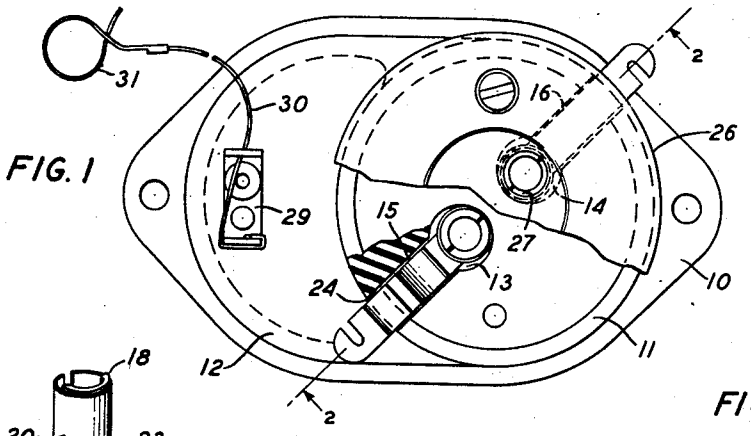
Oct. 4, 1932. E. SORENY 1,880,511

MOUNTING FOR ELECTRICAL DEVICES

Filed Oct. 25, 1930

FIG. 1



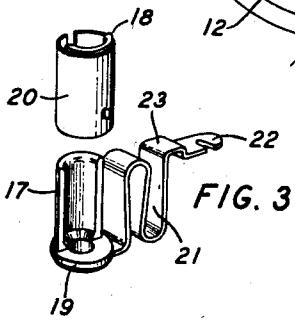


FIG. 3

FIG. 2

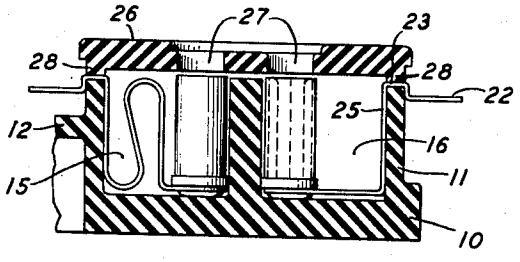


FIG. 4

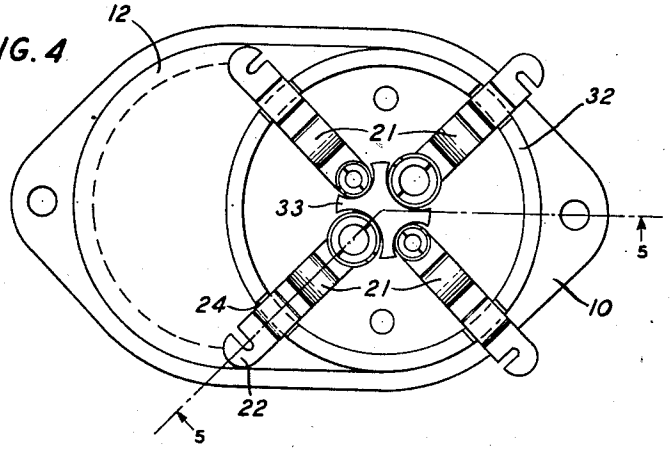
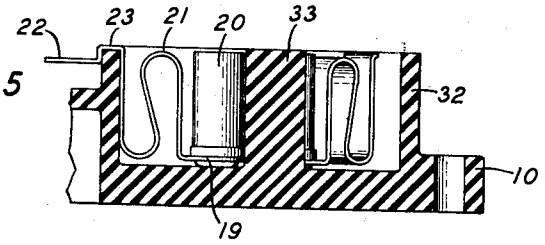


FIG. 5



INVENTOR
E. SORENY

BY
Walter C. Kiesel

ATTORNEY

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UNITED STATES PATENT OFFICE

ERNEST SORENY, OF NEW YORK, N. Y., ASSIGNOR TO BELL TELEPHONE LABORATORIES, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

MOUNTING FOR ELECTRICAL DEVICES

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This invention relates to mountings for electrical devices and more particularly to such mountings capable of withstanding currents of high magnitude.

An object of the invention is to reduce the contact resistance between the prongs of an electrical discharge device and the contacts in a mounting for supporting high current discharge devices.

In accordance with this invention a mounting for discharge devices comprises an insulting base having cut out portions forming cavities to receive the prongs of the device and radial slots extending to the wall of the mounting. These cut out portions form receptacles for the contacts which consist of a resilient loop spring lying in the radial slot having its flat surface transverse to the slot and a large surface split sleeve portion formed of two semi-tubular sections held in cooperative relation by an embracing resilient tube. The resilient spring portion of the contact at its outermost end is fitted into a groove in the wall of the mounting and a perforated disc securely fastens the contact in the mounting. This arrangement provides a large surface contact for the prongs of the device and is of particular benefit when exceedingly high current is supplied to the prongs of the device, since the contact withstands high temperature. The large surface and positive connection between the contacts and the prongs lower the contact resistance between these elements and corrosion is prevented.

