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M. F. SKINKER

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RECTIFIER ASSEMBLY AND MOUNTING

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*Fig. 1.*

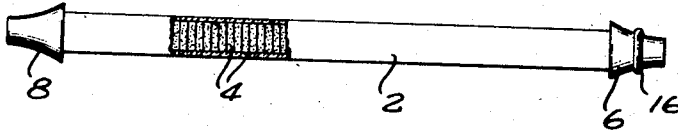


*Fig. 2.*

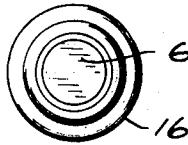


*Fig. 3.*

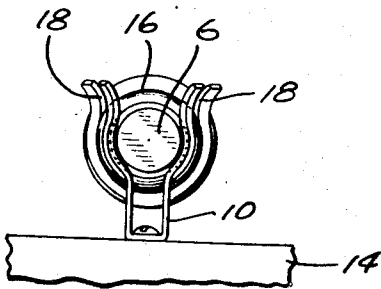
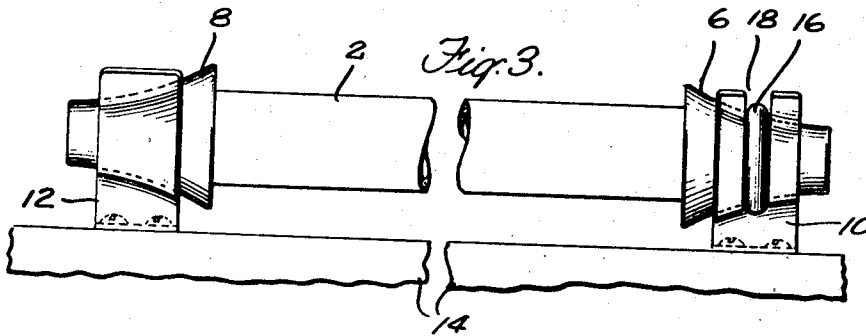


*Fig. 4.*

MURRAY F. SKINKER

INVENTOR

BY

*Donald R. Skinker*  
ATTORNEY

## UNITED STATES PATENT OFFICE

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## RECTIFIER ASSEMBLY AND MOUNTING

Murray F. Skinker, Montclair, N. J., assignor to  
Federal Telephone and Radio Corporation, New  
York, N. Y., a corporation of Delaware

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7 Claims. (Cl. 175—366)

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The invention relates to a rectifier disc tube, and especially to the mounting and supporting of such a tube.

It is well known to form a rectifier unit by arranging a stack of rectifiers within a ceramic tube, each rectifier being in the shape of a disc. Suitable end pieces are provided on the tube for conducting current to the discs, and for mounting the tube on a base. It has been usual to form these end pieces of substantially frusto-conical shape and to mount them in spring clips carried by the base. The end pieces on the opposite ends of the tubes have been alike.

There are two disadvantages in such an arrangement. Of course, when the rectifier unit is mounted in a circuit, it must have the proper polarity or the circuit will not operate in the intended manner. However, if the unit is removed from its clips for some reason, and then reinserted or replaced, the polarity may be reversed if the operator is at all careless.

In addition, even though frusto-conical end pieces are used, there is some possibility that the rectifier will slip endwise in the clips and thus fail to make proper contact at some point.

The primary object of the invention is to provide a rectifier unit, composed of a tube containing a stack of rectifiers and having end pieces, which cannot be inserted into a circuit with the wrong polarity. More particularly, the invention contemplates the construction of such a unit with differently shaped end pieces at least one of which is incapable of being assembled into rectifier unit supports in a position of reversed polarity.

A further object of the invention is to provide the combination of a rectifier unit of the type described and of supports therefor, these being so constructed and arranged that the unit can be placed in the supports in only one position so that reversal of the polarity is impossible. More specifically, the invention involves the use of differently shaped end pieces on the unit and of differently shaped spring clips, at least one of the clips being capable of receiving only one of the end pieces so that the tube can only be inserted into the clips in one position.

Still another object of the invention is to produce an arrangement providing the advantages described above and which, in addition, tends to prevent longitudinal movement of the tube in its supports.

While it is desirable that the tube be insertable in the supports in only one position so far as its ends are concerned, it is also important that the angular position of the tube around its axis should

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be immaterial during the insertion and holding of the unit on the support. In its specific form, therefore, it is an object of the invention to provide cooperating means on the tube and support which will permit insertion of the tube in the support when it is applied to the support at its proper polarity, no matter what the angular position of the tube around its axis may be.

Further objects and advantages of the invention will appear more fully from the following description, particularly when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings—

Fig. 1 shows in side elevation with parts in section a rectifier unit embodying the invention.

Fig. 2 is an end view thereof.

