April 19, 1938. B. VANDERMEER 2,114,550

LUMINOUS GLASS LETTER SIGN

Filed Feb. 4, 1937

Fig. 1

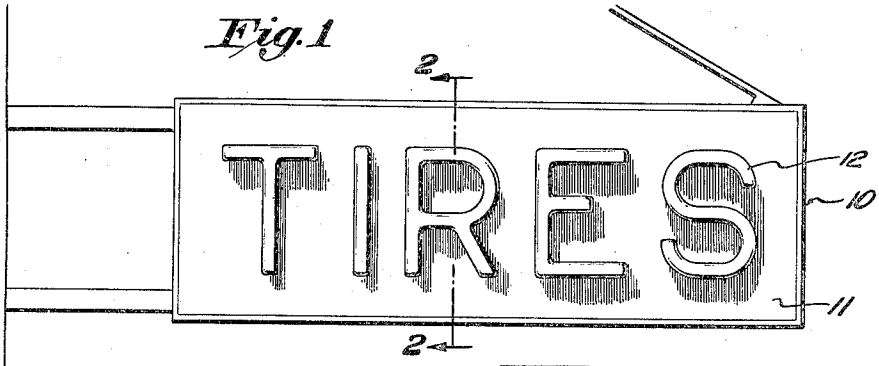


Fig. 2

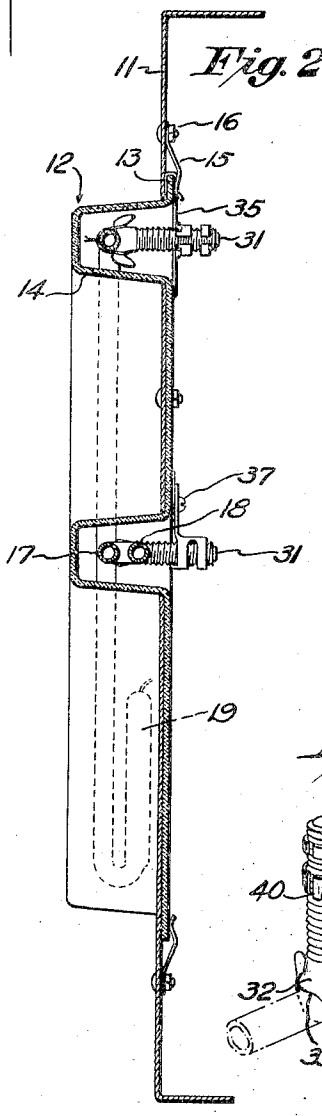


Fig. 3

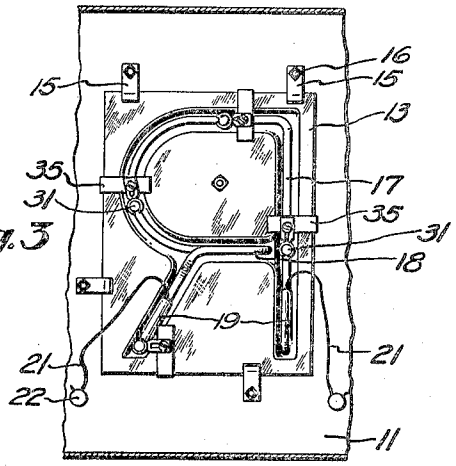


Fig. 4

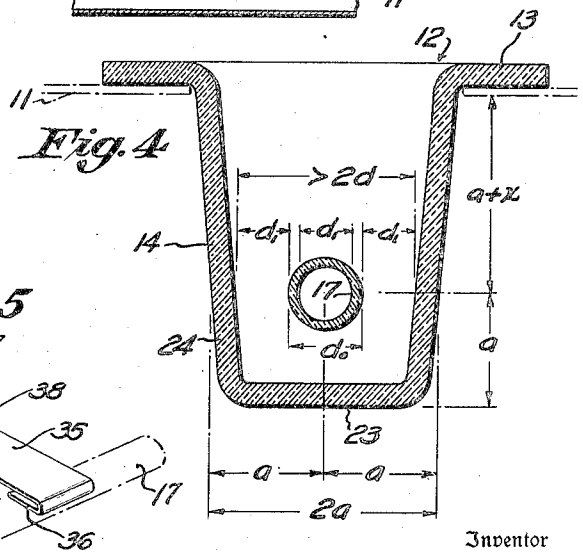
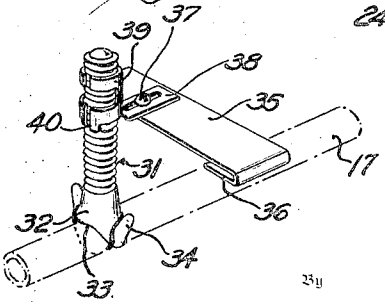