Furthermore, this invention contemplates an arrangement of the contacts in the mounting whereby the contacts are not rigid with respect to the apertures through which the prongs of the device are inserted, but are allowed a limited movement in all directions to compensate for irregularities in the spacing of the prongs on the base of the device which are adapted to be engaged by the contacts in the mounting. This feature of the invention is accomplished by the loop spring portion normally holding the tubular contact portion against the central hub of the mounting so that the axis of the tubular contact is misaligned with respect to the cavity and the aperture in the closure member of the mounting. The split sleeve arrangement of the contact permits transverse movement of the contact with respect to the cavity and aperture so that for all practical purposes the contacts are substantially universally movable with respect to the spacing of the prongs on the device to be inserted in the mounting.

These and various other features of the invention will be more clearly understood from the following detailed description in connection with the accompanying drawing.

Fig. 1 is a plan view of the mounting made in accordance with this invention showing a portion of the cover broken away to show the assembly of the contact in the mounting.

Fig. 2 is a cross-sectional view in elevation of the mounting of this invention on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged perspective view of the contact shown in Figs. 1 and 2 showing the different portions of the contact.

Fig. 4 is a plan view of a modified form of the invention in which four contacts are employed instead of two as shown in Fig. 1, and

Fig. 5 is a view in cross section of the mounting shown in Fig. 4 on the line 5—5.

Referring to Fig. 1 of the drawing, the mounting for discharge devices made in accordance with this invention comprises an elongated base portion 10 having tapered ends provided with holes for attaching the mounting to a support and a circular elevated portion 11 in which are arranged the contacts to be engaged by the prongs of a discharge device. The mounting is preferably molded of insulating material, such as rubber or bakelite. The circular portion 11 is eccentrically arranged on the base 10 in order that a raised platform 12 may be formed at one end of the mounting. The circular portion 11 is substantially solid except across one diameter where two substantially circular cavities or receptacles 13 and 14 are formed on opposite sides of a central solid partition. A radial slot 15 having the same depth as the circular cavity 13 extends from the cavity to the side wall of the circular portion 11. A similar slot 16 extends in the opposite direction from

the cavity 14 to the outer wall of the portion 11. A high current carrying tubular contact is arranged in each circular cavity and is connected to a terminal member which extends beyond the edge of the circular solid portion 11.

The high current carrying contact, as shown in Fig. 3, comprises a metallic split tubular portion formed of two semi-cylindrical sections 17 and 18, the section 17 being formed integral with an annular base portion 19 and the section 18 being rigidly attached to a resilient metallic sleeve member 20. As shown in Fig. 3 the section 18 and the split sleeve 20 are shown in elevated position ready to be assembled with the section 17 shown directly below it. The base 19 of the tubular contact is spun over the end of a double loop resilient flat spring 21 having a terminal 22 at its free end and a hump portion 23 intermediate the terminal 22 and the adjacent loop of the resilient spring.

The assembly of the contacts in the mounting is shown clearly in Fig. 2 in which the tubular portion of the contact is arranged in the substantially circular cavity near the center of the circular portion 11 and the double loop resilient spring arranged in the slot. The terminal 22 extends to the exterior of the circular portion 11 and the resilient spring is locked in vertical position by the hump portion 23 being located in a slot 24.

When a discharge device such as a mercury rectifier having a cathode or filament adapted to be heated is associated with the mounting, only two terminals are required to receive the prongs which are connected to the filament. Furthermore, since the variation in spacing between the two prongs on the base of the device is not complex it is only necessary for one of the terminals to be universally yielding with respect to the prongs of the device. For this reason the tubular contact located in the cavity 14, while formed of the same elements as the tubular contact located in the cavity 13, is prevented from radial movement by the L-shaped terminal member 25 which extends along the bottom of the slot 16 and arises perpendicularly to form the hump portion 23 and the external terminal end 22.

It will be observed that the double loop resilient spring exerts a normal force against the tubular contact so that this contact is in engagement with the central solid portion or partition of the circular portion 11 whereby the axis of the tubular contact is misaligned with the axis of the substantially circular cavity 13. After the contacts are arranged in the cavities of the circular portion 11, a circular closure member 26 is fastened thereto by screws. This closure member is provided with a pair of apertures 27 arranged coaxial with the circular cavities 13 and 14 in the circular portion 11. The closure member 26 is also provided with a pair of oppositely disposed projections 28 which fit into the slots 24 and engage the hump portions 23 of the spring terminals.

When a rectifier device is inserted in the mounting, the terminals or prongs will enter the apertures 27 and engage the tubular contacts within the mounting. If any irregularity in the spacing of the prongs on the base of the rectifier occurs, this irregularity will be compensated by the misaligned tubular contact. Since the tubular contact in the cavity 14 is prevented from radial movement, this will cause the irregularly spaced prong to adjust the position of the tubular contact in cavity 13 in cooperative relation with the contact in cavity 14 without distorting the tubular contact within the mounting. At the same time, any irregularity in the diameter of the prongs on the rectifier device will be compensated by the yielding arrangement of the tubular contacts in the cavities. Furthermore, any eccentricity of the prongs on the base of the rectifier will be compensated by a transverse movement of the contacts in the enlarged circular cavities in the mounting. In this arrangement, the loop spring terminal portion of the contact forms a yielding connection which is not subject to undue strain and the split tubular contact portion provides a large surface contact for the prongs of the device or rectifier whereby the contact resistance is substantially reduced and the contact is capable of carrying current of high magnitude. Since the terminal of the anode of the rectifier is usually sealed through the opposite end of the device it is more convenient to provide a stationary terminal on the mounting to which external connection may be made. This is accomplished by fastening a rigid terminal punching 29 to the curved elevated portion or platform 12 on the base and connecting a flexible conductor 30 to the terminal and providing a closed clip 31 at the free end of the conductor so that it may be attached to the anode terminal on the device.

