

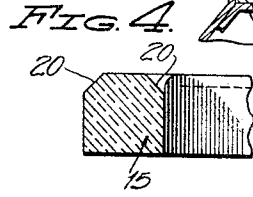
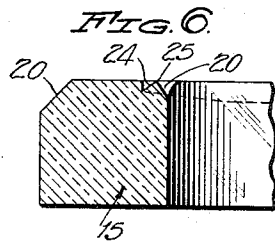
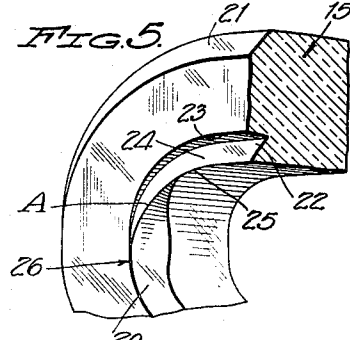
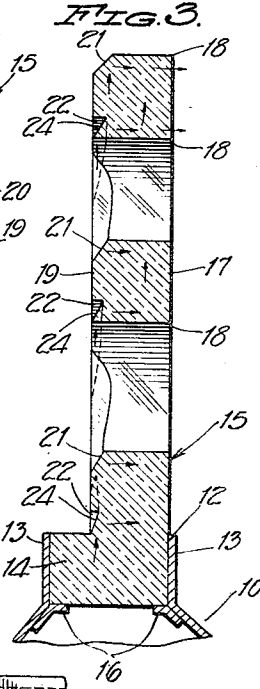
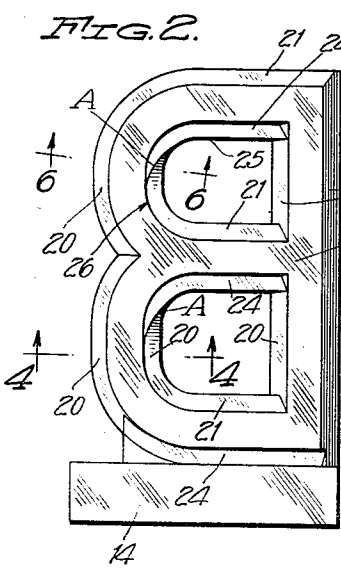
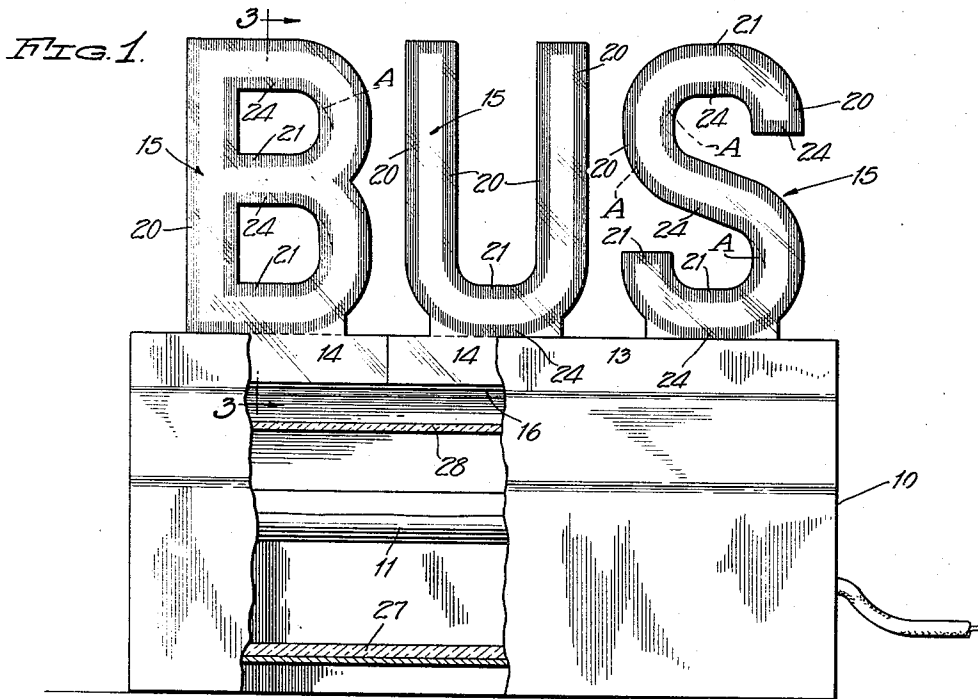
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J. J. STURE

2,276,114

ILLUMINATED SIGN

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ILLUMINATED SIGN

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7 Claims. (Cl. 40—130)

This invention relates to improvements in illuminated signs of the kind set forth in the pending application of Alfred Gauthier, Serial No. 269,925, filed April 25, 1939, wherein the complete border outline of transparent sign characters are illuminated by reflecting light to impart a "Neon" appearance to the sign.

