Aug. 16, 1932. W. P. DRURY 1,872,428

LUMINOUS TUBE SIGN LETTER

Filed April 26, 1930

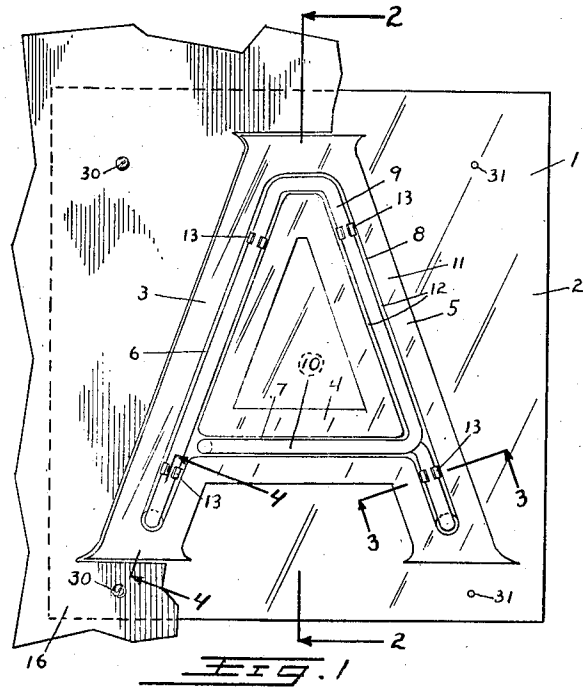


Fig. 1

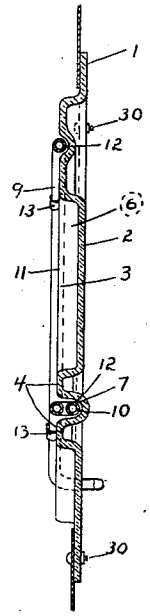


Fig. 2

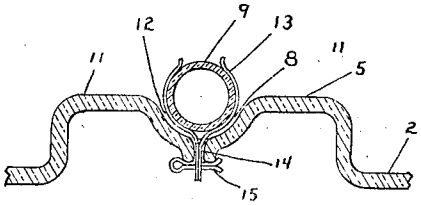


Fig. 3

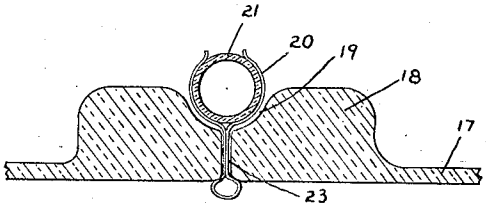


Fig. 4

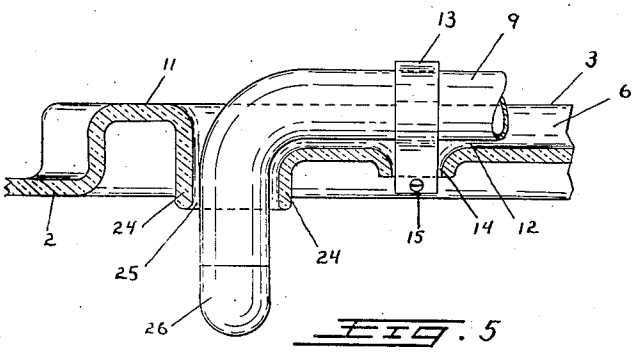


Fig. 5

INVENTOR

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UNITED STATES PATENT OFFICE

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LUMINOUS TUBE SIGN LETTER

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This invention relates to a luminous tube sign letter and the object thereof is to provide a mounting for a discharge tube letter which will provide an insulating support for the tube, will be free from the unsightly mounting devices now used, which will provide protection for the tube from the various influences tending to break the same in use and also to provide for a novel and attractive effect and overcome certain detrimental effects in the prior art devices.

The prior practice in mounting discharge tubes on signs was to secure them by insulators at a distance of from one half inch to two inches from the nearest metal. The electrode terminals turn backward and enter the sign thru glass or porcelain bushings. Due to the high voltage used and the liberal clearances that necessarily must be provided because of inaccuracies in manufacture, quite large and unsightly bushings are used. The entire make up of such devices is awkward in the extreme, the tubes are liable to breakage from many influences and the cost of shipping is excessively high.

