June 9, 1942. M. K. DAVIS 2,285,907

SIGN

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Fig. 1.

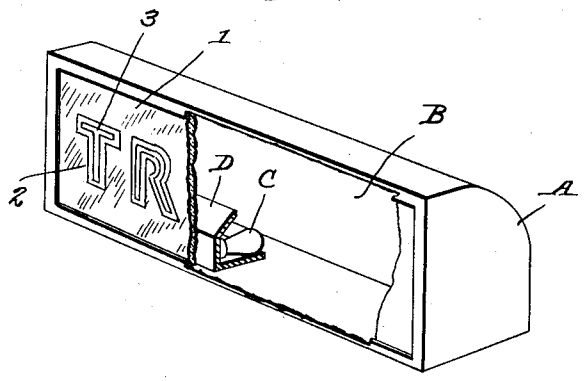



Fig. 2.

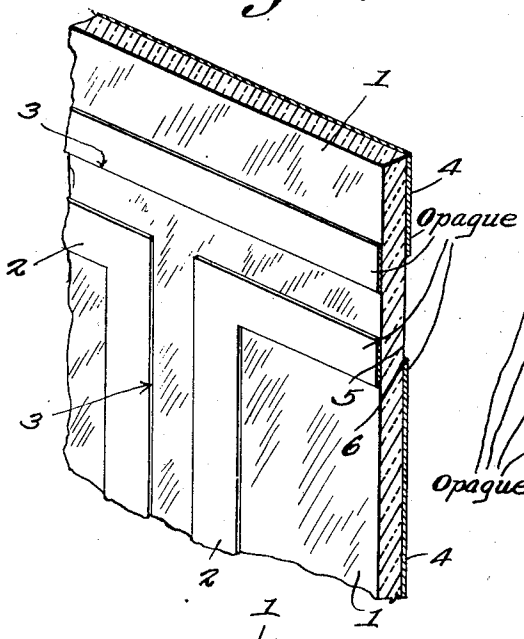



Fig. 3.

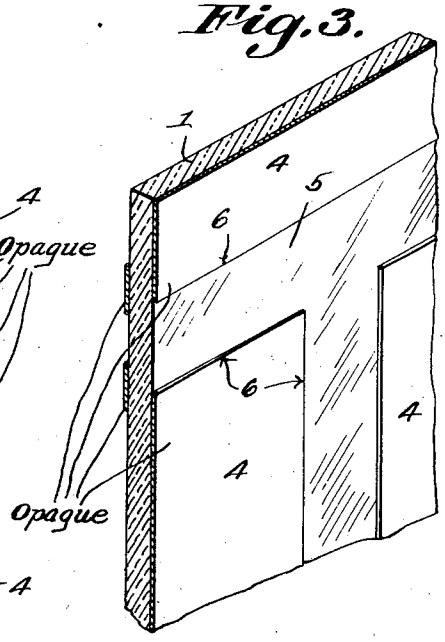
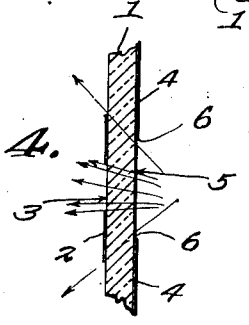



Fig. 4.




Milton K. Davis

INVENTOR.

BY Albright & Co.

ATTORNEYS.

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Fig. 5.

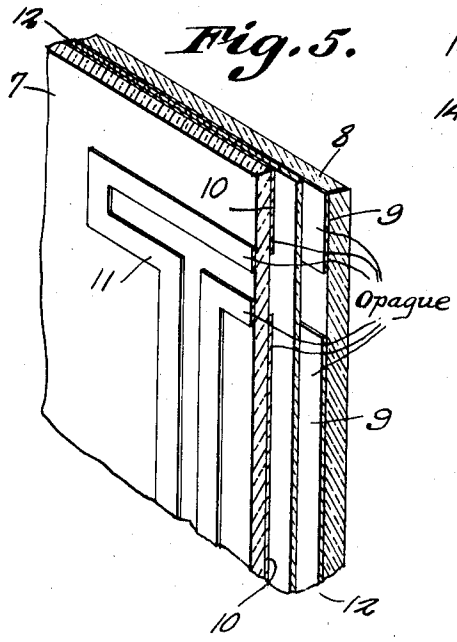



Fig. 6.