The light rays for illuminating this type of sign are directed edgewise through the body of the character, and certain of these light rays are picked up by beveling the rear edges of the crystal clear block sign characters. In order to provide the necessary light pick up beveled surfaces entirely about the boundary edges of the sign characters, certain other edges facing in the direction of the source of light must be undercut, and a beveled light pick-up and reflecting surface is formed on one of the walls of the undercut. In the above application, the sign characters in the form of letters of the alphabet were constructed of straight sides which met at sharp corners. Good results have been obtained by such shape sign characters, but a more natural and attractive shape letter is that in which the meeting ends of angular surfaces are joined by rounded or curved surfaces. By curving certain portions of the sign characters, a condition arises where an ordinary bevel edge light pick-up surface meets an undercut beveled light pick-up surface. If these surfaces meet abruptly, a shadow appears at their juncture where the sign character is illuminated, thus preventing the uninterrupted uniform illumination of the complete outline of the character. It is therefore the purpose of this invention to gradually merge the meeting of an undercut bevel light pick-up surface with an edge bevel light pick-up surface to produce a continuous uniform illuminated border outline of the sign character when it is illuminated. Thus, by this invention, there is no visible line of meeting between the edge bevels and the undercut bevels when the sign character is illuminated.

Other features of the invention will become apparent as the following specification is read in conjunction with the accompanying drawing, in which:

Figure 1 is a front elevational view of a sign made up of sign characters constructed in accordance with this invention, with a part of the light casing broken away.

Figure 2 is a rear elevational view of a sign character per se representative of the letter B.

Figure 3 is an enlarged vertical transverse sectional view on the line 3—3 of Figure 1.

Figure 4 is an enlarged detail horizontal sectional view on the line 4—4 of Figure 2.

Figure 5 is a detail sectional perspective view illustrating the manner in which an undercut beveled light pick-up surface merges into an edge beveled light pick-up surface.

Figure 6 is an enlarged detail horizontal sectional view on the line 6—6 of Figure 2.

Referring to the drawing by reference characters, the numeral 10 designates a metal housing in which a source of electric light is arranged, the same being designated 11 and consisting of one or more fluorescent tubes. The top of the housing is provided with a light emitting slot 12, the front and rear walls of which consist of spaced parallel upstanding flanges 13 between which the flat bases 14 of the sign character bodies 15 fit. The bases of the sign characters rest upon narrow horizontal flanges 16 which extend inwardly from the flanges 13 but the flanges 16 do not interfere with the upward passage of light through the slot 12 for subsequent passage upwardly through the sign characters 15 as and for the purpose to be hereinafter explained.

In Figure 1 there is illustrated a sign made up of three sign characters 14 representing the letters "B"—"U"—"S", and these letters have been chosen because they all have straight and decided curved portions in their outline which best illustrates the invention about to be described. In Figures 2 to 6 inclusive, the sign character representing the letter B is shown in detail for it clearly illustrates the manner in which the undercut bevel light pick-up and reflecting surface gradually merges into an edge light pick-up and reflecting bevel surface. It is therefore believed that a detail description of the sign character B will suffice for all other sign characters, be they letters of the alphabet, numerals, or any advertising display in which two angularly disposed light pick-up surfaces are joined by a curved light pick-up surface.

The sign character 15 representative of the letter B is constructed of a clear solid transparent substance resembling plate glass but which is known by the trade-name "Lucite." The substance known as "Lucite" is a plastic composition and being unlike glass, it is crystal clear which makes it free of any natural light reflecting elements. Light freely passes throughout the entire thickness of "Lucite" but by beveling and imparting a dull or frosted appearance to bevels formed around the border edges in a manner presently to be explained, it is possible to control the picking up of light rays to impart illumina-