Fig. 5



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2,114,550

LUMINOUS GLASS LETTER SIGN

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5 Claims. (Cl. 40—130)

This invention relates to luminous letter signs, and particularly to signs in which a neon or similar luminous tube is associated with a raised sign character of glass or like material in such fashion as to provide a character or sign suitable for both daytime and night display.

Heretofore, it has been customary in the art to which this invention relates to provide a luminous sign by forming a neon tube into the shape or contour of the character or word which is to be displayed,—the illumination of such sign being effected by electrical means which form no part of the present invention, and hence need not be dwelt upon here. It has also been customary to form sign characters of translucent glass, commonly called "raised glass" letters, although frequently such letters may be recessed rather than elevated above the plane of the sign. Such letters, for many years, were illuminated by ordinary electric lamps, and, with the advent of the neon tube as a readily available article of commerce, there have been a number of proposals to replace the older electric lamps with the tubes, thus giving to the sign some of the characteristics which are peculiar to ionized gas illumination.

The general idea of combining neon tubes and glass letters has not, however, resulted in the full attainment of the desired results. There are, for example, controlling objections to a number of such proposals, because of the blurring of the sign character by the transmitted light. Another type of failure which militates against public acceptance is due to an inability to read the sign from an acute angle. That is, a person approaching the sign must be very close to it, and view it at an angle approaching the perpendicular to the sign face in order to determine its full context. As these signs are frequently used for advertising purposes, and must make a quick and somewhat impressionistic appeal to the passerby, it will be understood that the matter of visibility from an acute angle is therefore of considerable importance. Other factors include cost, both as to initial cost and ease of repair and replacement of worn-out parts of the sign.

The present invention has, as its primary object, the devising of a day and night sign character which, while inexpensive to manufacture, nevertheless gives a clear and sharp image from acute angles, and includes neon tube means so disposed within the character as to provide well-defined and optically attractive illumination. Another object of the invention is to devise such a sign character which may be readily mounted or removed for repair purposes, and in which the light source may be quickly brought into a "focus" to produce the effects just referred to.

To these ends, the invention comprises a glass sign character, adapted to be mounted with like characters on a suitable frame, in which the body portion is elevated above the sign face, and approximates, except for a slight taper, a rectangular body in cross section. The cavity of the letter is adapted to receive a neon tube, bent to follow the contour of the character, and to be mounted therein to form a substantially unitary assembly, in which the dimensional relations between the character and tube are such as to effect proper illumination.

The invention may be described in greater detail by the following description, in which reference is made to the accompanying drawing, wherein:

Fig. 1 is a side elevation of a sign including the present invention;

Fig. 2 is a section, drawn on an enlarged scale, on the line 2—2 of Fig. 1, and showing the tube within the raised portion of the sign character;

Fig. 3 is an elevation of the rear side of a sign character mounted in the sign of Fig. 1, and showing in greater detail how the character is mounted in the sign body, and the tube is mounted in the character;

Fig. 4 is an enlarged transverse section of a sign character, illustrating the relations between the parts which are best adapted to achieve the objects of the invention; and

Fig. 5 is a perspective view of a tube support and bridge for securing the tube to the character.

The sign shown in Fig. 1 comprises a sheet metal body 10, which may be, as is customary in the art, in the form of a hollow box containing between the walls 11 thereof the wires, transformers, and like paraphernalia required for the necessary electric circuits. The wall 11 is partially cut away, during manufacturing operations, to provide recesses through which project the various sign characters 12, which here are shown as spelling out the word "tires".

