

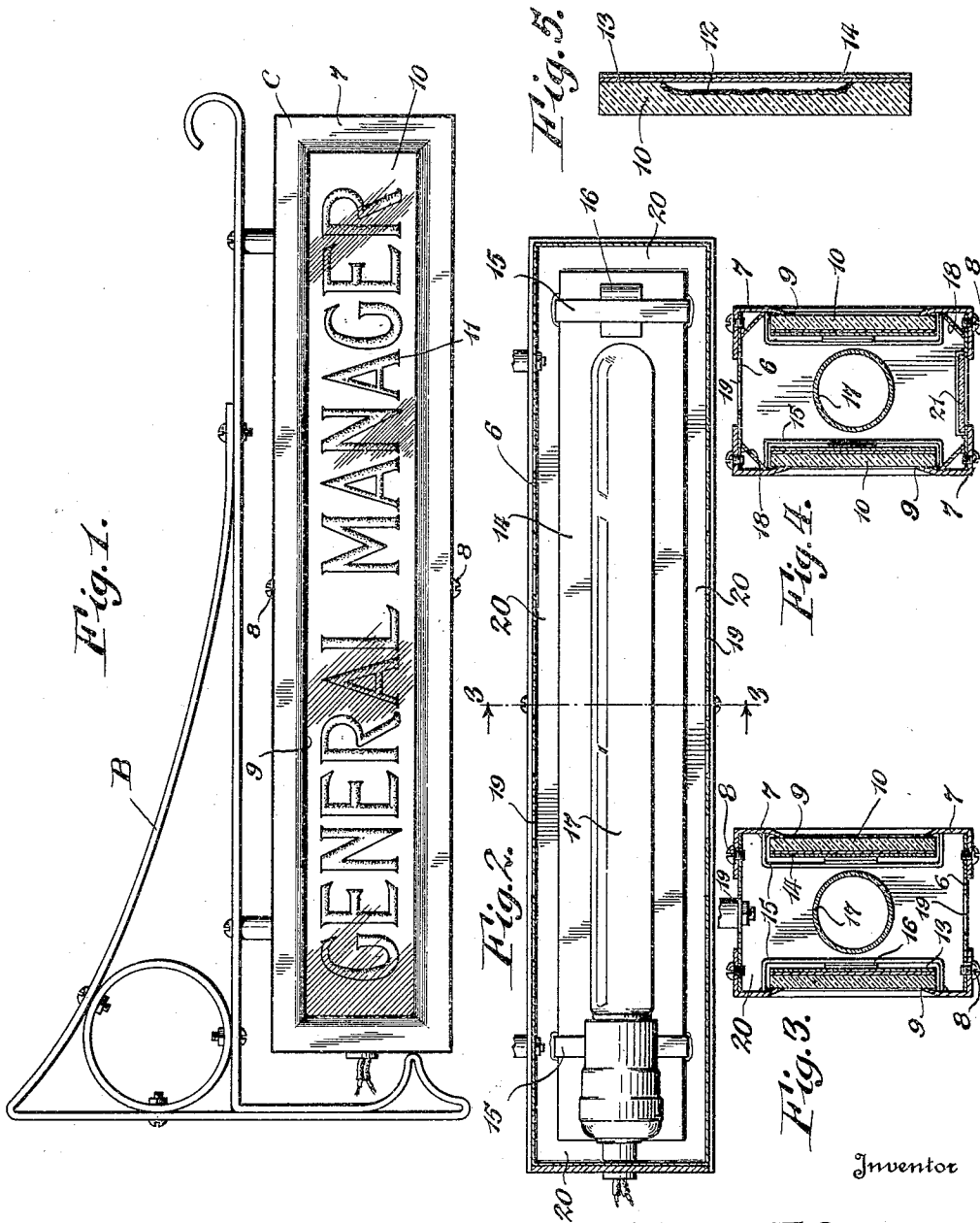
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ILLUMINATED SIGN

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ILLUMINATED SIGN

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This invention relates to improvements in illuminated signs of the kind in which the display characters are formed in a transparent panel such as glass and are illuminated by the reflection of light within the panel, the light utilized for this purpose being caused to enter the panel at one or more of its edges.

