April 5, 1932. W. W. ROBINSON 1,852,334

VACUUM TUBE HOLDER

Filed Feb. 12, 1926

Fig. 1.

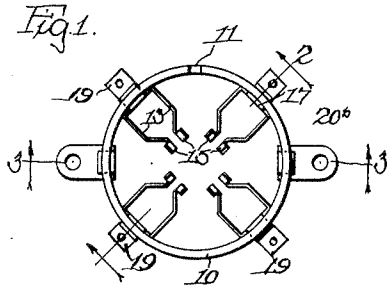


Fig. 2.

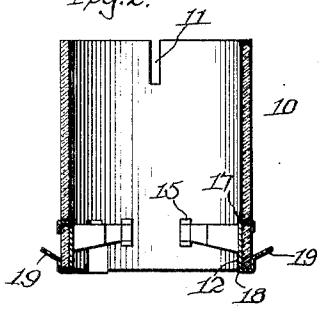


Fig. 3.

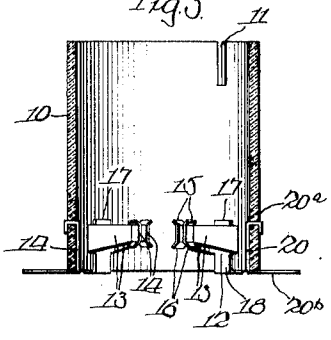


Fig. 4.

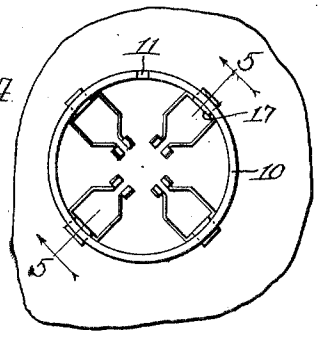
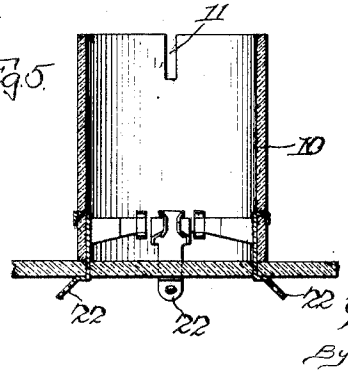


Fig. 5.



Inventor:
Walter W. Robinson
By Luther Johns Atty.

Patented Apr. 5, 1932 1,852,334

UNITED STATES PATENT OFFICE

WALTER W. ROBINSON, OF BELOIT, WISCONSIN, ASSIGNOR OF ONE-HALF TO BENJAMIN F. LYONS, OF CHICAGO, ILLINOIS

VACUUM TUBE HOLDER

Application filed February 12, 1926. Serial No. 87,756.

These improvements relate to holders ordinarily termed sockets for vacuum tube devices. Such tubes contain a plurality of electrodes within a glass enclosure and terminals projecting from the cylindrical base in the form of pins extending in parallel arrangement.

An object of the invention is to provide a unitary contact member for engaging the projecting pins on the bottom of the tube and which may be mounted upon the main portion of the holder, and, as a detail or specific improvement, without the use of rivets or screws.

Another object is to provide advantageous forms of terminal connections in such a device and suitable for the usual type of wiring or for so-called subpanel wiring.

Another object is to provide a unitary contact member and a wiring projection. Another object is to provide a wiring terminal for a device of this kind which may be used for attaching the shell of the holder or socket firmly to the base. It is also an object to accomplish these results by a simple, relatively cheap, strong and durable construction.

Other objects and advantages will appear hereinafter.

In the drawings, Figure 1 is a top plan of the preferred form of my improved holder; Fig. 2 is a vertical section thereof, as on the line 2—2 of Fig. 1, showing the manner in which the terminals are attached to the shell; Fig. 3 is a similar section on the line 3—3 of Fig. 1 showing independent means for holding the shell to a base board or the like; Fig. 4 is a top plan of a modification of my invention which avoids the use of independent shell-holding means and is appropriate to so-called panel wiring; Fig. 5 is a vertical section of the device of Fig. 4 on the line 5—5 thereof.

Referring to Figs. 1 to 3 inclusive, the shell 10 in my practice is a section of Bakelite tubing having an inside diameter sufficient to receive, for easy interfitting movement, the base portion of the well-known vacuum tube used in radio work. The cylindrical bases of such tubes are provided at one side with an outstanding pin for positioning the tube in the holder. In some sockets this pin travels in a bayonet slot in the shell when applying or removing the tube. In these improvements the shell is provided with a longitudinal slot 11 for the laterally-extending pin of the tube base whereby the tube may be inserted in the socket by simply moving it longitudinally. With the locating pin in this slot the four contact terminals of the tube are so directed as to make contact with the proper terminals of the socket respectively.

