Dec. 12, 1933. R. C. HARRIS ET AL 1,938,962

DOUBLE ELECTRODE TERMINAL

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Fig. 1.

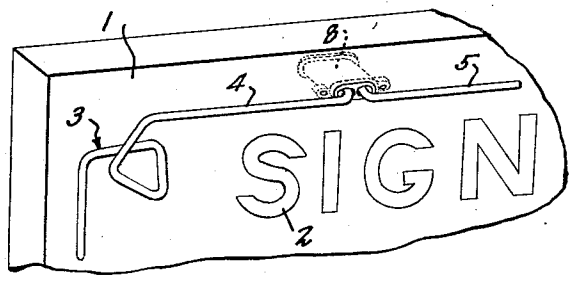


Fig. 2.

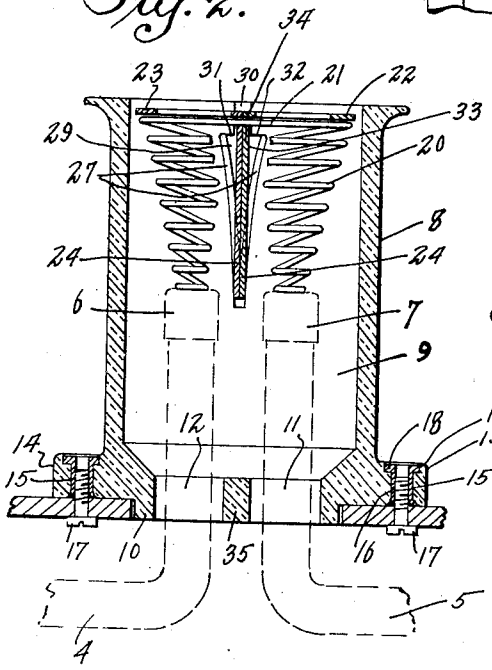
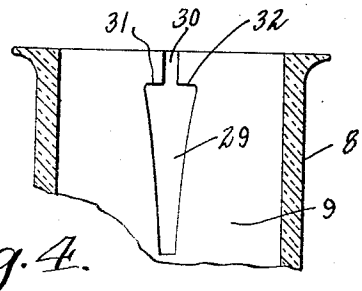


Fig. 4.



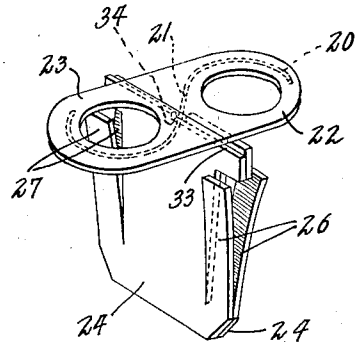


Fig. 5.

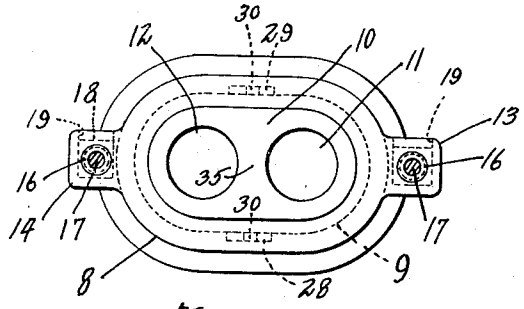


Fig. 3.

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DOUBLE ELECTRODE TERMINAL

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Application July 22, 1932. Serial No. 623,998

6 Claims. (Cl. 173—328)

Our invention relates to terminal housings for electrical devices and has particular reference to a terminal device for use in the construction of signs employing tubular lamps of the gaseous discharge type. In the construction of signs using tubular lamps of the gaseous discharge type, otherwise known as neon lamps, it is the practice to mount the lamps upon a suitable background member, the lamps being bent or otherwise formed into the particular configuration of lines, characters, designs, borders, etc., necessary to make up the desired sign indicia.

In view of the potential and current required for supplying the operating means of the tubular lamps, it is desirable that the indicia shall be made up of a number of relatively short lengths of tubular lamps rather than to have the indicia made from a lamp of great length. This characteristic is true even though the particular portion of the design or character under question is a substantially continuous line of considerable length, since even in this instance it is necessary that the line shall be made up of several units of lamps mounted end to end and each of the units being of relatively short length, the assembled structure forming a substantially continuous illuminated line necessary to carry out the motif of the indicia desired.

In the mounting of several units of lamps upon a sign, particularly in the formation of a single line or a single section of the indicia, it is difficult to obtain the appearance of a continuous line, particularly at the points at which the adjacent ends of the sections of tubing meet, since the space required for the housing of the electrode ends of the tube requires considerable length of tubing which cannot be readily employed in the formation of the illuminated line.

