Feb. 24, 1959 E. E. RITTER 2,875,423

ELECTRONIC TUBE SOCKET

Filed Jan. 6, 1955

Fig. 1

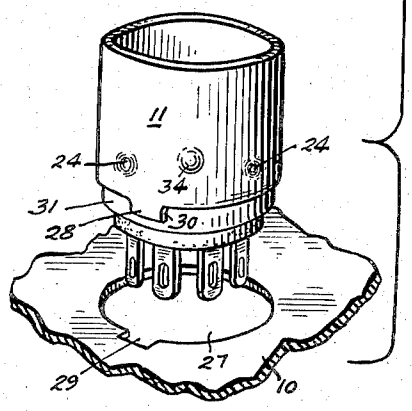


Fig. 4.

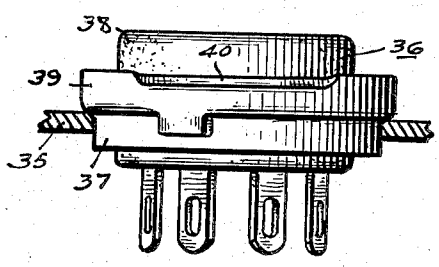


Fig. 2.

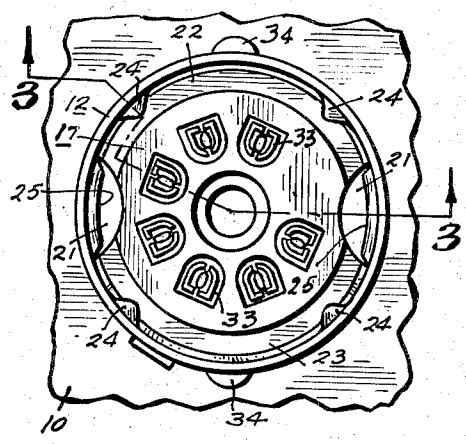


Fig. 5.

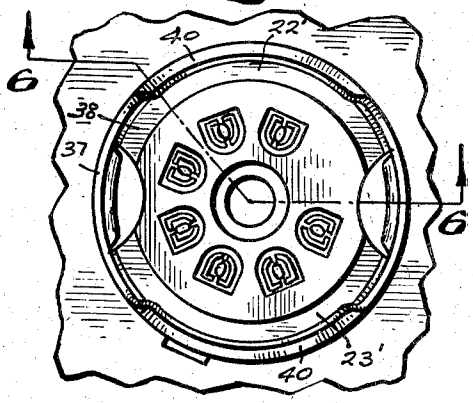


Fig. 3.

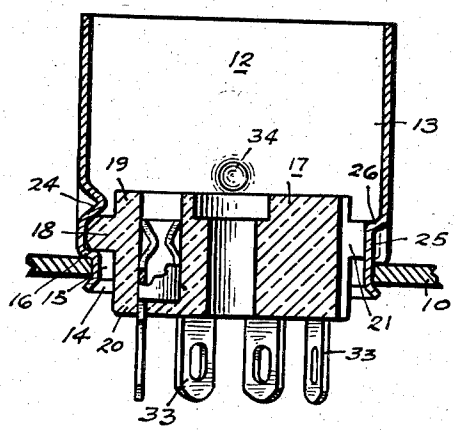


Fig. 7.

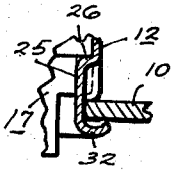
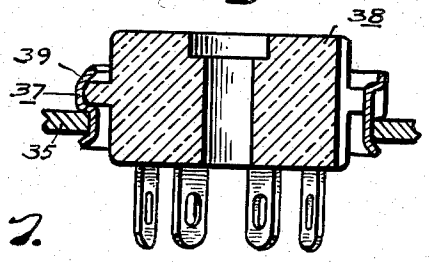


Fig. 6.



INVENTOR.
EDWIN E. RITTER
BY
ATTORNEY

United States Patent Office 2,875,423 Patented Feb. 24, 1959

2,875,423

ELECTRONIC TUBE SOCKET

Edwin E. Ritter, Chalfonte, Pa., assignor to Hugh H. Eby, Inc., Philadelphia, Pa., a corporation of Pennsylvania

Application January 6, 1955, Serial No. 480,147

4 Claims. (Cl. 339—126)

This invention relates generally to means for mounting electrical apparatus and more particularly to improvements in means for mounting a receptacle for an electrical tube.

A principal object of the present invention is to provide such means wherein a receptacle including a socket and a shield for the socket is operatively mounted upon a chassis plate directly through the medium of the shield without the use of separate securing elements.

Another object of the present invention is to provide such means wherein the shield is effectively grounded by reason of being secured to the chassis plate through the medium of a connection which extends continuously about the body of the shield.

Still another object of the present invention is to provide such means which is exceedingly simple in design and construction and which is comparatively simple and inexpensive to manufacture.

