Sept. 21, 1926. 1,600,595

P. F. J. LEBRUN

ELECTRODE FOR LUMINESCENT TUBES

Filed Sept. 8, 1925

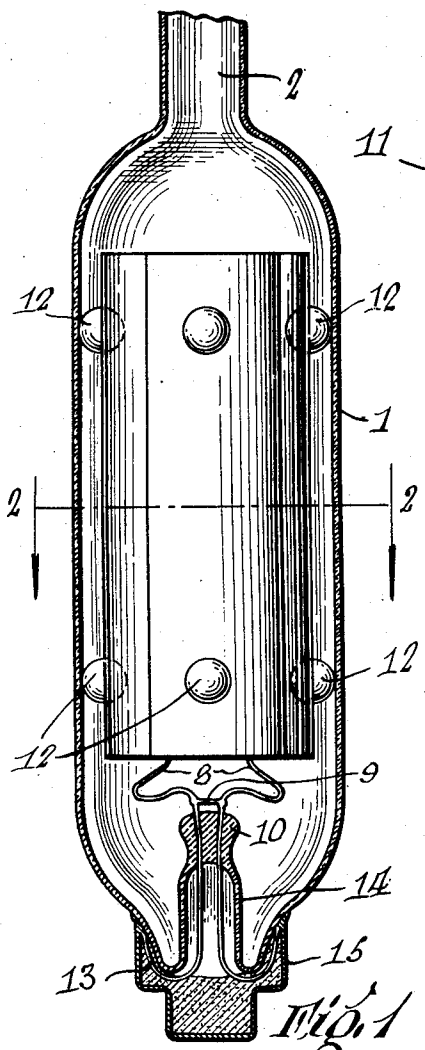


Fig. 1

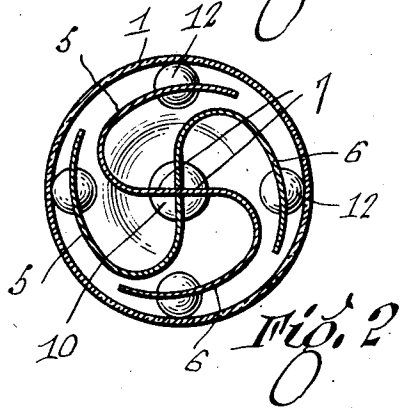


Fig. 2

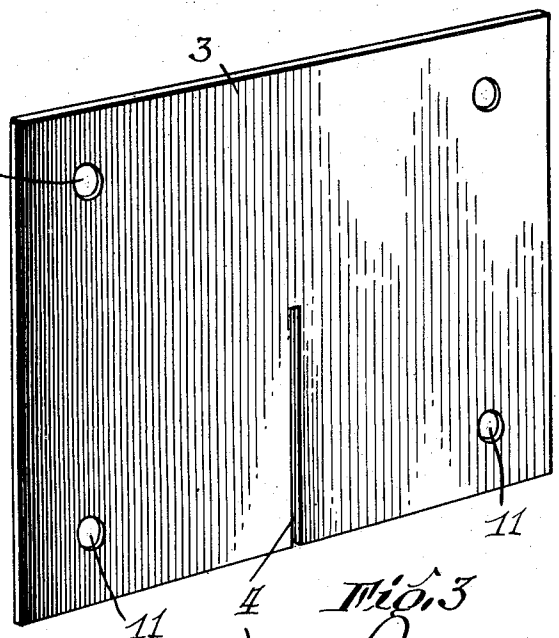


Fig. 3

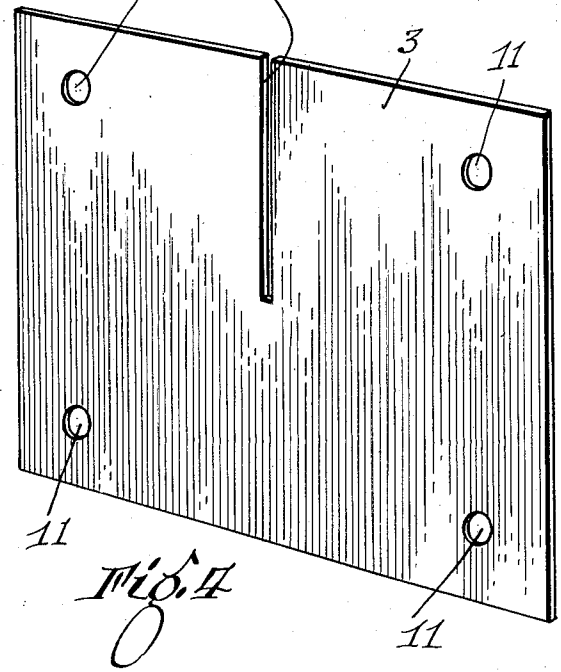


Fig. 4

Inventor

Paul F. J. Lebrun

By William Clinton

Attorney

Patented Sept. 21, 1926. 1,600,595

UNITED STATES PATENT OFFICE.