tion to the outline of a sign character. The sign character 15 is provided with a flat front surface 17 which is defined by sharp corner edges 18. The sign character has a flat rear surface 19 which is parallel to the flat front surface 18 and all vertical or upwardly extending rear edges are provided with flat bevel light pick-up and reflecting surfaces 20. The rear top horizontal edge of the sign character is provided with a flat light pick up and reflecting surface 21 as are all other upper horizontal or substantially horizontal edges and which are likewise designated by the reference numeral 21. The base of the sign character is horizontally recessed or undercut as at 22 as are all other lower horizontal or substantially horizontal edges. Each undercut 22 is substantially V-shaped and includes a shoulder 23, and an inwardly beveled light pick-up and reflecting surface 24. By reference to Figures 2 and 5 it will be seen that where an undercut bevel surface 24 meets a flat edge bevel surface 20 at a rounded under corner A, the undercut bevel surface 24 gradually merges into the flat bevel surface 20. The same condition exists where an undercut bevel surface 24 might join up with the outer flat edge bevel surface 20, as is present in the sign character S in Figure 1. The outer edge 25 of each undercut 22 crosses over the meeting flat edge bevel 20 and gradually merges into the outer edge 26 thereof. The merging of the undercut and outer flat beveled surfaces takes place at that part of a curve where the light pick-up qualities of the two surfaces diminish, but the two angular meeting surfaces 20 and 24 combined bring up the light pick-up characteristics at the curves to the same degree as that of the light pick-up surfaces which define the remaining outline of the sign character.

In practice, light rays from the tube lamp 11 are reflected upwardly by a mirror or reflector 27 mounted at the bottom of the housing 10, and if desired a colored glass plate 28 may be disposed above the lamp 11 to cause colored light rays to pass upwardly through the slot 12, thence upwardly through the solid transparent bodies of the sign characters 15. Best results occur when the sign is illuminated in the dark, for when viewed from the front under such condition, certain of the colored light rays are picked up by the beveled surfaces 20, 21, and 24, and reflected forwardly. The surfaces 20, 21, and 24 combined, produce a border outline of the sign characters and due to the merging of the undercut and edge beveled surfaces, a soft uninterrupted, uniform illumination of the border outline results.

In Figure 3 of the drawing, it will be noted that the degree of angle of the undercut beveled surfaces 24 gradually increases in a direction away from the light source, and the same is true of the flat edge beveled surfaces 21. Also the depth of the undercut 22 increases in a direction away from the light source. These surfaces are in vertical alinement which causes a gradual diminishing of the light rays from the bottom to the top of the character, but by gradually increasing the angularity of the light pick-up surfaces, it is possible to maintain an even and uniform illumination of the border outline of the character. When the substantially vertical surfaces 20 are curved such as on the top bulge of the character B, the angle of the said surface may vary or at other locations on a character where a light pick-up surface may be "robbed" of light rays by some other light pick-up surface which is closer to the source of light.

I have shown and described a sign constructed in accordance with my invention in which the source of light is directed upwardly through the body of the sign characters, but the light source may be located above the characters, or from the sides thereof if desired, it being borne in mind that the location of the undercut bevel surfaces must be presented in the direction from which the source of light emanates.

Whereas the sign characters have been described as being constructed of "Lucite," it is to be understood that any other material having like characteristics may be used without in any way departing from the spirit of the invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:

1. A sign character comprising a block-like body of a predetermined sign character shape constructed of a solid crystal clear substance having flat vertically extending side surfaces and flat top and bottom horizontally disposed surfaces, certain of adjacent horizontal and vertically extending surfaces being joined by curved surfaces, all of which surfaces combine to define a border outline of the block-like body, said body being positioned over a source of light to cause light rays to pass upwardly through the body, inwardly beveled edge light intercepting and forwardly reflecting surfaces provided at the rear edges of the vertically extending side surfaces of said body and at the top horizontal surfaces thereof, undercut V-shaped recesses provided in the rear of said body along the edges of the bottom surfaces thereof, the bottom angular walls of said V-shaped recesses constituting light intercepting and forwardly reflecting surfaces, those light intercepting and forwardly reflecting surfaces which are disposed in the undercut V-shaped recesses which are joined to adjacent inwardly beveled edge light intercepting and forwardly reflecting surfaces by curved surfaces gradually merging together at the curved surfaces whereby an even and uniform illuminated border outline is imparted to said body when light rays are projected upwardly therethrough.

2. A sign character comprising a block-like body of predetermined sign character shape constructed of solid crystal clear substance through which rays of light are reflected inwardly through an edge thereof, said body having at least two adjacent angularly disposed straight edges connected by a curved edge, one of the straight edges being provided with a beveled light pick-up and reflecting surface, a substantially V-shaped recess provided in the body along the other straight edge thereof, one of the inclined walls of the recess constituting a light pick-up and reflecting surface which gradually merges with the beveled light pick-up and reflecting surface at the connecting curved edge, the angles of the two meeting beveled light pick-up surfaces being reverse.