The necessity of allowing insulating clearances and the various other limitations inherent in the type of construction has also prevented the use of channels on the letters as was customary in the prior art, incandescent lamp signs. For that reason considerable light is cast upon the body of the sign. This is objectionable as it detracts from the readability of the letters. Dust, rain, fog or snow in the atmosphere also contribute to reducing the readability by becoming illuminated by the light passing to the sides of the letters.

In the present invention due to the insulating quality of the letter itself, the tube may be mounted directly in contact with the letter. Thus the insulators for supporting the tube away from the letter are disposed of and the letter itself being provided with openings for the electrode terminals, the insulating bushings are eliminated. The tube may be recessed into the letter as in the preferred form of the invention illustrated, thus preventing any light from reaching the body of the sign and also overcoming almost completely the halation effects in the atmosphere around the letter. However, as it is desirable that the letters have an illuminated stroke of a width equeal to that customary with the prior devices, I accomplish this end without the necessity of positioning the tube a distance from the face of the letter. I have found that if a letter be made of glass having the optical characteristics of "white" or "opal" glass and the tube be set into a recess formed from the surface of the letter back into the body thereof, the letter will be illuminated in a very satisfactory manner by light transmitted thru the body of the glass directly from the tube and scattered from innumerable points within the glass.

Thus the tube and letter alone are illuminated and all light is cut off from reaching the body of the sign. The effect of this device is particularly attractive and has strong advantages over the optical effect of the prior devices. It is to be noted that light reflected from a painted surface is brightest at certain angles depending on the degree of luster that the surface has. These angles are usually those out of the range of ordinary view and thus considerable light is lost. However, if the surface be painted with a dull finish it becomes coated with dirt in a short time. In the instant invention this is overcome as the redirecting of the rays of light takes place within the body of the glass and produces an attractive, soft and uniform glow that never changes.

Further advantages are secured in this invention in providing a unit which can be shipped with facility and without danger, one which provides protection for the tube when mounted in the sign from the various influences tending to break the tubes, such as hail stones, frost, etc., and one which is a complete electrical unit without additional insulating means.

Other objects of the invention will be apparent from the following description:

An embodiment of the invention is shown in the accompanying drawing in which the same reference numeral refers to the same part whenever shown in more than one view

Figure 1 is an elevation of a letter made

according to this invention showing a discharge tube in position and a portion of the body of the sign in which the device is illustrated as mounted.

Figure 2 is a sectional view of the letter shown in Figure 1 taken on the line 2—2, Figure 1.

Figure 3 is a cross section of a stroke of the letter shown in Figure 1 taken on the line 3—3, Figure 1.

Figure 4 is a cross section of a modified form of this invention to illustrate a letter formed from a moulded mass of glass.

Figure 5 is a sectional view of a portion of the letter shown in Figure 1 taken on the line 4—4, Figure 1.

In the drawing, numeral 1 indicates a letter made according to this invention, having the plate 2, from which are pressed the strokes 3, 4 and 5 comprising the strokes of the letter "A". Into the strokes are pressed the grooves 6, 7 and 8 which are intercommunicating and form the character recess into which the discharge tube 9 is positioned. The groove 7 is recessed deeper than the others to allow the return bend portion 10 of the cross stroke of the letter to set in deeper than the other portions of the tube thus providing for the center of the tube proper falling in the plane 11 of the face of the strokes. One half of the tube is thus sheltered from rain, hail stones, etc., the exposed portion being convex easily sheds water and offers no lodgement to hail stones.

It is not desired however that the letter contact directly with the glass but it should have a small clearance to allow for irregularities in manufacture. Thus the tube is supported by the clips 13, 13, etc., which support it in a flexible manner and a slight distance from any surface of the glass leaving a space indicated by numeral 12 in the various views around the tube. Any suitable type of clip may be used but I prefer to use a flat spring bent into suitable shape and passed thru an elongated opening pressed thru the plate as indicated at 14 and held by a cotter pin 15, Figure 3. An alternative type of clip is shown in Figure 4.