One serious objection to the use of such signs as heretofore constructed has been that the display characters do not present a uniform illuminated appearance, the characters or portions of characters adjacent the edge through which the light is caused to enter being illuminated to a greater extent than those characters or portions of characters which are more remote. This is due to the fact that the light is refracted out of the panel as it is intercepted by the display characters, such refracted light resulting in the illumination of those characters which refract it but being lost insofar as the illumination of more remote characters is concerned. Thus, where a means of illumination is arranged opposite an edge of a panel of the kind described the brilliance of the display characters diminishes in intensity from that edge toward the opposite edge of the panel, the contrast in appearance between the characters or those portions of the characters adjacent the light source and the characters or those portions more remote depending upon the reflecting areas of the intervening portions and also the distances between them. Heretofore, this type of sign has also been objectionable because of the necessity of arranging the illuminating means directly opposite the edge of the panel through which the light was to enter, the casing for enclosing the illuminating means being of such a size relative to the panel with which it was to be associated as to impart an unsymmetrical and overbalanced appearance to the sign.

The principal object of the present invention is to overcome the objections above stated.

Further objects are to provide for the uniform illumination of the display characters by the utilization of a single light source, eliminate the need of individual illuminating means for the opposite edges of the panel without impairing the appearance of the display characters, provide a construction available for use in double face signs as well as for single face signs and provide a sign having the above characteristics which will be compact in construction and attractive in appearance.

The invention is illustrated in the accompanying drawing, in which:

Figure 1 is a view in front elevation of an illuminated sign constructed in accordance with the invention.

Figure 2 is a longitudinal vertical section with respect to Figure 1.

Figure 3 is a transverse section taken along line 3—3 of Figure 2.

Figure 4 is a transverse section similar to Figure 3 showing additional means for facilitating entry of the light rays into the transparent panels in which the display characters are formed.

Figure 5 is an enlarged transverse section through one of the panel assemblies.

The invention is illustrated in connection with a double face sign. It is to be understood, however, that this is solely for the purpose of illustration and that the invention is not dependent upon the number of such faces which may be varied to meet the individual requirements of use.

As illustrated the sign comprises a casing C which may be supported in any suitable manner as by a bracket B to which it is conveniently secured.

The casing includes a body 6 and removable flanged sides 7 which are secured to the body as by screw fastenings 8. The sides 7 are provided with opposed openings 9 behind which transparent panels 10, as for instance, glass, are arranged, the panels 10

being adapted to carry the display characters 11.

The display characters 11, best shown in Figure 5, are formed in the panels 10 in any suitable manner as by cutting, etching, sand blasting, etc. The depressions thus formed provide upon the rear face of the panels characters having character strokes concave in cross section. In order that the characters may be suitably distinct and at the same time contrast with the background which is to be used, it is preferred that the depressions be coated with a layer 12 of metal or pigment having the desired characteristics, silver leaf being desirable in many instances because of its adaptability to various backgrounds. The coating 12 sharply defines the characters and as viewed from the front of the panel, their character strokes are convex in cross section.

While the background which is employed may be in the form of a coating applied to the rear face of the panel 10, the background, as illustrated, is supplied by a thin sheet 13 which is adapted to be held against the rear face of the panel 10. The sheet 13 may be lacquered or otherwise treated for this purpose, that is to say, provided with a surface which will contrast in the desired manner with the display characters.

In addition to providing a background for the display characters, the sheet 13 may also be utilized to prevent the passage of any light from the light source within the casing directly through the panel 10. A backing plate 14 may be utilized in connection with the sheet 13. The outer face of the sheet 14 is designed to provide a reflecting surface. However, if desired, the plate 14 may be omitted from the assembly and the outer face of the sheet 13 is finished to provide the reflecting surface.

As illustrated, an assembly which includes a transparent panel 10, a background sheet 13 and a backing plate 14 is removably secured as a unit behind each display opening of the sign casing. This may be accomplished conveniently by brackets 15, one being utilized to support each end of the assembly. A wedge 16 may be employed in conjunction with one of the brackets for securing the assembly tightly in position. With this arrangement the removal of the assembly may be readily effected by first removing the wedge.