Other objects and advantages of the present invention will appear more fully hereinafter, it being understood that said invention consists substantially in the combination, construction, location and general arrangement of parts, all as described in detail in the following specification, as shown in the accompanying drawing and as fully pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a perspective view of apparatus embodying the present invention and showing a receptacle located over the mounting hole in a chassis plate preliminarily to final assembly;

Figure 2 is a top view of the receptacle and chassis plate of Figure 1, shown fully assembled;

Figure 3 is a vertical section on line 3—3 of Figure 2;

Figure 4 is a view of another apparatus embodying the present invention, the receptacle being shown in elevation prior to being secured to the chassis plate, the latter being shown in section;

Figure 5 is a top view of the receptacle and chassis plate shown in Figure 4;

Figure 6 is a vertical section on line 6—6 of Figure 5, the receptacle being shown permanently secured to the chassis plate; and

Figure 7 is a fragmentary sectional view illustrating a modified detail of construction.

Referring to the drawing, and particularly to Figures 1, 2 and 3, the assembly embodying the present invention comprises a rigid metal plate member **10** which forms part of a chassis and which mounts a receptacle indicated generally by the numeral **11**. The receptacle **11** is provided with a shell or mounting base shield in the form of a one-piece draw metal cylindrical sleeve part **12** which has a large diameter main body section **13** and an external axially tapered annular flange **14** disposed respectively at opposite ends of the sleeve part **12** and connected together by a reduced diameter section **15** and an annular shoulder **16** which is formed by the reduced diameter section **15**.

The receptacle **11** is additionally provided with a cast-

ing or molded body of insulating material in the form of a socket **17** which is circular in transverse cross-section. The socket **17** has a large diameter section **18** that is interposed between a pair of reduced diameter sections **19** and **20**. Extending longitudinally of the socket **17** in diametrically opposed relation are a pair of round bottomed open grooves **21—21** which separate marginal portions of the large diameter section **18** of the socket **17** to afford arcuately shaped ribs **22** and **23**.

The socket **17** is fitted into the sleeve part **12** and is positioned with the arcuate ribs **22** and **23** seated upon the annular shoulder **16** of the sleeve part **12**, being thus secured against axial displacement in one direction. For securing the socket **17** against axial displacement in the opposite direction, the main body section **13** of the sleeve part **12** is inwardly staked at four circumferentially spaced locations just above the large diameter section **18** of the socket **17**. Two of the wall areas **24—24** thus inwardly offset are disposed over the arcuate rib **22** of the socket **17**, and the other two wall areas **24—24** thus inwardly offset are disposed over the arcuate rib **23** of the socket **17**.

For securing the socket **17** against turning in the sleeve part **12**, the portions of the reduced diameter section **15** of the sleeve part **12** which are opposed respectively to the grooves **21—21** of the socket **17** are extended upwardly as at **25—25**, the extended wall areas **25—25** being disposed each between a pair of opposed end portions of the arcuate ribs **22** and **23** of the socket **17**, and the circumferential extent of each of the wall areas **25** being sufficient for spanning the distance between the arcuate ribs **22** and **23**. The annular shoulder **16** of the sleeve part **12** arches upwardly over the wall areas **25—25** as at **26—26**.

When mounted upon the plate member **10**, the receptacle **11** is disposed with the reduced diameter section **15** of the sleeve part **12** snugly fitted in a mounting hole **27** formed in the plate member **10**, and with the portion of the plate member **10** bordering the mounting hole **27** firmly gripped between the annular shoulder **16** and the annular flange **14** of the sleeve part **12**, the annular shoulder **16** being firmly seated upon the upwardly presenting face of the plate member **10** while the annular flange **14** flares outwardly in overlying relation to the downwardly presenting face of the plate member **10**. For securing the receptacle **11** and particularly the sleeve part **12** against turning in the mounting hole **27**, the main body section **13** of the sleeve part **12** is provided with a portion at the base thereof which is extended downwardly as at **28**, the extended wall area **28** being disposed in a recess **29** formed in the plate member **10** and communicating with the mounting hole **27**, and the circumferential extent of the wall area **28** being sufficient for spanning the recess **29**. The annular shoulder **16** of the sleeve part **12** extends under and around the wall area **28** as at **30**.

It will be understood, of course, that the socket **17** is fitted into the sleeve part **12** preliminarily to any staking of the main body section **13** of the sleeve part **12** as at **24**. In addition, since the flange **14** of the sleeve part **12** must be formed after the lower end of the sleeve part **12** is projected through the mounting hole **27** of the plate member **10**, the flange **14** and the contiguous reduced diameter section **15** initially form a cylindrical collar **31** of uniform diameter throughout its length, the diameter being sufficiently small to permit projection of the collar freely through the mounting hole **27**. After projection of the collar **31** into the opening **27** with the wall area or key **28** in registry with the recess or keyway **29**, the freely extending bottom end of the collar **31** is flared or otherwise expanded to securely lock the socket receptacle H to the chassis plate **10** and so pro-

vide a circumferentially continuous grounded connection between the metal parts 10 and 11. This grounded connection greatly reduces objectionable radiation present in many high frequency electronic circuits and is especially advantageous in television circuits designed to use both U. H. F. and V. H. F. frequency bands. In this connection, the flange 14 of the sleeve part 12 may be variously formed. For example, referring to Figure 7, the flange may be curved in transverse cross-section as at 32.