As best shown in Figs. 2 and 4, each sign character 12 is formed with a marginal portion or flange 13 engaging the inner surface of the wall 11, and with an outwardly projecting body portion 14, which, as it will be readily observed, stands out an appreciable distance from the face of the wall 11.

In conformity with the intendment of the present invention, each sign character 12 is formed from a sheet of translucent glass, which may be

white or colored, or both, as desired. A suitable method for making these characters is to subject a plane glass sheet of suitable size to sufficient heat to soften it, and then pull it over a mold member by vacuum, with subsequent annealing. By such procedure, the thickness of the glass is maintained substantially uniform throughout the raised portion of the character. After being formed and annealed, and assembled with a neon tube as hereinafter described, the characters, as independent units, may be inserted from the rear of the wall 11, through the apertures heretofore mentioned, and mounted in place by detachable clips. As shown in Figs. 2 and 3, each clip consists of a resilient sheet metal finger 15, one end of which is secured to the wall 11 by a bolt and nut 16, while the other end engages over the flange 13 of the character. Three or four such clips will usually suffice to secure the sign in place, but it will be observed that they may be quickly loosened and swung out of operative position, thus permitting the character to be removed independently of other characters.

Each character 12 also receives, within the cavity formed by its body portion 14, a luminous tube 17, which follows the cavity throughout its extent. Where the tube must reverse on itself, as, for example, at the zone marked with the reference numeral 18, or the terminal electrode portions 19, in Fig. 3, that portion of the tube remote from the outer face of the character may be painted black, to blot out illumination emanating from such portion. It is to be observed that each character 12 is provided with its own individual tube 17, the electrode portions of which are provided with wires 21 connected to binding posts 22 secured within the sign frame. Suitable series of parallel circuits may be taken through the connections made at the binding posts, in order to effect the illumination of the tubes. With this arrangement, it will further be understood that, when any character 12 is removed from the sign, its individual tube is removable with it, without disturbing the mounting or adjustment of any other character or tube, as would be required if this arrangement were not provided.

Referring now to Fig. 4, and having in mind the matters stated at the outset of this specification, attention is invited to the fact that the dimensions of the letter, and the location of the tube within the cavity thereof, are significant and rather critical. Descriptively speaking, it will be seen that the tube 17 is centered in the cavity of the letter, with respect to the longitudinal axis thereof, but is brought fairly close to the outer face 23 of the letter, and well above the center thereof. The relation is such that the tube 17 is substantially as far from the front wall 23 as it is from the side wall 24. That is, if the distance from the center or longitudinal axis to the side wall is denominated "*a*", then the tube is also a distance "*a*" from the outer or front face 23. However, it will be also observed that the entire depth of the letter is more than 2*a*, so that the tube center is nearer the front face 23, than it is the sign wall 11. It will also be noted that the distance "*a*" is greater than the external diameter of the tube 17, which is denominated on the drawing as "*do*". Accordingly, any reverse bend portion of the tube, such as the portion 18, also lies within the cavity of the character.

It may also be mentioned that the outside surface of the tube 17 is spaced from the faces 23 and 24 a distance somewhat less than the outside tube diameter, or a distance approximately equal to the inside diameter of the tube, "*di*".

In practical effect, the dimensioning of the character in this fashion, and the proper positioning of the tube 17 therein, results in the production of a very sharply defined sign, which can be readily deciphered at an acute angle. By making the portions 23 less than the depth of the face 24, and imparting just a slight taper to the side walls 24, the legibility of the character is greatly increased over the known and heretofore used semi-cylindrical and shallow letters. Likewise, by giving the letter such depth, it is possible to bring the tube 17 forward to a point where the illumination therefrom impinges uniformly on the outer portions of the letter, thereby not only giving an effective brilliance, but also enhancing the sharp definition for each character. So far as I am aware, the practical art has not heretofore achieved the desired results either by the means herein described, or to the extent now permissible.