PAUL FRANÇOIS JOSEPH LEBRUN, OF PARIS, FRANCE, ASSIGNOR OF ONE-HALF TO MAURICE JULES QUEDRUE, OF MONTREAL, CANADA.

ELECTRODE FOR LUMINESCENT TUBES.

Application filed September 8, 1925. Serial No. 55,102.

The present invention pertains to a novel lamp for luminescent tubes employed in the manufacture of luminescent signs consisting of a suitably bent glass tube filled with a conducting gas and having an electrode at each end.

The object of the invention is the provision of a device designed for application to the ends of a luminous tube and containing the electrode.

The device comprises a bulb which is completely sealed except where it is connected to the luminescent tube. The electrode contained within the bulb consists of a pair of metallic plates which intersect with one another and are connected to conductors passing through the wall of the tube and adapted to receive current from a convenient source.

A particular feature of the invention is that the plates are bent sinuously, preferably being substantially S-shaped in cross section. This construction affords a larger electrode area for a given size of chamber than would be possible if the plates were merely flat. The increased surface of the electrode provides a more intimate contact between the current and the gas within the bulb and allows more rapid dissipation of the heat of resistance. The plates are insulated from the bulb by means of balls received in apertures formed in the plates.

The invention is fully disclosed in the following description and in the accompanying drawings in which:—

Figure 1 is a longitudinal section of the electrode showing the interior parts in elevation;

Figure 2 is a cross section of the electrode on the line 2—2 of Figure 1; and

Figures 3 and 4 are perspective views of the conducting plates.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The electrode comprises a bulb 1 connected or adapted for connection at one end to a luminescent tube 2 of a display sign. Luminescent tube signs are already well known in the art and are constructed by bending a glass tube into the script or design to be displayed. The tube is filled with a gas such as argon, helium or neon and is provided with a lamp or electrode at each end. When current is applied to the lamps or electrodes, it also flows through the gas in the curved tube and produces a luminous colour which is determined by the nature of the gas contained within the tube.

According to this invention the electrode contained with the bulb 1 comprises a pair of plates 3 each having a slot 4 extending from the midpoint of one edge perpendicularly to the centre of the plate. The plates are then fitted together by means of the slots so that the slot of each plate lies in alinement with the slot in the other plate, whereby the height of the assembly is equal to the height of each plate.

The ends of each plate lying parallel to the alined slots are curved in opposite directions as indicated by the numerals 5 and 6 in Figure 2. The intermediate portion of each plate is allowed to remain straight as shown by the numeral 7. The result of bending the plates in this manner is that each plate acquires substantially the cross section of an S.

The end of the bulb not connected to the luminescent tube is open before the electrode is inserted. After the plates have been bent as described, conductors 8 are secured thereto and preferably joined by a bridge 9. The intermediate portion of the conductors is surrounded by an insulating bushing 10 properly secured thereto. The plates have apertures 11 in their corners adapted to receive spacing balls 12 consisting of glass, quartz or other vitreous material. The balls are now placed in the apertures and the electrode is inserted within the bulb 1. The balls bear against the inner wall of the bulb and thereby hold the electrode spaced and insulated from the bulb.

The ends 13 of the conductors are now passed around the open end of the bulb and secured to the outer wall thereof. A jet or torch is applied to the free edge of the bulb in order to form an interior tube 14 which at the same time is welded to the bushing 10. Finally, a plug 15 is applied over this end of the tube and secured to the ends 13 of the conductors 8. The plug is of such shape that it may be inserted in an appropriate socket to receive current therefrom.

The plates 3 may consist of any suitable metal and their thickness may be determined according to particular requirements. The

material of which the plates are made is preferably extra pure sheet iron. The curvature of the plates provides a greater discharge of surface for a bulb of a given size than is possible with merely flat plates. A better distribution of current within the bulb and consequently a more intimate contact between the current and the conducting gas is thus obtained. A further advantage of the larger surface of the plates is that the heat of resistance is more rapidly dissipated whereby the lamp is less likely to become overheated.

It has been found in practice that an electrode constructed in this manner has a life of 10,000 hours or more. At the end of this period the electrode is recharged with gas.

While a specific embodiment of the invention has been illustrated and described, it is to be understood that various alterations in the details of construction may be made without departing from the spirit of the invention as indicated by the appended claims.

Having thus fully described the invention, what I claim as new and desire to protect by Letters Patent is:—

1. An electrode for luminescent tubes comprising a bulb adapted for communication with a luminescent tube, a pair of intersecting conducting plates contained in the bulb and spaced from the walls thereof, said plates being sinuously bent, a current conductor connected to said plates, said bulb being completely sealed except where it communicates with the luminescent tube.

2. An electrode for luminescent tubes comprising a bulb adapted for communication with a luminescent tube, a pair of intersecting conducting plates contained in the bulb and spaced from the walls thereof, said plates being substantially S-shaped in cross section, a current conductor connected to said plates, said bulb being completely sealed except where it communicates with the luminescent tube.

In witness whereof I have hereunto set my hand.

PAUL FRANÇOIS JOSEPH LEBRUN.