

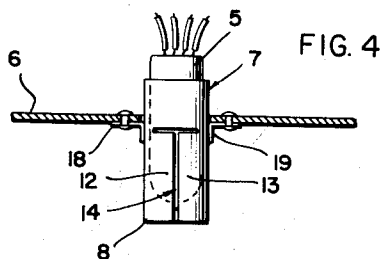
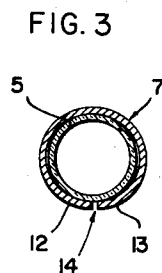
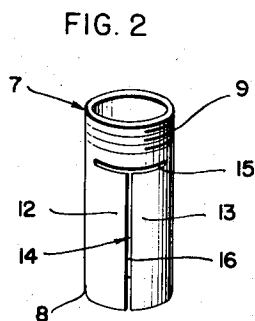
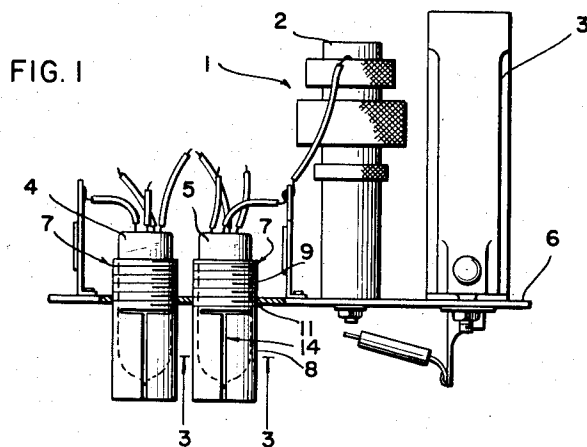
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MINIATURE TUBE HOLDER

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MINIATURE TUBE HOLDER

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This invention relates to holders for radio tubes and more particularly to holders adapted to shield and support tubes of the miniature and sub-miniature types.

It is the present trend to build miniature and sub-miniature radio tubes. Tubes of these types are usually used for special applications, such as in compact electronic instruments. When tubes of these types are used in such instruments, means must be provided for securely mounting them so that they are free from vibration, readily accessible and structurally simple in design. Then again, for successful operation of the instrument, the tubes must be shielded from stray electrostatic fields. Furthermore, tubes of these types have the property of generating a considerable amount of heat. When several tubes are grouped closely together, an enormous amount of heat is generated. Therefore, means must be provided for dissipating the generated heat from the tubes to prevent warpage of their electrodes and damage to associated circuit components.

Therefore, it is an object of this invention to provide a novel unitary radio tube shield and holder.

Another object of this invention is to provide a tube holder that is adapted to dissipate the heat of the radio tube.

Still another object of this invention is to provide a tube holder that is simple in construction, inexpensive to manufacture and easily mounted.

In accordance with this invention there is provided a novel vacuum tube holder comprising a container having clamping means provided therein for holding and shielding a vacuum tube. There is also arranged on the container, fastening means for rigidly securing the container to a support, such as a radio chassis.

For a better understanding of the invention together with other and further objects thereof, reference is made to the following description, taken in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a side elevational view of the tube holder associated with a fragmentary portion of a radio receiver;

Fig. 2 is a perspective view of the tube holder;

Fig. 3 is an enlarged sectional view of the tube holder taken on line 3—3 of Fig. 1; and

Fig. 4 is a modification of a tube holder according to the invention.

Referring to Figs. 1, 2 and 3 of the drawing there is shown a fragmentary section of an in-

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put stage of a high frequency radio receiver 1, including an input transformer 2, by-pass condenser 3, and a pair of radio tubes 4 and 5, mounted on a chassis 6. The radio tubes 4 and 5 are securely mounted within a novel tube holder 7 comprising a metal sleeve 8, one end of which is threaded as at 9. The threaded end of the sleeve is screwed into a suitable threaded aperture 11 provided in the radio chassis.