This spacing of the electrode ends is particularly undesirable when a separate electrode receptacle is used for each of the tubing ends of adjacent sections, since the housings in these are of considerable dimension and require considerable spacing in order to accommodate two of them mounted as closely together as it is possible to mount them.

To overcome this objection to the break in a line, it has been the practice to bend the electrode end of the tubing back upon the main body of the tube in such manner that the electrodes are spaced somewhat inwardly of the extreme ends of the illuminated line formed by the particular lamp so that the adjacent lamps may be mounted with their illuminated portions very close together, avoiding the appearance of an interrupted illuminated line while providing the necessary spacing between the electrode ends to permit them to be received in two separate single electrode receptacles. However, such bending of the tubing not only requires considerable spacing between the tubing and the background upon which the tube is mounted to accommodate the overlapping portions of the tubing, but also requires a greater length of tubing to form any particular section of the sign indicia, and further requires the formation of difficult bends in the ends of the tubing section.

It is, therefore, an object of our invention to provide a device for receiving the adjacent ends of two sections of tubing forming a sign indicia in which a tubular housing is provided with metallic inserts constituting a support for electrical contact terminals interconnecting the ends of the tubes inserted in the housing.

Another object of the invention is to provide a device of the character set forth in the preceding paragraph in which the contact supporting inserts may be readily inserted into the tubular housing and secured thereto.

Another object of the invention is to provide a device of the character set forth in the preceding paragraph in which the inserts may be placed in the receptacle housing by passing them through an open rear end of the tubular housing.

Other objects and advantages will be apparent from a study of the following specifications read in connection with the accompanying drawing, wherein

Figure 1 is a perspective view of a sign constructed of tubular lamps and employing a double electrode receptacle in accordance with our invention;

Figure 2 is a detail sectional view taken through one of the electrode receptacles constructed in accordance with our invention;

Figure 3 is a top plan view of the electrode receptacle shown in Figure 2;

Figure 4 is a detail perspective view of a strap connector employed with our invention; and

Figure 5 is a perspective view of the contact supports.

Referring to the drawing, we have illustrated in Figure 1 a sign construction employing a background or plate 1 upon which suitable sign indicia is to be provided. The sign indicia may be of any suitable character, either in the form of lines or characters painted upon the plate 1, as is indicated at 2, or the sign indicia may be outlined in tubular lamps of the neon type.

Suitable design characteristics may be pro-

vided for the sign, such as a border 3, formed of tubular lamps, which, when illuminated, will form a border line of illumination outlining the sign proper and enhancing the attractiveness of the sign. The border 3 is illustrated as being formed of a plurality of sections of tubular lamps, one of the sections being indicated by the reference character 4, another by the reference character 5, each of the sections being formed of any suitable, convenient length most desirable for the particular installation to which it is adapted.

It will be observed that in order to provide a continuous illuminated line for the border, it is desirable that the adjacent illuminated portions of the tubing should substantially abut each other, while it is necessary to interconnect adjacent sections of tubing 4 and 5 through their electrode ends 6 and 7, respectively. The interconnection of the electrode ends may be readily made by merely bending the electrode ends of the tubing at a right angle to the main body or illuminated portion thereof and inserting the same in a suitable electrode receptacle 8.

Referring particularly to Figures 2 and 3, it will be observed that the electrode receptacle 8 is formed of a tubular section of porcelain, or similar insulating material, the interior 9 of which is hollow and preferably has a cross section of which one axis is greater than the other axis so as to provide ample space for the two electrode ends 6 and 7 to be arranged side by side but avoiding excess dimension at portions where only the thickness of one electrode must be accommodated.

The chamber 9 extends entirely through one end of the receptacle, while the opposite end of the receptacle may be provided with a partial closure 10 illustrated as formed integrally with the body portion of the receptacle 8 and providing two relatively small openings 11 and 12 through which the electrode ends 6 and 7 may be admitted into the chamber 9.

The receptacle body is illustrated as being provided with a pair of radially extending ears 13 and 14 preferably arranged at opposite ends of the major cross sectional axis to provide means for attaching the receptacle 8 to the background member 1. Preferably each of the ears is provided with a longitudinal opening 15 adapted to receive a threaded bushing 16 constituting a nut receiving the ends of an attaching screw 17 which may be passed through the face of the background member 1.

Preferably, the rear end of the threaded tube 16 is formed with a square cross section, as indicated at 18, to be received in a similarly shaped enlargement 19 of the opening 15 to prevent relative rotation between the tube 15 and the receptacle when rotary motion is applied to the screws 17.

