Feb. 5, 1935. H. J. NICHOLS ET AL 1,990,087

RADIO SOCKET

Filed Jan. 12, 1931

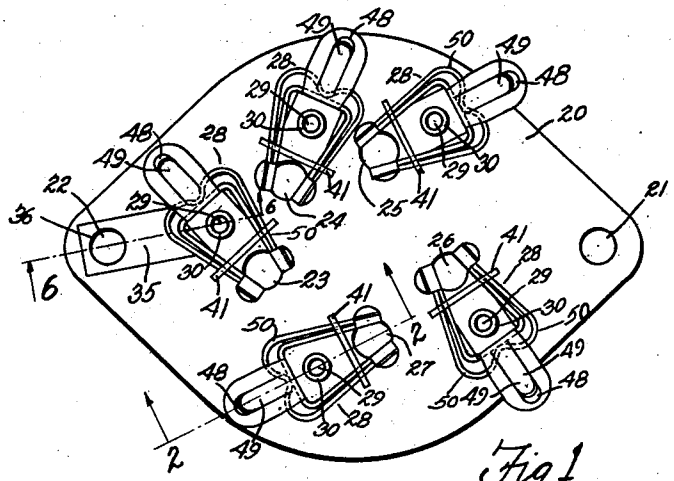


Fig 1

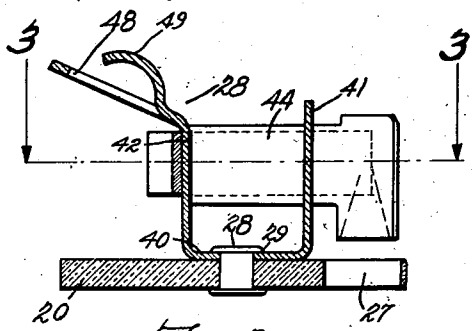


Fig 2

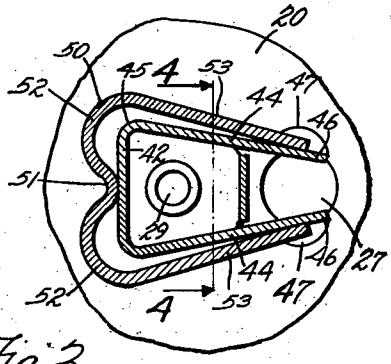


Fig 3

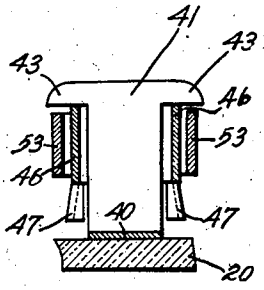


Fig 4

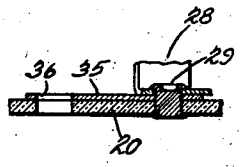


Fig 6

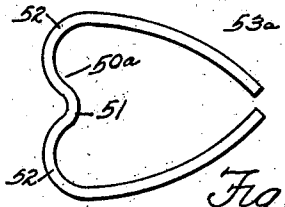


Fig 5

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RADIO SOCKET

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Application January 12, 1931, Serial No. 508,078

2 Claims. (Cl. 173—328)

This invention relates to radio apparatus and has for its object to improve radio tube sockets.

One of the objects of the invention is to improve radio tube sockets so as to insure efficient contact with each and every prong of a radio tube, and to thereafter maintain such efficient connection.

A further object of the invention is to provide a grounding link or connector strap for a conductor member of a radio tube receptacle.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawing:

Fig. 1 is a bottom plan view of a radio tube receptacle illustrating the instant invention.

Fig. 2 is an enlarged view illustrating in longitudinal section a conductor member forming part of the instant invention.

Fig. 3 is an enlarged view in longitudinal section, substantially as indicated by the line and arrows 3—3 of Fig. 2.

Fig. 4 is a transverse sectional view substantially as illustrated by the line and arrows 4—4 of Fig. 3.

Fig. 5 is a detail view of an element contributing to the instant invention.

Fig. 6 is a fragmentary view in section, substantially as illustrated by the line and arrows 6—6 of Fig. 1.

With particular reference to the drawing 20 indicates a base of nonconducting material, providing apertured attaching ears 21 and 22 by which the tube receptacle may be secured to a base or chassis of a radio receiver or similar apparatus. The base 20 is provided with a desired number of tube prong receiving apertures 23, 24, 25, 26 and 27, depending upon the character of the tube for which the socket is to be adapted, in the present instance a five-prong tube receptacle being illustrated. Mounted on the base 20, there are provided conductor members 28 so adapted and positioned as to be disposed over each of the prong receiving apertures of the base and to engage the respective prongs of a radio tube when so inserted. Each of the conductor members 28 is essentially the same and therefore a description of one will suffice, and that description will follow in due course.

Each of the conductor members 28 is secured to the base 20 in any preferred manner, but in the present instance is accomplished by a rivet 29 passing through the base and a portion of the conductor member, and housing its head turned over as at 30 so as to maintain the conductor in rigid relation with the base, and with the contacting portion of the conductor disposed over its respective prong receiving aperture. In one or more instances a connector strap 35 is inserted between the base 20 and the conductor member 28 as is illustrated in Figs. 1 and 6. This provides an efficient and simplified means of grounding or otherwise making connection with, or providing an accessible connection with one or another of the conductor members 28. In the illustrated instance, the strap 35 is led laterally of the conductor member and has one end disposed over one of the attaching ears as 22 of the base where it is apertured coextensive with the securing aperture of the base as of 36. In practice the strap 35 may be adapted to one or more, and to any desired ones of the conductor members, but in the present instance it is illustrated as having connection with the terminal member 28 disposed over the prong receiving aperture 23, and provides for grounding that conductor to the chassis frame by a rivet, screw or other attaching means to be passed through the apertures 21 and 22 by which the receptacle is to be supported.