Now it is to be observed that the tube is so positioned that no rays of light can reach the background of the sign which in Figure 1 would correspond to the sheet of metal indicated by 16. If desired the edges of the raised strokes may be painted but this is not necessary as the amount of light that will be radiated from the edges toward the background is too small to be a factor. The form of the letters are cut from the background and the letters are secured thereto by bolts as indicated by 30, 30, etc., passing thru holes 31, 31, etc., in the letter plates. It is also to be observed that an appreciable proportion of the light emitted by the tube is transmitted into the edge of the glass and thus illuminates the stroke of the letter by virtue of that portion of the radiation that is reflected back towards the sign in the prior devices.

While I prefer to press the letter from a sheet of glass, a satisfactory letter may also be formed by moulding a solid block of glass as shown in Figure 4. In this view, 17 indicates the letter plate proper; 18, the raised stroke; 19, the groove for the tube; 20, the clip for supporting the tube; 21, the tube; and 23, the opening thru the glass for the clip.

In Figure 5 I illustrate the manner of forming the terminal openings for the ends of the tube. The material of the plate is pressed back as at 24 leaving an opening 25 thru which the electrode terminal 26 of the tube extends. Any suitable electric connection may be used inside of the sign to supply current to the tube. It is here to be noted that the glass plate itself takes the place of the customary porcelain bushing, and whereas in the prior devices the bushing presents an awkward element in the sign, this terminal is entirely concealed.

It is to be understood that this letter may be mounted in any desired fashion into an electric sign as this invention is not limited to any particular type of mounting. By way of suggestion three types of construction are here set forth making use of this invention:

First, the entire plate as shown in Figure 1 with the tube mounted may be assembled in a frame with other letters, dispensing with the background.

Second, the letters may be mounted into a sign face as shown in Figure 1 with the background cut out to the form of the letter, only the raised portion with the tube being exposed.

Third, the letters may be made without the plate, that is in skeleton form, and bolted onto the front of the background, holes being provided in the background only for the terminals which pass to the inside of the sign, and of course for suitable bolts to hold the letter in place.

Having thus described the preferred form of my invention it is to be understood that it may be embodied in many other forms and is thus to be limited only by the following claims.

What I claim is:

1. In an electric sign, a sheet metal background, an opening thru said background having the form of a character, a body of dielectric material closing said opening and having a tube light in the general form of said character secured thereto and out of contact with said background, said tube light having a pair of terminals extending backward into suitable depressions in said body of dielectric material and means

on the back of said body to make contact with said terminals.

2. In an electric sign, a sheet metal background having an opening in the general form of a character, a body of dielectric material having a raised portion in the general form of said character said raised portion extending thru said opening, a depression in the face of said raised portion having the general form of said character and a tubular light positioned in said depression in said raised portion.

3. In an electric sign, a sheet metal background having an opening in the general form of a character, a body of dielectric material having a raised portion in the general form of said character said raised portion extending thru said opening, a depression in the face of said raised portion in the general form of said character, there being a pair of openings thru said body terminating in said depression, and a tubular light in the general form of said character, formed to fit said depression and positioned therein said light having two terminals disposed to pass thru said openings.

4. In an electric sign, a luminous character including a body of glass having a depression in which is disposed a luminous tube light, said light having the general form of a character at least one stroke of which is doubled back under itself the character in general being represented by strokes of tubing that lie in a single plane, said depression being of varying depth and of such values that in those portions of the character represented by a single stroke of tubing the depression just allows the tube to become partly concealed in said depression and in that stroke in which the tubing is doubled under itself the depression allows the doubled under portion of the tubing to be completely concealed and the other portion to be partly concealed by the walls of the depression.

5. In an electric sign, a sheet metal background, an opening thru said background having the general form of a character, a body of dielectric material having a raised portion also in the form of said character and extending thru said opening, there being a pair of openings thru said body for the reception of the terminals of a tube light and additional openings thru said body for the reception of fastening means to secure a tube light thereto, and a tube light also in the general form of said character secured to said raised portion by suitable fastening means passing thru the last said openings and having a pair of terminals extending thru the first said openings, said tube light being wholly out of contact with said background.

6. In an electric sign, an opaque background having an opening in the general form of a character, a body of dielectric material having a raised portion in the general form of said character said raised portion extending thru said opening, a depression in the face of said raised portion having the general form of said character and a tubular light positioned in said depression in said raised portion.

In testimony whereof I affix my signature.

WILLIAM PAUL DRURY.