 of the member 4 which is provided with a pair of U shaped grooves 33 which are adapted to receive the U shaped connecting link portions 34 between the semi-circular loops 23 and 24 of the respective members 21 and 22. The threaded stud 20 secured to the cylindrical portion 19 rests between the U shaped link portions 34 and a washer 136 and nut 35 which has threaded engagement with the end of the threaded stud 20 to secure the tube supporting member T to the resilient member C. The nut 35 in addition to securing the member T to the resilient member C also maintains the U shaped connecting link portions 34 of the members 21 and 22 in the grooves 33 in the face 32 of the cylindrical portion 19 to prevent the said member T from rotating relative to the base B.

When the prongs of the audion tube are inserted in the orifices 18 in the member T to force them between the free ends of the springs, 9, 10, 11 and 12 and the faces 13, 14, 15 and 16 of the ribs 5 downward pressure is applied to the tube causing the resilient member C to be flexed. The downward movement of the member T is limited as the diameter of the cup member 4 is slightly larger than the central orifice 31 in the base B which permits the rim 6 of the cup member 4 to engage the top face of the base B to prevent excessive flexure of the resilient member C as the tube is inserted. A pair of projecting ears 36 integrally formed with the base B lie beneath a portion of the semi-circular portions 23 and 24 of the members 21 and 22 of the resilient member C and when a tube is removed from the tube supporting member T the pull exerted on the tube to remove the same will cause the resilient member C to flex, but this flexure is limited as these projecting ears 36 will be engaged by the semi-circular portions 23 and 24 of the members 21 and 22 which form the resilient member C to prevent excess flexure of the same in this direction.

As the tube supporting member T is secured to the resilient member C as before described, the figure 8 shaped resilient member C effectively cushions the audion tube supported in the member 4 against a blow from any direction. The semi-circular portions 23 and 24 of the respective members 21 and 22 which form the figure 8 shaped resilient member C produce this cushioning effect and permit the tube supporting member T to yield slightly toward or away from the base B or it may oscillate in any direction.

The base is provided on its underside thereof with four grooves or channels 37, and at the outer extremity of each of these channels 37 are secured terminal members 38 which are secured to the base B by means of rivets 39, and flexible conductors 40 lying within the channels 37 join the contact springs 9, 10, 11 and 12 of the tube supporting member T with the terminals 38. One end of each flexible conductor 40 is soldered to a tab 41 integrally formed with the terminal 38, the other end of the conductors 40 being in turn soldered to tabs 42 integrally formed with the springs 9, 10, 11 and 12. The terminal members 38 are adapted to receive the external circuit connections and through the medium of the flexible conductors 40 the circuit is extended to the spring terminals 9, 10, 11 and 12 of the tube supporting member T. With a construction of the type just described the socket is cushioned and at the same time yieldingly supported for movement in all directions by a single resilient supporting member. Thus efficient and satisfactory means are provided independent of the resilient supporting means for extending the external electrical circuit to the pins of the tube through the medium of the contact springs 9, 10, 11 and 12 of the member 4.

In Fig. 8 I illustrate an alternative method of securing the members 21 and 22 to the base B. The projecting lugs 26 are provided with suitable orifices 45 which are adapted to receive the depending ends 28 and 29 of members 21 and 22 by means of a force fit.

While I have illustrated and described a preferred embodiment of my invention it is to be understood that I do not wish to be limited to the exact structure as shown but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention what I claim is new and desire to secure by United States Letters Patent is:

1. In a device of the character described comprising a base, means for holding an audion tube, a pair of spring members forming a double loop and secured at their

respective ends to said base to form a resilient element, and means for securing said holding means to said resilient element to resiliently support said holding means from said base.

2. A device of the character described comprising a base, means for holding an audion tube, a pair of looped spring members secured to the said base to form a figure 8 shaped resilient element, and means for securing said holding means to said resilient element to resiliently support said holding means from said base.

3. A device of the character described comprising a base, means for holding an audion tube, a pair of looped spring members secured to said base via studs attached to the base to form a figure 8 shaped resilient element, means for securing said tube holding means to said resilient element intermediate of its ends whereby said tube supporting member is resiliently supported from said base.

4. A device of the character described including a base, a tube supporting member for receiving an audion tube, a pair of double loop spring members secured at their respective ends to said base to form a figure 8 shaped resilient element, means including studs around which said resilient member extends for securing said tube supporting member to said resilient element intermediate of its secured ends to yieldingly support said tube supporting member with respect to said base.

5. A device of the character described including a base, a socket for receiving an audion tube, a pair of double loop spring members secured at their respective ends to said base to form a figure 8 shaped resilient element, a depending cylindrical member of said socket provided with U shaped grooves adapted to receive the U shaped link portions of said pair of double loop spring members, to support said socket intermediate of the ends of said resilient element, and means for securing said socket to said resilient element for resiliently supporting said socket from said base.

6. A device of the character described including a socket for receiving an audion tube, a base for said socket, a pair of double loop spring members secured at their respective ends to said base to form a figure 8 shaped resilient element comprising U shaped link portions connecting said loops of each of said spring members intermediate of their ends, an integrally formed depending member on said socket provided with U shaped slots for receiving said U shaped link portions of said spring members, and means for securing said socket to said resilient element in a central orifice of said base, said loop portions of said pair of spring members yieldingly supporting said socket with respect to said base in said central orifice.

7. In a device of the character described including a socket for supporting an audion tube, a base having a central orifice for loosely receiving said socket, a pair of spring members secured at their respective ends to members fastened to said base to form a figure 8 shaped resilient element, means for securing said socket to said resilient element intermediate its secured ends for yieldingly supporting said socket in said central orifice of said base.

8. A device of the character described including a base, means for supporting an audion tube, a pair of wire-spring members formed in a double loop and excluded from the tube circuit, said spring members being secured to said base to form a resilient element, and independent means for securing said holding means to said resilient element to resiliently support said holding means from the base.

9. A device of the character described including a base having a central orifice, means for supporting an audion tube, said means comprising an inverted cup-shaped member having a plurality of depending ribs forming triangular openings within said cup-shaped member, a pair of looped spring members adapted to form a figure 8 shaped resilient element, and means for securing said supporting means to said resilient element to resiliently support said supporting means from said base.

10. A device of the character described including a base, means for supporting an audion tube comprising an inverted cup-shaped member having depending ribs forming triangular orifices within said cup-shaped member, spring means secured to said ribs adapted to engage the prongs of an audion tube, a pair of looped spring members comprising a resilient element, and means for securing said supporting means to said resilient element to resiliently support said supporting means from said base.

11. A device of the character described including a base, a socket comprising an inverted cup-shaped member, a depending central cylindrical member, rib members within said cup-shaped member, spring members secured to said rib members adapted to engage the prongs of an audion tube for supporting the same, and means secured to said depending central cylindrical member for resiliently supporting said socket from said base.

12. A device of the character described including a base having a central orifice, a socket comprising an inverted cup-shaped member, a depending central portion, a plurality of rib members extending from said central portion to said cup-shaped member,

spring members secured to said rib members adapted to engage the prongs of a vacuum tube to support the same, terminal members secured to said base, flexible conductors extending from said terminal members to said spring members, and a pair of looped spring members secured at their respective ends to said base to resiliently support said socket from said base.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 3d day of December, 1926.

HALVOR M. OLSEN.