Dec. 31, 1929. H. A. BREMER 1,741,221

SOCKET

Filed May 12, 1926

Fig. 3.

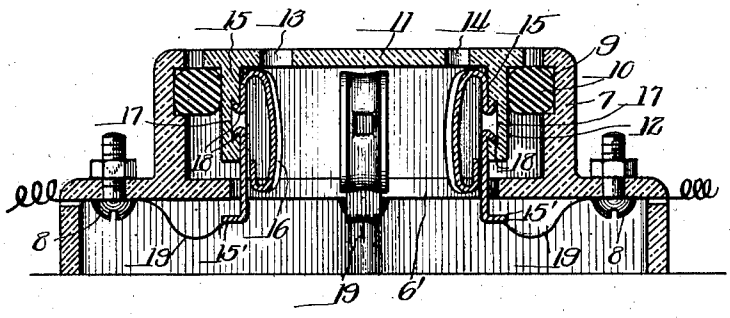


Fig. 1.

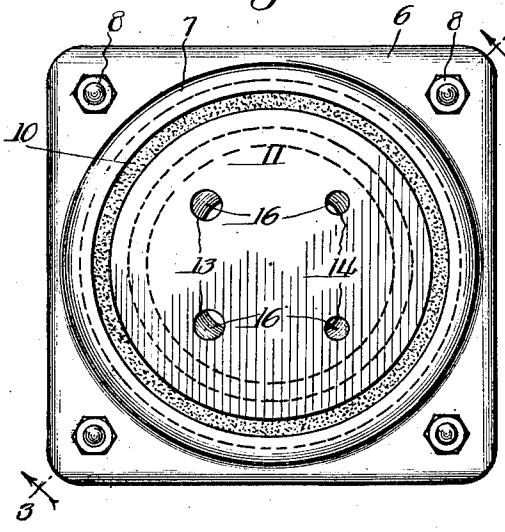


Fig. 2.

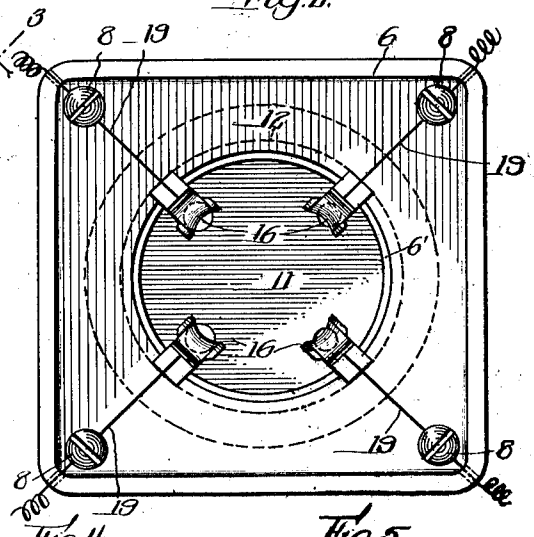


Fig. 4.

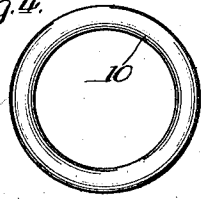


Fig. 5.

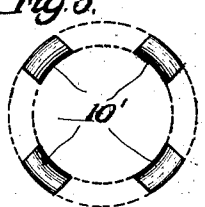
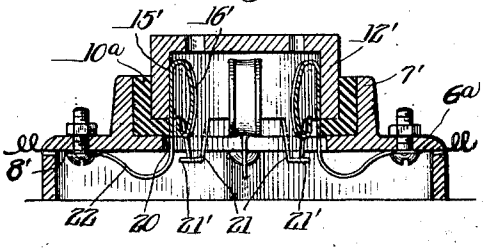


Fig. 6.



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UNITED STATES PATENT OFFICE

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SOCKET

Application filed May 12, 1926. Serial No. 108,513.

This invention relates to sockets, having reference more particularly to sockets for supporting the tubes of radio apparatus. One object of the invention is to provide a very simple, inexpensive and efficient socket of the type adapted to support tubes having depending pin electrodes. Another object of the invention is to provide a socket including a tube receptacle, with improved means for supporting the tube receptacle in the socket base which shall also act as a damper or absorber of vibration. A still further object is to provide, in such a socket, an improved construction for limiting the vertical movement of the tube support relatively to the base and preventing its being accidentally withdrawn from the base when the tube is withdrawn from the supporting member. A still further object is to provide in a socket of the type mentioned, improved contact devices for the tube electrodes and improved leads between the wiring terminals on the base and said contact devices.

Other objects and attendant advantages of the invention will be apparent to persons skilled in the art from the following detailed description, taken in connection with the accompanying drawing wherein I have illustrated one practical embodiment of the invention, and in which—

Fig. 1 is a top plan view of my improved socket;

Fig. 2 is a bottom plan view;

Fig. 3 is a vertical section on the line 3—3 of Fig. 1;

Fig. 4 is a plan view of one form of vibration absorbing supporting means for the tube holder or guide plate;

Fig. 5 shows a modified form of such supporting means; and

Fig. 6 is a view similar to Fig. 3, showing a modification.

Referring to the drawings in detail, 6 designates a hollow rectangular insulating wiring base on and integral with which is a circular upstanding shell 7. 8 designates each of four wiring terminals preferably located at the four corners of the rectangular base 6. The inner wall of the shell 7 is preferably formed with a shallow annular groove or channel 9, in which is seated a ring 10 of soft dead material, such as sponge rubber, felt or the like, well adapted to absorb vibrations and act as a damper.