The sleeve is split in such a manner to form therein fractional portions which are adapted to mount the tube in accordance with the principles of this invention as described more fully hereinafter. For example, on the side of the sleeve there are provided fractional portions consisting of a pair of longitudinal elements 12 and 13 adapted to clamp and yieldably but securely hold the envelope of the radio tube 5 in good contact against the inner wall of the sleeve 8. The clamping elements 12 and 13 are formed by stamping or cutting a T-slot 14 in the side of the sleeve. The T-slot comprises a head portion 15 and a leg portion 16. The head portion is a transverse cut disposed adjacent the threaded section 9 and the leg portion is a longitudinal cut extending to the outer end of the sleeve. The longitudinal end portions of the clamping elements 12 and 13 are slightly bent inwardly so that the diameter of the clamping section is less than the diameter of the threaded section of the sleeve. The tube is inserted into the sleeve through the larger opening into full frictional contact with the clamping elements 12 and 13 and the inner wall of the sleeve, with the tube leads exposed for connection.

In the modification (Fig. 4) there is shown a tube holder similar to the one shown in Fig. 2, differing principally therefrom in that the securing means comprises a pair of ears 18 and 19 which are secured to the sleeve 8 by welding, riveting or any other suitable fastening means. The holder in turn is secured to the chassis 6, such as by welding or riveting the ears to the chassis as shown.

From the foregoing description, it is to be observed that the invention provides a novel tube holder that may be secured at will to the chassis from either the top or bottom or fastened to a vertical or inclined support from any angle. This feature allows the leads of the tube to be placed and connected to adjacent component parts of the receiver with the shortest connections. It is to be observed that by using a holder of this type, several tubes may be mounted adjacent each other with a minimum amount of space between them. It is also well known that

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miniature tubes generate a considerable amount of heat. A cluster of such tubes develop an enormous amount of heat, which is harmful, not only to the tube electrodes, but also to the associated circuit components. The holder according to this invention serves to increase the conductivity between the tube envelope and the chassis since metal is a better heat conductor than glass, thereby to provide an improved heat dissipating facility. Furthermore, the holder is designed to completely enclose and shield the tube from stray electrostatic fields and also to confine to the tube fields produced by the tube electrodes.

In conclusion, it is to be observed that the tube holder of this invention supports the tube by the envelope. By supporting a tube in this manner no capacity is added to the tube electrodes. Conventional tube holders employ prongs to support a tube. A plurality of such prongs add considerable capacity to the tube electrodes which must be considered in the design of a circuit.

It should be apparent that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is desired, therefore, that the embodiments disclosed herein be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description and/or drawings for a determination of the scope of the invention.

What is claimed is:

1. A tube shield and holder adapted to be mounted in a threaded aperture of a radio chassis comprising, a sleeve, a threaded screw portion formed at one end of said sleeve for screwing and holding it within said aperture, a T-slot formed in the side of said sleeve, the head portion of the slot being transversely disposed adjacent the threaded portion and the leg portion of the slot extending longitudinally to the outer end of the sleeve thereby forming in said sleeve a pair of inwardly disposed longitudinal clamping elements adapted to securely hold the envelope of a radio tube against the inner wall of the sleeve.

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2. A tube shield and holder adapted to be mounted on a radio chassis comprising, a sleeve, a T-slot formed in the side of said sleeve thereby forming in the walls of said sleeve a pair of inwardly disposed longitudinal clamping elements adapted to securely hold the envelope of a radio tube against the inner wall of the sleeve, and lugs secured to the side of said sleeve for fastening it to said chassis.

3. A miniature vacuum tube holder comprising a metallic sleeve provided with an axially extending slot which extends from one end of the sleeve to a point spaced from the opposite end, a second slot formed in the sleeve transversely of the first-named slot and intersecting the latter at the end thereof whereby the longitudinal edges of said sleeve adjacent the first slot may be flexed uniformly inwardly or outwardly.

4. A vacuum tube holder comprising a tubular member having a tube-receiving opening of substantially uniform diameter throughout its length, a plurality of axially extending slots provided in said member in angular spaced relation, a plurality of cross-slots in said member which intersect respective ones of the first-named slots whereby the size of said opening may be adjusted and whereby the longitudinal walls defining said opening are resiliently expandable for gripping a vacuum tube securely.

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