Fig. 4 shows a modification of the invention in which a plurality of contacts, usually four, are arranged in the mounting. The insulating base 10 is provided with a cylindrical shell 32 and a central hub 33, the hub having concave curvatures to receive the tubular contacts to be positioned in the mounting. In this arrangement two of the tubular contacts are made of large diameter to receive the terminal prongs connected to the cathode of an electron discharge device and are arranged to seat against the large curvatures of the hub 33 with the loop springs 21 extending in opposite directions toward the wall of the cylindrical shell 32. The smaller diameter tubular contacts are arranged at right angles with respect to the large diameter contacts and seat against the

small curvatures of the hub 33. These smaller contacts receive the prongs to which the anode and the grid of the device are connected and are also provided with the double loop springs which extend outwardly from the shell 32 to form terminal extensions. A perforated closure 26 similar to that shown in Fig. 2 except provided with four apertures is fastened to the cylindrical shell 32 and clamps the flat springs of the contacts between the projections 28 and the wall of the shell 32. In this arrangement all of the contacts are made universally yielding to compensate for irregularities in the spacing of the four terminal prongs on the base of the device inserted in the mounting. The function of the loop spring of producing a pressure on the tubular contacts to misalign the axis of the tubular contact with respect to the aperture in the closure member is the same as described in connection with Figs. 1 and 2.

It is, of course, understood that any number of contacts may be arranged in the mounting depending on the number of terminal prongs on the electrical device which is to be accommodated in the mounting. Furthermore, various changes may be made in the construction and assembly of the mounting as disclosed without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. A mounting for electrical devices comprising an insulating base having a portion arising therefrom, said portion having a solid central hub, a plurality of contact members abutting said hub, terminals attached to said contact members extending radially beyond said portion, a perforated cover plate engaging said terminals, and a separate terminal attached to said insulating base.

2. A mounting for electrical devices comprising an insulating base having a circular portion arising therefrom, said circular portion having a solid central hub portion, a plurality of expansible contact members abutting said hub portion, resilient terminal extensions on said contact members projecting radially beyond said circular portion, a perforated cover plate engaging said terminal extensions, and a separate terminal attached to said insulating base.

3. A mounting for electrical devices comprising an insulating base having a circular portion arising therefrom, said circular portion having a solid central hub portion, a plurality of tubular contact members comprising a split sleeve portion and an embracing resilient portion positioned close to said hub portion, terminal extensions on said contact members extending radially beyond said circular portion, and a perforated cover plate engaging said terminal extensions.

4. A mounting for electrical devices comprising an insulating base having a circular portion arising therefrom, said circular portion having substantially circular cavities adjacent the center thereof and radial slots extending substantially to the edge thereof, tubular contacts in said circular cavities, a flat plate positioned on said circular portion having apertures in register with said cavities, and a folded loop spring member arranged in one of said radial slots, said spring member exerting pressure on said contact member toward the center of said mounting.

5. A mounting for electrical devices comprising an insulating base having a circular portion arising therefrom, said circular portion having substantially circular cavities adjacent the center thereof and radial slots extending substantially to the edge thereof, tubular contacts in said cavities, a closure member on said circular portion having apertures in register with said cavities, and a double-looped spring arranged in one of said radial slots, said spring normally maintaining the axis of one of said tubular contacts in misalignment with the axis of the associated cavity and the aperture in said closure member.

6. A mounting having cavities adapted to receive the prongs of a discharge device in its upper surface, tubular contacts in said cavities having rigid semi-cylindrical portions and a surrounding resilient sleeve portion, and looped flat springs connected to said contacts, to compensate for irregularities in the spacing of the prongs on the discharge device.

7. A mounting for discharge devices comprising an insulating base having a circular portion a rising therefrom, a central hub within said circular portion having concave curvatures, a plurality of yielding tubular contacts abutting said curvatures, folded flat springs positioned radially between the wall of said circular portion and said contacts, and a closure member attached to said circular portion, said springs having an anchoring portion held between the edge of said circular portion and said closure member.

8. A mounting for discharge devices having an insulating base having a portion arising therefrom, said portion having a plurality of cavities therein, tubular contacts arranged in said cavities, a folded loop flat spring associated with at least one of said contacts, said spring member permitting radial movement of said contact, and yielding means associated with said contacts permitting transverse movement of said contacts.

In witness whereof, I hereunto subscribe my name this 21st day of October, 1930.

ERNEST SORENY.