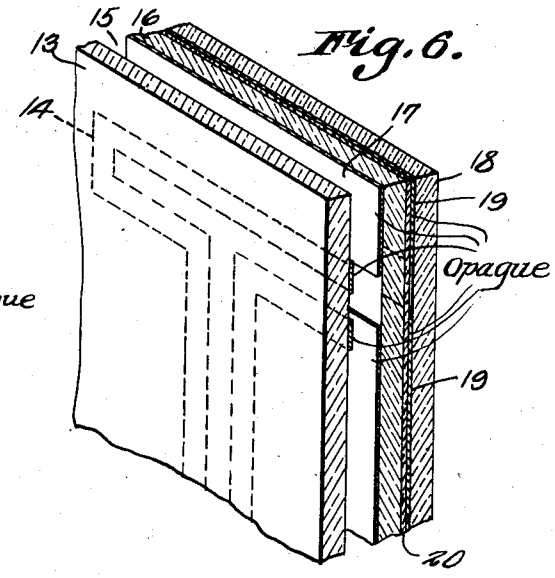



Fig. 7.

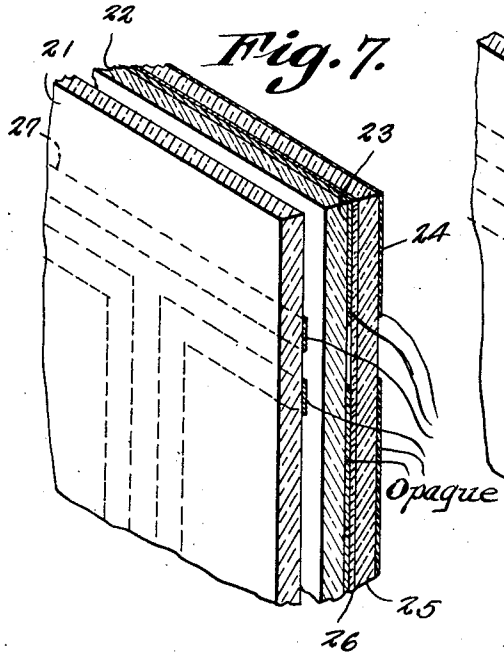
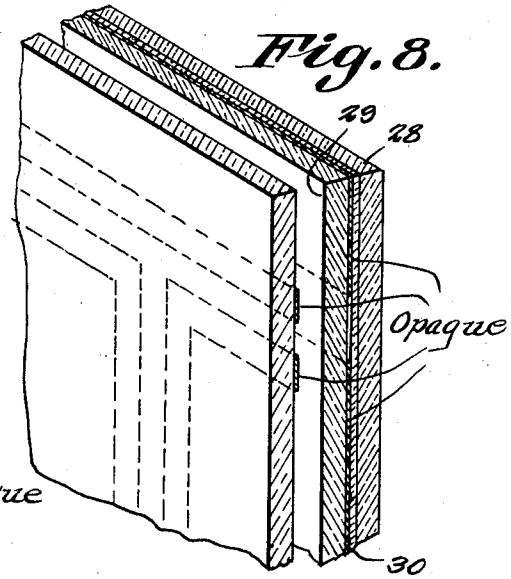



Fig. 8.




Milton K. Davis

INVENTOR.

BY C. A. Snow & Co.

ATTORNEYS.

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# UNITED STATES PATENT OFFICE

2,285,907

## SIGN

Milton K. Davis, Dallas, Tex.

Application March 18, 1940, Serial No. 324,732

3 Claims. (Cl. 40—133)

This invention relates to illuminated signs, one of the objects being to provide a sign the display portion of which is so constructed that, when illuminated by means of a lamp or lamps, the sign, although provided with a smooth unobstructed display surface, will present to the observer indicia provided with surrounding fields of diffused light whereby the sign, in appearance, simulates to a large extent, a neon sign.

A further object of the invention is to provide a sign of this character which is of simple construction and can be installed readily at low cost.

Heretofore signs or display devices have been made with characters supported in front of and spaced from the front or display panels of the signs, said panels as well as the characters, being provided with transparent or open portions through which light rays have been permitted to pass for the purpose of providing an illuminated background for the forwardly spaced characters. Structures of this type have been objectional, however, because of the cost of production, it being necessary not only to provide cut-out characters especially constructed, but also to provide the front panel of the display device or sign with spacing means whereby the characters have been held away from the panel.

