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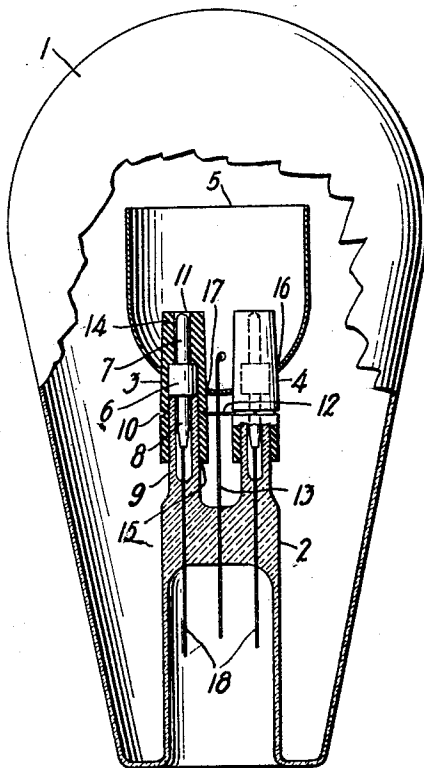
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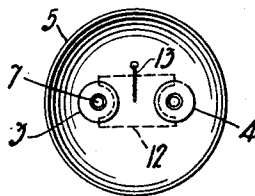
ELECTRICAL DISCHARGE DEVICE

Filed March 9, 1927

*Fig. 1.*



*Fig. 2.*



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## UNITED STATES PATENT OFFICE

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## ELECTRICAL DISCHARGE DEVICE

Application filed March 9, 1927. Serial No. 173,911.

This invention relates to electrical discharge devices and more particularly relates to an improvement in rectifiers for alternating current.

5 Rectifiers having two small anodes and a relatively large cathode are now old and well known. Some of these rectifiers utilize a hemispherical cathode having the two anodes facing the open side of the hemisphere and supported independently thereof.

10 An object of my invention is the provision of an improved rectifier construction whereby a rectifier of the above type may be cheaply and efficiently constructed.

15 Another object is the construction of a rectifier of relatively small dimensions.

I accomplish these objects by so arranging the several component parts of the rectifier that the cathode rests upon and is supported  
20 by the anode structures.

Other objects and advantages of my invention will be made clear by the following detailed description and accompanying drawings, taken in connection with the appended  
25 claims forming a part hereof.

The invention is illustrated in connection with a rectifier of the type disclosed in my copending application Serial No. 140,309.

30 In the drawings, Fig. 1 is a sectional view of a rectifier constructed in accordance with my invention. Fig. 2 is a plan view of the electrode structure of Fig. 1.

Reference numeral 1 indicates an envelope of glass or other transparent or translucent  
35 material, having an inwardly turned base portion 2 upon which is supported two anode structures 3 and 4 and a cathode 5. Cathode 5 is preferably made of aluminum, although, it is within the scope of my invention to use  
40 other material. The inwardly turned base portion 2 has attached thereto two tubular extensions 9 upon which the electrode structures are mounted. Electrode structures 3 and 4 consist of a conducting button having a base  
45 portion 6 with a point 7 and a rod 8 attached

thereto. This button is made preferably of carbon or nickel, but other conducting materials may be used. Rod 8 is seated within the bore of extension 9 and is surrounded by a sleeve 14 of lava, porcelain or the like, which  
50 has a perforation 15 in one end and a perforation 11 in the other end thereof. The sleeve 14 by virtue of the perforations secures the button in position relative to the extension 9 of inwardly turned base portion 2. Point 7  
55 fits closely within the perforation 11 but does not touch the walls thereof, due to being centered in the perforation by the base portion 6 which fits tightly into perforation 15 of the sleeve.

Cathode 5 is pierced by two holes 16 and 17 through which the anode structures 3 and 4 project. Sleeves 14 are tapered so that they will fit tightly within holes 16 and 17. Grooves 10 in sleeves 14 serve to accommodate a flat plate 12 which extends between the two sleeves. This plate 12 serves as a stop for preventing the cathode from sliding down on the anode structures too far. A leading-in wire 13 is connected to cathode 5 and passed  
65 downwardly through a hole in the cathode, and a hole in the plate 12 to the outside of the envelope. This wire 13 serves to hold the cathode 5 down upon the sleeves 14. A leading-in wire 18 is attached to rod 8 of each of the conducting buttons and extends to the outside of the envelope.

By constructing a rectifier in the manner disclosed herein, I obviate the necessity for a separate cathode support and also cause the cathode to approach the anodes more closely, thus reducing the overall dimensions of the rectifier structure.

While I have shown for the purpose of illustration a specific embodiment of my invention, I do not wish to be limited thereby as it will be evident to one skilled in the art that variations may be made in the materials used and the arrangement of parts, without a de-  
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parture from the spirit of the invention as set forth in the following claims.

What I claim is:

1. A rectifier comprising an envelope having an inwardly turned end portion, a tubular extension attached to the end portion, a conducting button having a base portion and a point, supported by said extension said base portion resting against the end of the extension, an insulating sleeve closely surrounding the said point and extending downwardly closely embracing the said base portion and a section of the tubular extension, an electrode having a perforation therein, said sleeve projecting within the perforation and serving as a support for the electrode.

2. An electrical discharge device comprising an envelope having an inwardly turned end portion, two tubular extensions attached to the end portion, a conducting button having a base portion and a point, supported by each of said extensions, said base portions resting against the end of the extensions, an insulating sleeve surrounding the said point and extending downwardly and closely embracing the said base portion and a section of the tubular extension, an electrode having two perforations therein, said sleeves projecting within the perforations and serving as a support for the electrode.

3. An electrical discharge device, comprising an envelope having an inwardly turned end portion, two tubular extensions attached to the end portion, a conducting button having a base portion, a point projecting from one side thereof and rod projecting from the other side thereof supported by each of said extensions, said base portion resting against the end of the extension and the said rod extending inside the said extension, an insulating sleeve closely surrounding the said point and extending downwardly embracing the said base portion and a section of the tubular extension, a hollow electrode having two perforations therein, said sleeves projecting within the perforations and serving as a support for the electrode, leading-in wires attached to the rods of the buttons and to the electrode and extending to the outside of the envelope through seals in the walls thereof.

4. A rectifier, comprising an envelope having an inwardly turned end portion, two tubular extensions attached to the end portion, a conducting button having a base portion, a point projecting from one side thereof and a rod projecting from the other side thereof, supported by each of said extensions, said base portion resting against the end of the extension and the said rod extending inside the said extension, an outwardly tapered insulating sleeve closely surrounding the said point but not touching the same and extending downwardly closely embracing the said base portion and a section of the tubular extension, a groove in each sleeve, a thin plate

extending between the two sleeves and supported by the grooves, a hollow electrode having two perforations therein, said sleeves projecting within the perforations and serving as a support for the electrode, leading-in wires attached to the rods of the buttons and to the electrode and extending to the outside of the envelope through seals in the walls thereof.

In testimony whereof, I have signed my name to this specification, this 2nd day of March 1927.

WILLIAM F. HENDRY.