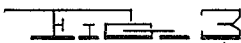
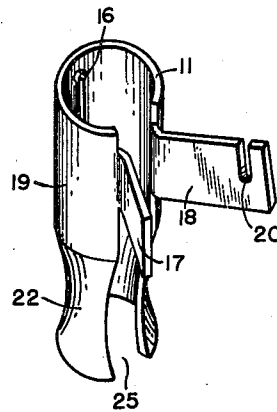
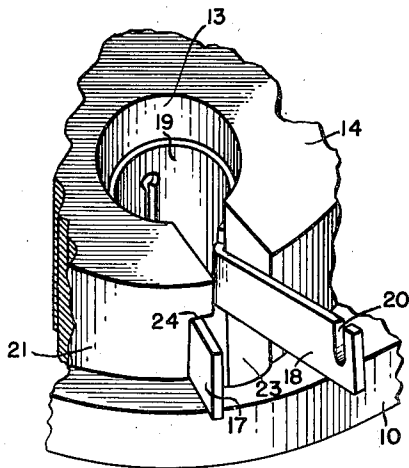
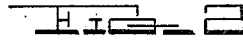
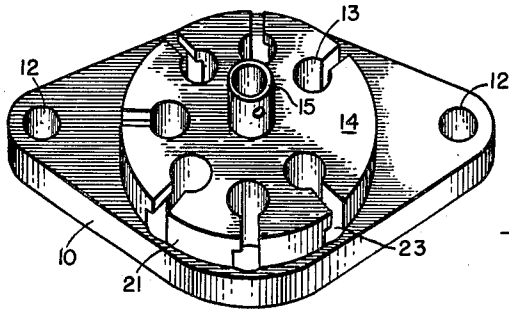


June 7, 1949.

E. TOTH ET AL
VACUUM TUBE SOCKET
Filed Jan. 15, 1946

2,472,131



Inventors
EMERICK TOTH
GEORGE H. BURBAGE

By

M. Hayes

Attorney

UNITED STATES PATENT OFFICE

2,472,131

VACUUM TUBE SOCKET

Emerick Toth, Takoma Park, Md., and George H.
Burbage, Washington, D. C.

Application January 15, 1946, Serial No. 641,373

5 Claims. (Cl. 173—328)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

1

This invention relates to certain improvements in vacuum tube sockets and, more specifically, to an improved base-pin vacuum-tube socket.

In the manufacture of electronic equipment employing base-pin vacuum-tube sockets, one of the main difficulties has been the soldering of electrical connections to the base-pins. This difficulty has been increased by the closeness of the base pin connectors to each other and has been particularly objectionable in the tube sockets for miniature vacuum tubes, where the perimeter of the tube is especially small. The fact that previous base pin sockets have employed essentially permanently inserted base pin connectors has required electrical connections to pins to be unsoldered when replacing defective components connected thereto, with the result that the connector would often be damaged, especially in the case of the so-called miniature sockets, requiring replacement of the entire socket.

Accordingly, it is an object of this invention to obviate the difficulties above mentioned and to provide a base-pin vacuum tube socket having readily removable base pin connectors, which, however, lock in place and are not removable while the tube is in place in the socket.

It is a further object of this invention to provide in such a tube socket base pin connectors that shall have soldering tabs extending radially outwardly from the center of the tube socket.

Other objects and advantages of the invention will be apparent from the following particular description of a preferred embodiment thereof taken in connection with the accompanying drawings in which:

Fig. 1 shows the base-pin vacuum tube socket as a whole, constructed in accordance with the invention;

Fig. 2 is a detail showing the construction of the metal base pin connector; and

Fig. 3 shows a fragmentary portion of the tube socket and depicts the manner in which the base-pin connector fits into the base-pin socket.