Since the advantages of the invention depend in part on the proper positioning of the tube within the body or cavity of the raised letter, the invention further contemplates mounting means for the tube permitting the tube to be easily focused and maintained in its intended position, while at the same time maintaining the unitary nature of assembled character and tube. Such mounting means, as shown in Fig. 5, includes a post 31 of insulating material having a corrugated or screw-threaded stem and a tube receiving step 32. The step 32 is formed with a saddle 33 adapted to engage a portion of the round tube surface, and ears 34 over which may be passed a tie wire to secure the tube 17 and post together. The post 31, and as many of them as may be deemed necessary for suitable mounting, is connected to the character by a bridge member 35 formed of a flat strip of sheet metal and having a reverse bend flange 36 disposed at one end thereof. This flange is just wide enough to slip over the flange 13 of the character, and is sufficiently long to overlie the cavity 14, as best shown in Figs. 2 and 3. The bridge 35 is provided with a screw 37 passing through the slot of a slotted connector 38, one end of which is formed into an upright cylindrical sleeve 39, constituting a socket for the stem 31. Ears 40 may be provided on the sleeve 39 to form thread guides for the stem 31, thereby permitting the adjustment of the tube relative to the bridge 35 by rotation of the stem 31.

When it is desired to assemble a tube 17 in the character 12, the posts 31 may be positioned thereon as required, and the sleeves 39 then approximately located along the posts. With the screws 37 loosened, the bridges 35 may be readily positioned over the flanges of the character 12, and minor or fine adjustments can be made by swiveling the connector, through its slot, on the screw 37. The screws 37 are then tightened, and since the multiplicity of the bridges make the mounting self supporting, the assembly is ready for insertion in the sign wall 11. Upon such assembly, the flanges 36 of the bridges 35 are securely held in place, by the clip connections 15 between the wall 11 and the flanges 13 of the character.

As noted above, by properly proportioning the dimensions of the character and locating the tube therein, a sign is produced which is quickly legible and is sharply defined. It will, of course,

be understood that while detailed specifications have been set forth herein, in order that all concerned may be apprised of the invention and the best mode known to be of utilizing the same, such specifications may be modified within the limits set forth in the following claims, without departure from the principles hereof.

I claim:

1. In a sign suitable for day and night display, the combination with a mounting panel of a sign character having a body portion extending above said panel, said character being formed of translucent material, a luminous tube disposed within said body portion, said character being rectilinear in transverse section and having a depth more than twice the distance of said tube from the side wall thereof, said tube being spaced from the front and side walls of said character substantially equal distances, and means connected to said character for positioning said tube within said body portion.

2. In a sign suitable for day and night display, a self-contained raised glass sign character having a marginal base portion and a luminous tube having electrode portions disposed within the cavity formed by said raised glass, said character being of rectilinear transverse cross-section and having a depth more than twice the diameter of said luminous tube, means for spacing said tube equidistantly from the front face of said character and a side wall thereof and positioning said tube nearer the front face of said character than the base thereof, said means comprising a post secured to said tube at one end and to a bridge member at the opposite end, said bridge member comprising a sheet metal strip having a reverse bend flange at one end thereof engaging a marginal portion of said character.

3. A sign character having a marginal flange portion and raised portions of translucent material elevated above said marginal portions and defining the character, said raised portions being substantially rectilinear in transverse cross section and having a front face and slightly tapered side faces, all of said faces being substantially plane, said character along all of said faces being of substantially uniform thickness, the depth of said character as measured along the side faces thereof being greater than the width of said character as measured along the front face thereof, said width being more than twice the outside diameter of a luminous tube adapted to be disposed within said raised portions.

4. In combination with a sign character as defined in claim 3, a luminous tube disposed within said character and spaced equidistantly from the front face and a side face thereof and a distance from said faces of not more than its own diameter.

5. In a self-contained raised glass letter sign character and neon tube assembly, a sign character having a marginal portion and a raised portion, a neon tube disposed within the raised portion and spaced from the walls thereof, a plurality of sheet metal strips each bent at one end to engage the marginal portion of the character, each of said strips overlying the cavity defined by the raised portion of said character, a connecting member comprising a strip formed at one end with a slot, a pin extending through said slot and secured to said strip, a cylindrical sleeve formed on the opposite end of said connecting member and extending perpendicular to said tube, and a post disposed in said sleeve and secured to said tube.

BARTLETT VANDERMEER.