By referring particularly to Figures 2 and 4, it will be observed that when the electrode ends 6 and 7 are inserted in the receptacle 8, electrical interconnection is made between them through a contact device 20, preferably formed by a length of spring wire twisted into a pair of spiral helices interconnected at their rear ends by a straight length of wire 21. The contact member 20 is illustrated as being held in place by a pair of supports 22 and 23, illustrated particularly in Figure 5, each of the supports being formed from a piece of sheet metal bent into substantially a right angle, the vertical leg 24 of which is provided upon opposite sides with out-struck tongues 26 and 27 which are adapted to engage in recesses 28 and 29, respectively, formed upon the interior of the receptacle 8.

By referring particularly to Figure 4, it will be observed that the recess 29 is formed with a width tapering outwardly toward the rear end of the receptacle 8, but provided with a restricted channel 30 at the extreme end of the receptacle whereby a pair of shoulders 31 and 32 are formed against which the outer ends of the tongue 27 may bear.

Again referring particularly to Figure 5, it will be observed that in forming each of the angle supports the material is severed along the apices of the angle for a portion of the width of the support, as is indicated at 33, and preferably a small section of metal is removed at this point so that when the supports 22 and 23 are assembled back to back the slots formed by the removed sections overlap each other, as is indicated at 34, providing an aperture through which the interconnecting straight section 21 of the conductor wire 20 may pass. With the conductor wire 20 and the two supports 22 and 23 so assembled, they may be inserted into the receptacle by passing the side edges of the assembled supports through the channel 30 into the recesses 29 and 28, respectively, so that as soon as the tongues 26 and 27 have passed beyond the shoulders 31 and 32 of the recesses, they will spring outwardly to engage the point of these shoulders and prevent inadvertent removal of the supports from the receptacle.

It will be observed that except for the space occupied by the supports 22 and 23, the rear end of the receptacle is open, providing ample drainage for any moisture which may collect within the receptacle and providing ample space through which any debris which may collect in the receptacle may pass out of the receptacle without damage to the receptacle or the electrode ends.

It will also be observed that the adjacent ends of the tubing may be brought very close together so that the effect of an uninterrupted line is achieved, even though two separate sections of tubular lamp is required to form the line.

It will, therefore, be observed that we have provided an electrode receptacle which is of relatively small dimension, and yet will permit the insertion therein of two electrode ends of adjacent sections of tubing, while permitting the electrode end of the tubing to be spaced apart only such distance as is required to clear the relatively narrow partition 35 formed in the front end of the receptacle 8. Thus the tubing sections require only one right angle bend between the body of the tubing and the electrode ends thereof.

While we have shown and described the preferred embodiment of our invention, we do not wish to be limited to any of the details of construction shown herein, except as defined in the appended claims.

We claim:

1. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a narrow channel communicating with the end of said housing, and a metallic contact support having a pair of tongues formed thereon for passage through said channel and engaged in said recesses to lock said support in said housing.

2. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing

formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a narrow channel communicating with the ends of said housing, a metallic contact support having a pair of tongues formed thereon for passage through said channel and engaged in said recesses to lock said support in said housing, and a contact spring carried by said support extending into said housing.

3. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a channel communicating with the end of said housing, a metallic contact support comprising a pair of angle members assembled back to back, each of said angle members being provided with a pair of tongues for passage through said channels and engaged in said recesses to lock said support in said housing.

4. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a channel communicating with the end of said housing, a metallic contact support comprising a pair of angle members assembled back to back, each of said angle members being provided with a pair of tongues for passage through said channels and engaged in said recesses, and a contact spring carried by said support comprising a pair of helices having means interconnecting one of said helices with one end of the other of said helices and said interconnecting means passing through the adjacent back portions of said supports.

5. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a channel communicating with the end of said housing, a metallic contact support comprising a pair of angle members assembled back to back, each of said angle members being provided with a pair of tongues for passage through said channels and engaged in said recesses, said contact support having an opening formed through the adjacent backs of said supports for receiving therein the interconnecting portion of said contact springs.

6. In an electrode receptacle for receiving electrode ends of tubular lamps, a housing formed of insulating material having a longitudinal chamber extending from one end thereof toward the other end, a pair of recesses formed in the interior walls of said chamber, each having a channel communicating with the end of said housing, and a metallic contact support comprising a pair of angle members arranged back to back, each of said members being provided with a pair of tongues for passage through said channels and engaged in said recesses, each of said angle members having a cut-out portion at the angle thereof for a distance in excess of one-half the width of said member to provide an opening through the assembled backs of said members, and a contact spring having a pair of helices interconnected at one of their ends, said interconnection portion passing through said opening.

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