Broadly, the invention consists of a base-pin vacuum-tube socket having a base member and a pedestal rising therefrom. Cylindrical holes are provided in the pedestal and base member near the perimeter of the pedestal and narrow slots run from these holes radially outward to the perimeter of the pedestal. The central portion of the metal base pin connector is cylindrical and has an opening parallel to the axis of the cylinder, this opening extending from top to bottom of the cylinder. The base pin connector also

2

employs two lever arms which are integral with exposed edges of the opening in the cylindrical portion. The longer of these lever arms serves as a soldering tab and electrical connections are made to this arm by attaching leads thereto. The cylindrical portion of the pin connector rests in the cylindrical hole and the two lever arms extend radially out through the slot. The longer of these arms extends considerably beyond the perimeter of the pedestal, thus increasing the spacing between base pins for the soldering of electrical connections and for the allocation of accessory components such as condensers. Additionally, the radial extension outward of the base pin connectors tends to decrease the self-inductance over that found in other socket installations where external connections loop back upon themselves, as in ground connections to the chassis. Mutual inductance and capacitance between connectors are also reduced because the radial feature of the connectors causes the distance between connectors to be increased as the connector arms extend out from their cylindrical center portions. Reduction of inductive and capacitive reactance is especially desirable at the higher frequencies. The radial feature decreases the congestion of the components around the socket by permitting low inductance connections to be made away from the socket body.

The slots in the pedestal and base member, which extend from the cylindrical holes to the perimeter of the pedestal, are not as wide at the top as at the bottom, because of a detent at the top which extends out into the slot. Since the smaller lever arm is not free until it clears the detent, it must be pressed toward the longer arm before the base pin connector may be removed from its socket. By removing the base pin connectors from the pin sockets, external soldering of electrical connections to the base pin connectors may be facilitated, as, for instance, to a wiring harness. Additionally, defective components soldered to the connectors may be quickly replaced by removing the component and connector, and replacing both.

Referring more specifically to Fig. 1, 10 indicates the base member of the tube socket provided with suitable holes 12 through which studs (not shown) are passed to mount and secure the socket to the chassis of the equipment. Rising from the base member 10 and integral therewith is the generally cylindrical pedestal 14. The socket for the base pin connector consists mainly of a cylindrical hole 13 near the perimeter 21 of the pedestal

3

14, and a slot 23 extending from the hole 13 to the perimeter 21 of the pedestal 14. The hole and slot extend through the base member 10 and the pedestal 14. The metal cylinder 15 extending through the pedestal 14 and the base member 10 to a point above the pedestal 14 serves as an interconnector shield when suitably grounded.

In Fig. 2, the metal base pin connector 11 has a cylindrical center portion 19, with an opening 25 in the cylinder parallel to the axis of the cylinder and running from top to bottom of the cylinder. The arms 17 and 18 are integral with the cylindrical portion 19 and extend from the two exposed edges of the opening 25 in the cylindrical portion. The arm 17 is perpendicular to the axis of the cylinder while the arm 18 has an angle of less than 90 degrees with respect to said axis at one end. A slot 20 is cut into the lever arm 18 and electrical connections to the base pin 11 are made by wrapping leads around arm 18 at slot 20 and soldering. A slot 16 is cut from the cylindrical portion 19 at a point diametrically opposite the opening in the cylindrical portion. This slot 16 is parallel to the opening in the cylindrical portion and extends from the bottom of the cylindrical portion to a point approximately two thirds of the distance from the top. An hour-glass shaped indentation 22 is made around the perimeter of the cylindrical portion 19 at the bottom of the cylinder, so that the prong of a vacuum tube may be securely gripped when inserted into the base-pin connector 11.

Fig. 3 shows the manner in which the base-pin connector 11 fits into and may be removed from the base pin socket. The cylinder 19 fits into the hole 13 and grips the base pin of the vacuum tube. The lever arm 18 extends a considerable distance beyond the perimeter 21 of the pedestal 14, so that soldering of electrical connections to the arm may be facilitated. The lever arm 17, however, extends only far enough beyond the perimeter 21 to permit external pressure to be applied against it. The lever arm 17 must clear the detent 24 in the slot 23 before the base pin connector 11 can be removed.