Mounted on and supported by the ring 10 is a combined floating guide plate and contact carrier consisting of a disc 11 resting at its marginal portion upon the ring 10, and an inwardly offset depending cylindrical stem 12 that extends through the ring 10 with a sufficiently tight fit to exert a slight compressive action on the latter. In the guide plate 11 are formed the usual relatively large and small selective apertures 13 and 14 respectively to receive the terminal pins of the tube, and attached to the inner surface of the stem 12 beneath and in line with the holes 13 and 14 are the contact members for the pins, each preferably comprising an elastic sheet-metal strip 15 formed with a depending bowed portion 16 having a free lower end and at its upper end integral with the strip 15. The inner face of the bowed member 16 is preferably transversely concaved, as indicated, to fit and slidingly engage the sides of the usual round electrode pins as the latter are inserted through the holes 13 and 14, the contact member 16 being thereby pressed slightly outwardly so as to insure ample and snug contact with the pin. The contact strips 15 may be attached to the stem member 12 by any suitable means, the simple means herein shown consisting of under-cut recesses 17 in the inner wall of the stem member, and outwardly pressed lugs 18 of the strip swaged into said recesses.

By reference to Fig. 3 it will be observed that the stem 12 extends to a point slightly above the base plate 6 of the socket, while the contact strips 15 extend through a central opening 6′ of the base plate slightly below the latter and are formed with horizontally bent ends 15′. When the tube is applied to the guide plate 11 under a downward pressure, the lower end of the stem 12, through contact with the base plate 6, limits the downward movement of the guide plate so as to prevent displacement of the ring 10 from its seat; and, similarly, when the tube is withdrawn, causing an upward pull on the

guide plate 11, the stops 15′, through engagement with the under side of the base plate 6, prevent the floating guide plate from being withdrawn from the shell 7 and supporting ring 10.

The lower ends of the contact strips 15 are electrically connected to the wiring in terminals 8 by wires 19. These wires 19 serve solely as current conductors, and have no function to support the floating guide plate and the contacts carried thereby.

In lieu of employing a continuous annular member to support the floating guide plate and absorb vibrations, as shown at 10 in Figs. 1 and 4, a plurality of segment blocks of similar material may be employed, as indicated at 10′ in Fig. 5, this latter being the full equivalent of a continuous annular member.

In Fig. 6 I illustrate a slight modification in the vibration absorbing member and in the stop devices. Here the vibration absorbing member takes the form of a rubber ring 10^a interposed between the stem 12′ of the guide plate 11′ and the shell 7′ of the base 6^a. This ring is formed on its lower edge with an internal flange 20 resting on the base 6^a and underlying the lower edge of the stem 12^a so that the stem and guide plate are supported thereby. In lieu of using the stems of the contacts to provide the lower stops, as in Figs. 1, 2 and 3, I may form the stem 12′ of the guide plate with a plurality of depending lugs 21 extending through the central opening of the base and terminating in laterally bent stops 21′ which, through contact with the lower side of the base, prevent the guide plate and stem from being pulled out when a tube is withdrawn. In this construction also the stems 15′ of the contact springs 16′ are formed continuous with reduced or narrowed extensions 22 that are secured to the binding terminals 8′ and serve both as current conductors and as supports for the contact springs, but have no function to support the guide plate and its stem.

I claim—

1. In a socket of the character described, the combination with a base of insulating material formed with an upstanding annular shell, of a floating circular guide plate apertured to receive the electrode pins of a tube and formed with a depending annular stem inwardly offset from the periphery of said guide plate and disposed within said shell, a ring of vibration absorbing material compressed between said shell and said stem and supportingly engaged with the peripheral portion of said guide plate, and contacts attached to the inner wall of said stem in register with the apertures of said guide plate.

2. In a socket of the character described, the combination with a base of insulating material formed with an upstanding annular shell having an internal annular groove, of a floating circular guide plate apertured to receive the electrode pins of a tube and formed with a depending annular stem inwardly offset from the periphery of said guide plate and disposed within said shell, a ring of vibration absorbing material seated in said annular groove and compressed between the latter and said stem and supportingly engaged with the peripheral portion of said guide plate, and contacts attached to the inner wall of said stem in register with the apertures of said guide plate.

3. In a socket of the character described, the combination with a hollow base of insulating material equipped with wiring terminals and formed with an upstanding annular shell, of a floating circular guide plate apertured to receive the electrode pins of a tube and formed with a depending annular stem inwardly offset from the periphery of said guide plate disposed within said shell with its lower end normally above and out of contact with said base, a ring of vibration absorbing material compressed between said shell and said stem and supportingly engaged with the peripheral portion of said guide plate, contacts attached to the inner wall of said stem in register with the apertures of said guide plate, said contacts extending into said hollow base and formed with laterally offset end portions, said contact end portions and the lower end of said stem co-operating with said base as stops to limit upward and downward movements of said guide plate when removing and inserting a tube, and electrical conducting wires connecting said contacts with said wiring terminals.

4. In a socket of the character described, the combination with a base formed with a vertical annular flange, of a guide plate apertured to receive the electrode pins of a tube and formed with a depending annular stem disposed within the annular flange of said base, a continuous ring of vibration absorbing material compressed between said annular flange and stem, a portion of said ring underlying a portion of said guide plate in supporting relation to the latter, and contacts attached to the inner wall of said stem below and in register with the aperture of said guide plate.

HARRY A. BREMER.