

Fig. 1.

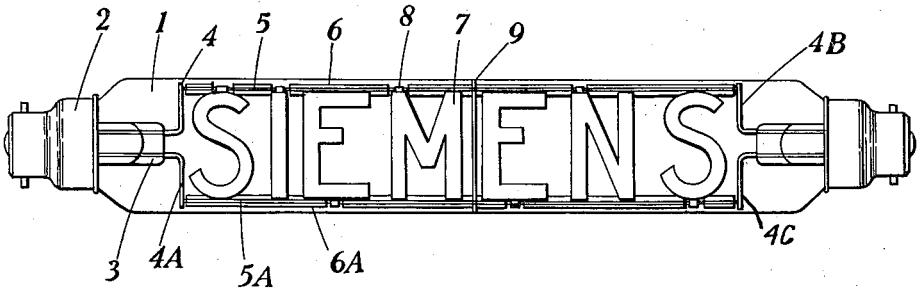
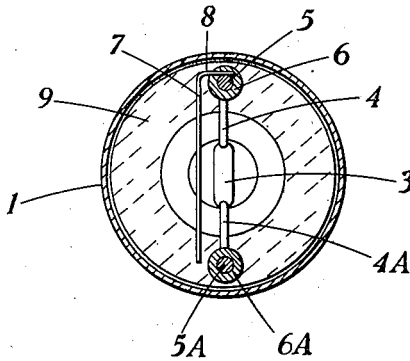


Fig. 2.



Percy D. Oakley
John N. Aldington
INVENTORS

BY *Louis H. Carreau*

ATTORNEY

UNITED STATES PATENT OFFICE

2,017,726

ELECTRIC CATHODE GLOW DEVICE

Percy Dale Oakley and John Norman Aldington,
Ashton-on-Ribble, England, assignors to Siem-
mens Electric Lamps and Supplies Limited,
London, England, a British company

Application February 21, 1934, Serial No. 712,370
In Great Britain February 25, 1933

3 Claims. (Cl. 176—14)

This invention relates to electric cathode glow devices and has for its object an improved sign in which characters, or representations, are arranged in sequential formation or in line.

5 In particular the invention has in view an improved device for use with alternating current. In such devices it is desirable that the characters or representations should glow with even luminosity and as little as possible show the flickering due to the current alternations. Where the characters or representations are all attached to one bus bar, or feeding electrode, the characters are illuminated only at each alternate half cycle of the alternating current supply, and as the characters or representations must be arranged adjacent to a second bus bar or electrode, this latter would glow at the other alternate half cycle giving an undesirable result.

10 The running current value of a device depends upon the surface area of the characters and the intensity of glow required as consistent with the life of the device, the running current value being limited by the inclusion of a resistance in series with the device. Thus it will be appreciated that unless the surface area of the second bus bar approaches the surface area of the characters or representations then during the period when the former is acting as cathode it would not only give an undesired cathode glow, but owing to its smaller surface area would be overloaded and tend to produce a premature blackening of the container.

15 In the present invention in such a device the characters are attached some to one bus bar and some to another bus bar, the bus bars being connected to the alternating current supply, so that the characters on one bus bar act as opposite electrodes to the electrodes on another bus bar. In order to obtain an even illuminating effect of the characters the surface area of the characters attached to each bus bar should be substantially the same. It can of course be arranged that the characters on one bus bar glow with a greater intrinsic brilliancy than the characters on the other bus bar. As before mentioned the running current of a tube is limited by a resistance in series with the device, and therefore, if the total surface area of the characters attached to each bus bar, and of the individual characters, is substantially the same, then all of the characters will glow with substantially the same brilliancy. However, if the surface areas of the characters on the different bus bars are different, then the smaller number of characters will give a greater intrinsic glow,

and this inequality of glow can exist provided that the characters of the smaller total surface area are not overloaded.

The bus bars need not be straight but may be curved or shaped to give any desired sequential formation of characters, or more than one pair of bus bars may be used.

The bus bars may be supported by wires branching out of glass feet sealed into the opposite ends of the container enclosing the characters, the bus bars being spot welded to the wires which may be insulated.

The bus bars may be insulated except at the points where the characters are attached, the insulation suitably taking the form of glass tubing.

A current limiting device may be contained in one or both of the connecting caps.

The bus bars may be supported along their lengths by supports bearing on or depending from the walls of the tube.

The tube is exhausted of air and filled with a rare gas or mixture of gases with or without the presence of a metallic vapour or volatile element.

In order that the invention may be more clearly understood reference should be made to the following description read in conjunction with the accompanying drawing which is given by way of example. In the drawing Fig. 1 shows a front view of a device, and Fig. 2 a slightly enlarged and sectional view taken between two of the characters such as the letters E and N.

The container 1 shown tubular is of plain or suitably colored glass or other suitable translucent material and terminates at each end in a single point bayonet cap 2, and from the connecting point of each cap extends a connecting wire 4 and 4A, firmly sealed into and passing through the feet 3, of the container. Within each foot is also sealed a supporting wire 4A and 4B, and each of the wires 4, 4A, 4B, 4C is bent at right angles to itself so that the free ends of adjacent pairs 4, 4A and 4B, 4C are substantially at 180° to each other and lie on the same line. The wires 4 and 4B support a bus bar 5, and the wires 4A and 4C support a bus bar 5A, the wires encircling the ends of the bus bars and being spot welded thereto. The bus bars are preferably of nickel. The wires and the joints with the bus bars are coated with insulation such as a ceramic, cement, or enamel.

The characters 7, are made from thin sheet metal and each is provided with a tongue 8 which is bent at right-angles to the plane of the character and spot welded to one of the bus bars.