The conductor member 28 is of the form illustrated, being fabricated from sheet metal, and comprises a bridge portion 40 provided with an up-standing T-shaped leg 41 in parallelism with a cruciform shaped leg 42, substantially as illustrated in Fig. 2. The T-shaped leg has the lateral extensions 43, while the cruciform leg has its oppositely extending limbs 44 bent through an acute angle at 45 so as to provide the coextensive contacting portions 46 lying beneath the lateral portions 43 of the T-shaped arm 41. The terminal ends of the portions 46 are flared outwardly at 47 to provide ready reception for the prongs of the tube to be inserted and the said arms 44 lie sufficiently close to the upright of the leg 41 and beneath the portion 43, to be retained thereby and yet to be capable of relative approach and separation. The continuing arm of the cruciform leg 42 is bent to a desired angle out of the plane of the upright, and pierced at 48 so as to leave an integral tongue 49 to facilitate the attachment of desired leads.

In conductor members of the type just described it is preferable to use a metal of high conductive properties such as copper or brass, and if these be of light gauge material it has been found that they are of insufficient resiliency

to retain the flexing properties necessary for making good electrical contact with the prong with which they may come into engagement during all conditions of adaptability. A reinforcing spring 50 is therefore added to the conductor member and this reinforcing spring comprises the disclosure herein set out. The particular form of conducting spring to be used is clearly set out in Figs. 1, 3 or 5, and embraces a member of high resiliency which may be of spring brass, bronze or tempered steel, and fashioned into the contour illustrated in Figs. 3 or 5.

The spring is fashioned to a cardiodal form, but essentially provides a middle bend 51 that recurves by the reverse bends 52 to join the arms 53 which converge sufficiently that they will substantially meet at the tips in the free position. Thus, when the terminating free ends thereof are adjusted about the prong receiving portion of the conductor member, the contacting portions 46 of the prong receiving arms will be engaged and forced together toward the axis of the prong receiving aperture. When the reinforcing spring is thus adjusted the tension will be sufficient to draw the middle bend 51 closely against the leg 42 of the conductor so that the spring will be in engagement with the conductor member substantially at the three points illustrated in Fig. 3 and the bend 51 resting against the leg 42 will act as a fulcrum or limit from which the flexing of the spring arm is manifest. By so fashioning the spring, the flexing of the two arms of the spring is fairly well distributed over the same from the engaging point near the free end of each arm to the central bight or bend 51.

In devices of similar character where the bend 52 has been sharp, or where the bend 51 has been absent, the bending of the spring between the flexing arms and the bridging portion of the spring has been so acute as to result in a considerable amount of breakage of the springs when applied to the conductor member, or if not then broken to be subsequently broken while in service. This high casualty or percentage of breakage has been traced to the rupture of the metal or a fracture of the particles at the said sharp bend, which short bend evidently strained the material of the spring beyond its elastic limit and by reason thereof the spring was susceptible to breakage far beyond an economical degree.

Fig. 5 illustrates a form of reinforcing spring including a slight modification in which the spring 50*a* is provided with the arms 53*a* of slight inward curvature, thus increasing the tension of the spring arms and more evenly distributing the flexing of the spring when it is applied to the conductor member. Aside from this the two forms of spring are structurally the same and are identical in operation in that the sharp bend 51 lies against the back of the conductor member or in other words is in engagement with the cruciform leg 42 while the spring arms 53 or 53*a* as the case may be substantially embraced and have their terminating free ends engaging the prong engaging portions 46 of the conductor member, and thus urge those contacting portions into and maintain positive communication with the said prongs. The amount of separation of the engaging portions 46 is of less magnitude than the cross section of the tube prongs with which they are adapted to engage, and consequently when a radio tube is inserted in the receptacle the prongs passing through the apertures of the base thence engage the contact portions 46 and force them outwardly, or separate them, against the reinforcing spring. This results in a flexing of the arms from the free end throughout the greater portion thereof and which is substantially distributed over the arm from the free end to the reentrant curve or bight 51. There being no sharp bend in the junction of the spring arm and bridge portion the breakage of springs is practically eliminated, and a prong contacting member is provided that always insures the best conductive engagement with the tube prongs. With the provision of the connector strap, means are affected by which the selected prong is readily connected in a desired circuit, at the instant of mounting the receptacle.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In a radio tube socket providing conducting members for engagement with prongs of a tube to be received, the combination of a reenforcing spring substantially embracing the said conducting member and urging the same into engagement with a tube prong, said spring comprising a pair of opposing arms joined by a reentrant curved portion.

2. In a conducting member for a radio tube socket, and in which said member has a pair of arms adapted for engagement with a tube prong, the combination of a reenforcing spring having a reentrant bridge portion joining a pair of converging free ends, said free ends engaging the arms of said conductor to insure electrical engagement between the arms and tube prong, the flexing of said spring being distributed thereover from the free end to the reentrant portion of the same.

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