Fig. 3 is a side elevation of the unit and mounting therefor on an enlarged scale.

Fig. 4 is an end view of Fig. 3.

As shown in the drawing, the invention is used in connection with a rectifier unit composed of a tube 2 of porcelain or other insulating material which holds a column of rectifier discs 4. The discs on the ends of the column are electrically connected in the usual manner to the metallic end caps 6, 8 which are to be held by spring clips 10, 12 respectively mounted on a base 14.

The caps 6, 8 are preferably formed so as to have their surfaces defined by surfaces of revolution, and more especially as substantially frusto-conical surfaces tapering outwardly. One of the caps, 6, has a projection from its surface in the form of an annular ring or ridge, 16, pressed outwardly from the material of the cap or otherwise formed thereon. The other cap, at least in its corresponding region, is plain. The spring clips 10, 12 are of generally U-shape, having legs adapted to engage opposite sides of the spring caps. One only of the clips (10) has slots 18 extending downwardly from the free ends of the legs into which the ridge 16 can engage when the cap 6 is inserted into the clip.

With such an arrangement, the clips are so connected into a circuit that the rectifier will have the proper polarity where cap 6 is in clip 10. If, in assembling or replacing the rectifier unit, any attempt is made to insert the unit in the clips in a position of reversed polarity, ridge 16 will prevent cap 6 from entering spring clip 12, and thus will make an improper assembly impossible. On the other hand, when the unit is properly positioned, cap 6 can enter clip 10 since slots 18 receive ridge 16; and obviously cap 8 can enter clip 12. Since the caps are defined by

surfaces of revolution, the caps can enter the clips in any angular position around the axis of the rectifier unit.

While I have described herein the preferred embodiment of my invention, it is obvious that the shape, arrangement and location of the various parts may vary within the scope of the invention; and I wish it to be understood that I do not intend to be limited by the foregoing description except within the scope of the appended claims.

I claim:

1. A rectifier unit comprising a tube having a plurality of rectifiers therein, and having metal caps on its ends electrically connected to said rectifiers, said caps being substantially frusto-conical, and one of said caps having a radially extending annular ridge on its outer surface at a position at which the other cap is smooth.

2. In combination with a rectifier unit mount having spring clips for engaging opposite ends of a rectifier unit, a rectifier unit comprising a tube having a plurality of rectifiers therein, and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially freely rotatively held by said clips, one only of said clips having a slot therein, and one only of said caps having a radially extending projection thereon engageable in said slot, said projection preventing insertion of said cap in the other clip.

3. In combination with a rectifier unit mount having spring clips for engaging opposite ends of a rectifier unit, a rectifier unit comprising a tube having a plurality of rectifiers therein, and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially freely rotatively held by said clips, one only of said clips having a slot therein, said slot extending in a direction perpendicular to the longitudinal axis of a rectifier unit held by the clips and one only of said caps having a radially extending projection thereon engageable in said slot, said projection preventing insertion of said cap in the other clip.

4. In combination with a rectifier unit mount having generally U-shaped spring clips for engaging opposite ends of a rectifier unit, a rectifier unit comprising a tube having a plurality of rectifiers therein and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially, freely rotatively held by said spring clips and having their outer surfaces formed as surfaces of revolution, one only of said clips having slots in the opposite legs thereof extending longitudinally of said legs, and one only of said caps having a radially extending annular ridge on its outer surface engageable in said slots,

5. In combination with a rectifier unit mount having generally U-shaped spring clips for engaging opposite ends of a rectifier unit, a rectifier unit comprising a tube having a plurality of rectifiers therein and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially freely rotatively held by said spring clips and being substantially frusto-conical, one only of said spring clips having slots extending from the free ends of its legs longitudinally thereof, and one only of said caps having a radially extending annular ridge thereon engageable in said slots.

6. For assembly in a rectifier unit mount having generally U-shaped spring clips for engaging opposite ends of a rectifier unit, one only of said clips having slots in the opposite legs thereof extending longitudinally of said legs, a rectifier unit comprising a tube having a plurality of rectifiers therein and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially freely rotatively held by said spring clips and having their outer surfaces formed as surfaces of revolution, and one only of said caps having a radially extending annular ridge on its outer surface engageable in said slots.

7. For assembly in a rectifier unit mount having generally U-shaped spring clips for engaging opposite ends of a rectifier unit, one only of said spring clips having slots extending from the free ends of its legs longitudinally thereof, a rectifier unit comprising a tube having a plurality of rectifiers therein and having metal caps on its ends electrically connected to said rectifiers, said caps being adapted to be axially freely rotatively held by said spring clips and being substantially frusto-conical, and one only of said caps having a radially extending annular ridge thereon engageable in said slots.

MURRAY F. SKINKER.

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