An object of the present invention is to eliminate all parts from the front or exposed surface of the display panel and to provide a sign which can be easily and quickly produced without requiring any technical skill.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangements of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings

Figure 1 is a perspective view of a sign provided with the present improvements, a portion thereof being broken away.

Figure 2 is an enlarged perspective view of a portion of the front panel of the sign forming the present invention, said view showing the front or exposed surface of the panel.

Figure 3 is a view similar to Figure 2 showing the rear portion of the panel.

Figure 4 is a section through a portion of the panel, illustrating by means of arrows, the illumination of a portion of a character on the panel by diffusion of light therearound.

Figure 5 is a view similar to Figure 2 showing a modified form of display panel.

Figure 6 is a similar view showing another modified form.

Figure 7 is a view like Figure 2 showing another modification.

Figure 8 is a view like Figure 7 illustrating a fourth modification.

Referring to the figures by characters of reference, A designates the housing of a sign or display device which can be provided at the back with a suitable reflecting surface B while located within this housing at any suitable point are lamps one of which has been indicated at C, these being located where they will throw light rays against the reflector B. These lamps can be shielded from the front of the housing by means of a reflecting strip D or the like. It is to be understood, of course, that the structure of the sign can meet any requirements as to size, shape and arrangement of parts. The present invention resides primarily in the construction of the front or display panel. This can be made in different ways within the scope of the present invention. For example, and as shown particularly in Figures 1 to 4 inclusive, said panel can be formed of a single sheet of glass 1 on the outer surface of which can be displayed characters 2. These characters can be produced by any suitable opaque material, such as paint applied directly to the surface of the panel and it is preferred to provide each character with an unpainted central portion 3 following the contours of the outer edges of the character.

The back or concealed surface of the panel 1, which is that surface nearest the reflector B, is provided with an opaque coating 4 which can be of paint, this coating being so applied as to leave uncoated portions 5 the edges of which follow the contours of the respective characters on the front surface of the panel and are spaced apart a distance somewhat greater than the width of the uncoated portions 3 of the character 2 but less than the over-all width of the corresponding portions of the character. This arrangement has been illustrated clearly in Figures 2, 3 and 4 and as a result thereof it will be noted, by referring particularly to Figure 4, that the reflected light rays within the housing A will not only be directed straight through the uncoated portions of the back surface of panel 1

and through the uncoated areas 3 within the characters, but will also be diffused through the panel 1 along oblique lines so that the light rays will produce a glow or luminous background beyond the outer edges of the characters 2 while, at the same time, the uncoated areas 3 of the characters will be brightly illuminated. Obviously the diffusion of the light rays is dependent upon the thickness of the glass panel 1, it being understood that this diffusion will increase in proportion to an increase in the thickness of the glass.

Should it be desired to color the light rays appearing through the display or front panel of the device, the structure could be made as shown in Figure 5. In this modified arrangement the front panel 7 is made exactly like the panel 1 but in addition thereto there is provided a rear panel 8 of glass, that surface of the panel 8 nearest the panel 7 being provided with an opaque coating 9 corresponding with the opaque coating 10 on panel 7. This opaque coating 10 is similar to the coating 4 heretofore described and is arranged similarly thereto with respect to the displayed character 11 on the front surface of panel 7. However this structure differs also from the one previously described in that there is interposed between the two panels 7 and 8, a sheet 12 of colored translucent material such as "Cellophane." Consequently the light rays passing through the clearances defined by the opaque portions 9 and 10 and the characters 11 will be colored.