The socket 17 is conventionally fitted with a set of contact members 33 and is otherwise adapted to receive an electrical tube (not shown). It will be apparent that the orientation of the pattern of the set of contact members 33 relative to the plate member 10 is determined by the location of the recess 29 in the plate member 10, the orientation of the wall area 28 of the sleeve part 12 with respect to the wall areas 25—25 of the sleeve part 12, and the orientation of the grooves 21—21 in the socket 17 with respect to the pattern of the set of contact members 33. Any desired orientation can be effected readily.

The reduced diameter sections 19 and 20 of the socket 17 respectively are substantially smaller in diameter than the main body section 13 and the reduced diameter 15 of the sleeve part 12. In addition, the top and bottom of the socket 17 are fully exposed. Furthermore, the flange 14 or 32 of the sleeve part 12 extends below the bottom of the plate member 10 a distance greater than that corresponding to the thickness of the wall of the sleeve part 12. Still further, the main body section 13 of the sleeve part 12 is outwardly staked as at 34—34 to facilitate retention of a tube shield (not shown) which may be fitted over the main body section 13.

Now referring particularly to Figures 4, 5 and 6, the modified assembly embodying the present invention comprises a plate member 35 and a receptacle 36. The receptacle 36 is provided with a sleeve part 37 and a socket 38. The plate member 35 and the socket 38 are identical respectively with the plate member 10 and the socket 17 already described. The sleeve part 37 corresponds to the sleeve part 12 already described. However, the main body section 39 of the socket receptacle 36 is of reduced axial length and is provided at its upper end with a pair of diametrically opposed arcuately shaped flanges 40—40 which overlie respectively the arcuate ribs 22' and 23' of the socket 38. It will be apparent that these flanges 40—40 function similarly to the indentations 24—24 of the construction shown in Figures 1 to 3 to secure the socket against axial displacement upwardly of its shielding receptacle. In all other material respects the construction of Figures 4 to 6 is the same as that of Figures 1 to 3.

It will be understood, of course, that the present invention is susceptible of various changes and modifications which may be made from time to time without involving any departure from the general principles or real spirit thereof. Accordingly, it is intended to claim the same broadly, as well as specifically, as indicated in the appended claims.

What is claimed as new and useful is:

1. In an electron tube socket assembly, a sleeve mounted socket, said socket having a face containing apertures for receiving the pins of an electron tube base when a tube is seated in said socket, an outwardly flanged peripheral ridge extending substantially completely about the circumference of the socket body in a plane parallel to said socket face, the outer edge of said peripheral ridge throughout its circumferential extent lying close adjacent to the inside surface of said sleeve with the socket face lying in a plane substantially perpendicular to the axis of said sleeve, said sleeve being of reduced cross-section immediately below said ridge and providing thereby a substantially circumferentially extending shoulder upon which said socket is supported by said ridge, said sleeve reduced cross-section extending axially downward from said shoulder to form a skirt extending circumferentially about said socket body in radial spaced relation therefrom, whereby said socket assembly may be mounted to a chassis by inserting said sleeve skirt through a prepunched hole just large enough to accommodate said skirt with said skirt extending below the chassis undersurface and with said shoulder seated on said chassis upper surface, and by then flaring outward the skirt edge.

2. The socket assembly of claim 1 wherein said sleeve extends axially upward beyond the plane of said socket face and is indented immediately above said socket ridge to thereby clamp said ridge between said indentation and said shoulder and thereby prevent relative axial movement between said socket and said sleeve.

3. The socket assembly of claim 1 wherein a portion of the sleeve outer surface below said ridge lies in the same plane as the sleeve outer surface surrounding said ridge and forms thereby a radially extending key.

4. The socket assembly of claim 1 wherein a portion is radially reduced in at least one region of its circumferential extent and said sleeve is indented to present radially inward into said radially reduced ridge region to thereby prevent relative rotational movement between said socket and said sleeve.

References Cited in the file of this patent

UNITED STATES PATENTS

1,088,776	Godley	Mar. 3, 1914
1,610,128	Godley	Dec. 7, 1926
2,291,808	Henning	Aug. 4, 1942
2,455,324	Wagstaff	Nov. 30, 1948

FOREIGN PATENTS

455,325	Canada	Mar. 22, 1949

OTHER REFERENCES

Publication "Electronics," p. 263, April 1952.