3. A sign comprising a solid transparent body of predetermined sign character shape, inwardly beveled light intercepting and reflecting surfaces at the rear edges of said body excepting the under edges thereof, substantially V-shaped recesses provided in the rear of said body along the under edges thereof, the bottom inclined surfaces of said recesses constituting light intercepting and reflecting surfaces, said inclined surfaces and the inwardly beveled surfaces being connected by a rounded portion or portions formed on said body, said inclined surfaces and inwardly beveled surfaces gradually merging with each

other at the rounded portion or portions to provide uninterrupted light intercepting and reflecting surfaces at the rounded portion or portions and coacting with all the other light intercepting and reflecting surfaces to define a border outline of a shape corresponding to the outline of said body, and a source of light disposed beneath said body whereby light rays from said source of light pass upwardly through said body and certain of which light rays are intercepted by the combined light intercepting and reflecting surfaces and reflected forwardly through the thickness of said body to impart a uniform illuminated border outline to said body when viewed from the front thereof.

4. A sign comprising a solid transparent body of a predetermined sign character shape defined by straight vertically extending edges and straight upper and lower horizontally disposed edges, certain of the vertically extending edges and horizontally disposed upper and lower edges being connected by curved edges, inwardly beveled light intercepting and reflecting surfaces at the rear of the body along the vertically extending edges and along the upper horizontal edges thereof, substantially V-shaped recesses provided in the rear of said body along the lower horizontal edges thereof, one of the inclined walls of the V-shaped recesses constituting light intercepting and reflecting surfaces which join with adjacent inwardly beveled light intercepting and reflecting surfaces at the curved edges and gradually merge therewith, the inwardly beveled surfaces, inclined surfaces, and merging of said surfaces combined, defining a continuous border outline conforming to that of said body, and a source of light for projecting light rays through the thickness of said solid body in the direction of the inclined surfaces, certain of the light rays therefrom being intercepted by the light intercepting and reflecting surfaces and reflected forwardly to impart a uniform illuminated outline to the body when viewed from the front thereof.

5. A sign comprising a solid transparent body of a predetermined sign character shape defined by a plurality of vertically extending edges and a plurality of upper and lower horizontally disposed edges, inwardly beveled light intercepting and reflecting surfaces at the rear of the body along the vertically extending edges and along the upper horizontal edges thereof, substantially V-shaped incisions provided in the rear of said body along the lower horizontal edges thereof, said V-shaped incisions providing inclined light intercepting and reflecting surfaces along the bottom walls thereof, and a source of light disposed beneath said body for directing light rays upwardly therethrough, the angularity of the

light intercepting and reflecting surfaces along the upper and lower horizontal edges gradually increasing in a direction away from the source of light, all of the light intercepting and reflecting surfaces cooperating to intercept light rays from the source of light and reflect the same forwardly to uniformly illuminate the border outline of the body when viewed from the front thereof.

6. A sign character comprising a solid transparent body of a predetermined sign character shape defined by a plurality of vertically extending edges and a plurality of superposed upper and lower horizontally disposed edges, said body adapted to have light rays projected upwardly through the bottom edge thereof, certain of the under edges meeting adjacent upwardly extending edges at rounded corners, inwardly beveled light intercepting and reflecting surfaces at the rear of the body along the vertically extending edges and along the upper horizontal edges thereof, elongated recesses provided in the rear of said body along the lower horizontal edges thereof, inclined light intercepting and reflecting surfaces at the bottom of said recesses which meet adjacent inwardly beveled light reflecting surfaces at rounded corners gradually merging together at said rounded corners, whereby to provide continuous uninterrupted light reflecting surfaces around the edges of the body which are uniformly receptive of light rays reflected upwardly through the body.

7. A sign character comprising a solid transparent body of a predetermined sign character shape defined by a plurality of vertically extending edges and a plurality of superposed upper and lower horizontally disposed edges, said body adapted to have light rays reflected upwardly edgewise therethrough, inwardly beveled light intercepting and reflecting surfaces at the rear of the body along the vertically extending edges and along the upper horizontal edges thereof, elongated recesses provided in the rear of said body along the lower horizontal edges thereof, the bottom walls of said recesses being inclined and constituting light intercepting and reflecting surfaces, the elongated recesses gradually increasing in depth from the lowermost to the uppermost of the same, the angularity of the horizontal inwardly beveled light intercepting and reflecting surfaces and the inclined light intercepting and reflecting surfaces increasing in angularity in a direction from bottom to top so as to dispose all of the horizontally disposed light reflecting surfaces in the path of light rays when passed upwardly through said body.

JOHN J. STURE.