While certain preferred embodiments of this invention have been described, it is realized that many modifications and variations of this invention may be made and no limitations upon this invention are intended other than may be imposed by the scope of the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A tube socket, comprising a base member and pedestal having a plurality of cylindrical apertures adapted to receive base pins of a tube, the socket being slotted from one end of each of said apertures to its periphery, each slot having opposed spaced wall portions, detent means in each of said slots extending from one of said wall portions towards the other wall portion, connector means positioned within each cylindrical aperture for contact with a tube base pin, and a pair of flexible arms extending from each connector means through its respective slot and engaging the wall portions thereof, one of said arms being positioned by the detent means.

2. A tube socket comprising a base member with two mounting holes at diagonal corners thereof, a pedestal extending from the base member and integral therewith, said base member and

4

pedestal having a plurality of cylindrical apertures therethrough, said apertures being slotted to the outer periphery of the pedestal, base pin connector means positioned within the apertures, each slot having opposed spaced wall portions, two arms integral with each base pin connector means, said arms extending through their respective slot radially outward beyond the perimeter of the pedestal and engaging the spaced wall portions of the slot, detent means extending from one wall portion of each slot towards the other wall portion to position one of the arms, and the other arm extending a considerable distance beyond the perimeter of the pedestal.

3. A tube socket comprising, a base member having a plurality of apertures arranged to receive the base pins of a tube, a plurality of base pin connector means, each of said connector means having a pair of opposed surfaces biased together for making contact with a base pin inserted therebetween, an arm extending from each of said surfaces to form a pair of arms for each connector means, each of said apertures being further adapted to receive one of said connector means and a portion of the arms attached thereto, retaining means disposed within each of said apertures, each of said pairs of arms being biased apart to engage said retaining means and position its respective connector means within its respective aperture, each connector means being removable from its respective aperture when its respective arms are pressed together.

4. A tube socket comprising, a base member and pedestal having a plurality of cylindrical apertures adapted to receive base pins of a tube, said pedestal being slotted from each aperture to its periphery, each slot having opposed spaced wall portions, detent means in each of said slots extending from one of said wall portions toward the other wall portion, connector means positioned within each cylindrical aperture for contact with a tube base pin, each of said connector means having a cylindrical body portion with a longitudinal opening formed therein, a longitudinal slit in one end of each said body portion at a point opposite said opening, indentations formed in said slitted end of each said body portion, and a pair of flexible arms extending radially outward from opposite edges of the opening in each said connector means through the adjacent slot in said pedestal, one of said arms being positioned by the detent means.

5. A radio tube socket comprising, a base member having a plurality of apertures formed therein, said apertures being arranged to receive the base pins of a radio tube, a plurality of base pin connectors each having an elongated body portion disposed within a corresponding aperture in the base member and operative to receive a base pin along its longitudinal axis, each said body portion having a longitudinal opening formed therein, and a pair of divergent arms attached to opposite edges of the opening in said body portion, a separate base pin connector retaining member contiguously disposed to each of said apertures and operative to engage the connector thereby to hold said connector in its respective aperture and further operative when said arms are pressed together to permit removal of the base pin connector from the aperture.

EMERICK TOTH.

GEORGE H. BURBAGE.

(References on following page)

2,472,131

5

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,719,288	Danielson -----	July 2, 1929
2,004,076	Knutson -----	June 4, 1935
2,004,610	Jones -----	June 11, 1935

Number
2,072,939
2,321,470

5

Number
358,788
559,562
766,524

6

Name	Date
Betts -----	Mar. 9, 1937
Draving -----	June 8, 1943

FOREIGN PATENTS

Country	Date
Great Britain -----	Oct. 15, 1931
Great Britain -----	Feb. 24, 1944
France -----	Apr. 16, 1934