The shell 10 carries four contact members formed of thin and springy sheet metal such as German silver or brass. Each of these contact members has a body part somewhat U-shaped having a seat portion 12, a pair of side members 13, the side members carrying a pair of oppositely-disposed contact ends 14 facing each other and close together, each of these contact ends being provided with a flaring top extension 15 to provide easy entrance between them of the terminals or pins extending from the base of the tubes, there being also bottom flaring extensions 16 adapted to provide easy withdrawal of the tube terminal pins in instances where they may be headed over or mushroomed by use in other types of device.

The seat portion 12 has a normally upwardly directed leaf-like extension 17 which is bent to pass through a narrow slot-like hole or aperture punched or otherwise formed in the shell 10, and is then bent back upon the shell at 17*a* to crimp and fasten the contact member securely by an interlocking and clamping action upon the shell. The seat portion 12 has also a leaf-like downwardly directed extension 18 of sufficient length to permit it to be bent around the lower end of the shell as additional means for holding the contact member in place. This extension 18, after being crimped against the shell, is bent outwardly so as to form a wiring end or terminal 19.

According to this construction the use of rivets or the like for holding the contact members is avoided, and no separate parts are required for the wiring connections. The unitary construction provides against electrical loss through poor connections, and the construction is cheap, durable and highly satisfactory in use.

An important advantage is in the unusually advantageous results provided by the substantially large area of the terminal of the tube contacted by the contact member. That is to say, instead of an electrical connection made with the pins of the tube through flat springs pressing against the small usually rounded surface at the bottom of the pins projecting from the tube base, electrical connection is here made on comparatively long lines or areas at the sides of the respective pins.

Means for holding the shell 10 upon a base are shown as two substantially L-shaped brackets 20 which may be of the same material as that of the contact members. These brackets 20 have their upper ends 20*a* extending through narrow slot-like holes in the lower portion of the shell and are then bent over so as to engage and firmly grip the shell.

The bottom extensions 20*b* are provided with small holes for screws with which to secure the device as a whole upon a base. It is to be noted that the brackets 20 require no screws or rivets to hold them upon the shell.

The structure just described is particularly adapted for the above-board type of wiring. Another type of wiring has recently come into vogue knows as subpanel wiring. For this type of wiring a horizontal base or subpanel is provided upon which all the desired apparatus is mounted and the wiring is done below the panel so that the appearance of the completed set is greatly improved and in many instances the connecting wires may be shorter and more direct. The construction shown in Figs. 4 and 5 is particularly adapted for such subpanel wiring. The only differences between the construction shown in Figs. 4 and 5 and that of the preceding figures are that the brackets 20 are omitted and the wiring terminals 22, corresponding in original shape to the terminals 19, are passed through holes in the base and are then bent over so as to grip the base and thus hold the shell securely. These extensions 22 may be bent away from the base in part for easy soldering operations and may then be bent back to lie upon the base if desired.

In this type of construction also the unitary and integral connection members serve to hold themselves upon the shell, to mount the shell upon the panel and to form the wiring terminals.

I contemplate as being included in these improvements such changes, modifications and departures from what is herein specifically set forth as fall within the scope of the appended claims.

I claim:

1. A socket for a vacuum tube comprising a shell, a panel for supporting said shell, a thin sheet metal contact member mounted on said shell, said contact member having a substantially U-shaped contact portion and an extension directed through an opening in the shell and crimped against it, and having another extension passing through an opening in said panel and crimped against it to secure said shell to said panel.

2. A socket for a vacuum tube comprising a shell, a panel for supporting said shell, a thin sheet metal contact member mounted on said shell, said contact member having a substantially U-shaped contact portion and an extension directed through an opening in the shell and crimped against it, and having another extension passing through an opening in said panel and crimped against it to secure said shell to said panel, one of said extensions forming a wiring terminal integral with said member.

3. A socket for a vacuum tube comprising a shell, a base for supporting said shell, and a spring contact member having means for engaging a terminal of the vacuum tube and having integral means constituting the sole means for fastening said shell to said base.

4. A socket for a vacuum tube comprising a shell, a base for supporting said shell, and a spring contact member for engaging a terminal of the vacuum tube mounted on said shell, said contact member having integral means constituting the sole means for fastening said shell to said base, an extension of said fastening means forming a wiring terminal integral with said contact member.

5. A contact member for a vacuum tube socket having a shell and a base, said contact member including opposed leaves of thin and springy sheet metal having contact ends adapted to engage substantially telescopically a terminal of a vacuum tube, said contact member having extensions adapted to constitute the sole means for fastening said member to such shell and said shell to such base.

6. A contact member formed of thin and flexible sheet metal and comprising a substantially U-shaped body which includes arms normally horizontally disposed and the free ends of which are formed to receive frictionally between them a pin-like terminal directed normally downward and extending transversely to the longitudinal direction of the body, the body having elongated surfaces spaced substantially apart and adapted to seat firmly upon a support at places similarly spaced apart, the body having integral leaf-like extensions associated with said base surfaces respectively and adapted to be bent over on the side of the support opposite to that on which the body is seated.

WALTER W. ROBINSON.