As stated, the invention contemplates the illumination of the display characters by light which is caused to enter the panel in which the characters are formed from its edges. In order to avoid the necessity of individual illuminating means for each of the panel edges through which it is desired that light enter while at the same time insuring a uniform illumination of the display characters, I propose to illuminate the char-

acters by reflected light. As illustrated and preferred, the illuminating means comprises a lamp 17 supported within the casing between the panels 10 by its socket which is mounted upon the end wall of the body 6, the backing plates 14, of course, preventing any light from passing directly through the panels. The lamp bulb is preferably elongated as shown, as this type of lamp provides a convenient means for obtaining a light source which extends substantially the entire length of the casing. It is preferably arranged midway between the marginal edges of the panel, whereby a substantial amount of light is caused to enter the panel from its opposite edges.

For the purpose of directing light from the lamp 17 into the panels 10 through their edges, the sign casing is designed so that with the panel assemblies secured in position behind the display openings the margins of the panels are spaced from the walls of the body 6, the said assemblies providing with the walls marginal channels 20. Upon illumination of the lamp 17, light therefrom, either direct or reflected is directed into the corners of the casing and by virtue of the walls of the body 6 and sides 7 which form these corners is reflected into the adjacent edges of the panels 10. Thus light is caused to enter the panels 10 from all of their edges, one source of illumination being adequate for this purpose. The angles of incidence and reflection of the light within the panels as it passes through them is less than the critical angle and hence the light in its passage toward the opposite sides of the panels is reflected back and forth between their inner and outer surfaces. The formation of the display characters 11, however, provides surfaces which reflect light at angles greater than the critical angle and hence the light which strikes the display characters is refracted out of the panel. By virtue of the refracted light, the characters stand out sharply in relief against the background which is employed, this resulting from the fact that the panel is substantially invisible. By causing light from the illuminating means to enter opposite edges of the panel a uniform overall appearance of the display characters is obtained. The reflection of the light into the edge of the panel may be facilitated by finishing the inner walls of the casing to provide reflecting surfaces which co-operate with the reflecting surfaces or the backing plates 14.

In the embodiment of the inventions shown in Figure 4 additional means is provided for facilitating entry of the light into the panels 10 for the illumination of the display characters. For this purpose reflectors 18 of any desired form may be secured across the corner angles of the casing and are arranged to

intercept direct and reflected light from the lamp 17 and reflect it into the panels.

In order to prevent the sign from becoming heated to an undesirable extent by the lamp 17, openings 19 may be formed in the walls of the casing at the desired points, such openings permitting access of air into the interior of the sign. If desired, a transparent or translucent panel 21 may be arranged in the lower wall of the casing whereby an area in the vicinity of the sign may be illuminated. Such a use of the sign does not detract from the appearance of the display characters to any material extent.

15 The arrangement of the illuminating means behind the panels in which the display characters are formed instead of opposite an edge of the panel as has been the practice heretofore makes possible the uniform illumination of the display characters of a single or double face sign of the type described with a single light source. This has the advantage that the cost of manufacture is reduced and assembling and maintenance costs are also reduced while at the same time a construction is provided in which the illumination of the display characters is substantially uniform throughout their entire extent. The invention has the further advantage that it enlarges the field of sign construction with respect to shapes and general appearance, such factors being of especial importance in the manufacture of so-called indoor signs.

35 Having fully described my invention, I claim:

1. An illuminated sign comprising a casing having an opening in one of its sides, a light transmitting panel secured in the casing behind said opening and provided with display characters and an opaque backing coextensive with said panel, said panel having its opposite edges spaced from the inner walls of the casing, and illuminating means within the casing behind the panel arranged substantially along the entire center thereof, the casing being constructed to reflect light from said illuminating means uniformly into said panel through its opposite edges.

50 2. An illuminated sign comprising a casing having an opening in one of its sides, a light transmitting panel secured in the casing behind said opening and provided with display characters and an opaque backing coextensive with said panel, said panel having its entire marginal edge spaced from the inner walls of the casing, and illuminating means within the casing behind the panel arranged substantially along the entire center thereof, the casing being constructed to reflect light from said illuminating means uniformly into said panel through its entire marginal edge.

65 3. An illuminated sign comprising a casing having opposed display openings in its

sides, a light transmitting panel secured in the casing behind each opening and provided with display characters and an opaque backing coextensive with the panel, each of said panels having its entire marginal edge spaced from the inner walls of the casing, and illuminating means within the casing between said panels arranged substantially along the entire center of each panel, the casing being constructed to reflect light from said illuminating means uniformly into both of said panels through their entire marginal edges.

In testimony whereof I affix my signature.

HENRY J. BANSE.

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