It is not always desirable to place the characters to be displayed, on the outer or exposed surface of the front panel of the device. Under these conditions it is designed to place the characters on the back or concealed surface of the front panel. In Figure 6 this panel has been shown at 13 and the characters, which can be made in the same manner as those heretofore described, are located on the back or concealed surface of the panel as shown at 14. Under these conditions it is preferred to leave a small space 15 between the panel 13 and an intermediate transparent panel 16, that surface of this intermediate panel nearest panel 13 being formed with opaque surfaces 17 corresponding with those shown at 10 in Figure 5 and at 4 in Figures 2 and 3. A third transparent panel 18 is located back of the intermediate panel 16 and also has opaque portions 19 thereon, these being applied to that surface of the panel nearest the panel 15. These opaque portions correspond with the portions 17 in arrangement and proportions. A translucent sheet 20 of "Cellophane" or the like is interposed between the panels 16 and 18 and obviously light rays emanating from within the housing to which the panels are applied, will escape between the opaque portions 19 through the translucent sheet 20 and thence through the uncoated portions of panel 16 after which the rays will not only pass outwardly through the uncoated portions of the characters 14 but will also be diffused along diagonal lines through panel 13 and around the characters on said panel.

Instead of providing the opaque coatings on those faces of the panels 16 and 18 nearest to panel 13, they can be located on those faces of the panels farthest removed from the front panel. This arrangement has been illustrated in Figure 7 where the front panel 21, which is similar to panel 13 and is spaced from an intermediate panel 22, receives light rays through uncoated areas on the back face of panel 22 between opaque portions 23. Opaque portions 24 are similarly located on the back face of the rear panel 25 and interposed between the panels 23 and 24 is a translucent sheet 26 of "Cellophane" or the like which can be suitably colored. In this structure light rays will also be directed to the uncoated portions of the characters 27 on panel 21 and will obviously be diffused around the characters.

The structure shown in Figure 8 is similar to that shown in Figure 7 with the exception that the back or rear panel 28 is not provided with an opaque coating material. Only the intermediate panel 29 is so coated, the coating material being arranged similarly to that shown in the other figures herein described while a translucent sheet 30 of "Cellophane" or the like is interposed between the two panels 28 and 29.

Attention is called to the fact that in all of the signs covered by this application the display panel is imperforate so that it is not possible for dust or moisture to pass therethrough into the sign housing and interfere with the proper reflection of light rays.

The term "glass" as herein used is to be understood to apply to any suitable transparent material. Furthermore the term "character" as herein used is intended to apply to any letter, number, symbol or other indicia to be displayed.

What is claimed is:

1. An illuminated display device including a light-emitting imperforate panel having an opaque portion defining a front character provided with a light-emitting portion spaced inwardly from the edges of the character, and opaque portions spaced from the opaque character and forming a background defining a similar but light-emitting rear character, directly back of the opaque character, the width of the light-emitting character at any point being greater than the width of the light-emitting portion at the corresponding point of the opaque character but less than the overall width of said opaque character at said point, the front and rear characters being proportioned and positioned relative to each other to permit direct passage of unintercepted light rays through the back character and the light emitting portion of the front character and to permit indirect passage of light rays between the opaque portions on the two surfaces thereby to produce a glow surrounding the opaque character and defining it on the opaque background.

2. In a display device the combination with a housing and an illuminating means therein, of a closure for the housing including a single imperforate transparent panel, an opaque coating on one surface of the panel defining a light-emitting area forming a character, a coating on the opposite surface of the panel forming an opaque character corresponding with and overlying the opposed light-emitting area, the outer marginal portions of said opaque character being extended past the corresponding marginal portions of the light-emitting area whereby all light rays emerging between said marginal portions will pass along outwardly diverging lines thereby to produce a character defining area of indirect light about the opaque character, there being a transparent portion in the opaque character defining said character on a scale smaller than both the opaque and the light-emitting characters and positioned to receive some of the di-

rect light rays passing through the light-emitting character on the opposed surface.

3. In a display device the combination with a housing and an illuminating means therein, of a closure for the housing including an outer imperforate transparent panel, an opaque coating on the inner surface of and protected by the panel, said material defining an outer opaque character and a smaller transparent character surrounded thereby but similar thereto, an inner imperforate transparent panel back of the outer panel, an opaque coating on one surface thereof defining a light-emitting inner character registering with and similar to said opaque outer character, the size of the inner light-emitting character being less than the size of the opaque character whereby the outer margins of the opaque character are positioned past the corresponding margins of the inner character, said opaque character constituting a shield whereby all light rays emitted between the margins of the inner and outer characters will diverge outwardly around the outer character defining said character by an area of indirect light, there being a transparent portion within the opaque character for defining said character on a small scale by direct light rays emitted through the inner transparent character.

MILTON K. DAVIS.