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H. GLOBUS

PERFORATED ILLUMINATED SIGN AND ITS MANUFACTURE

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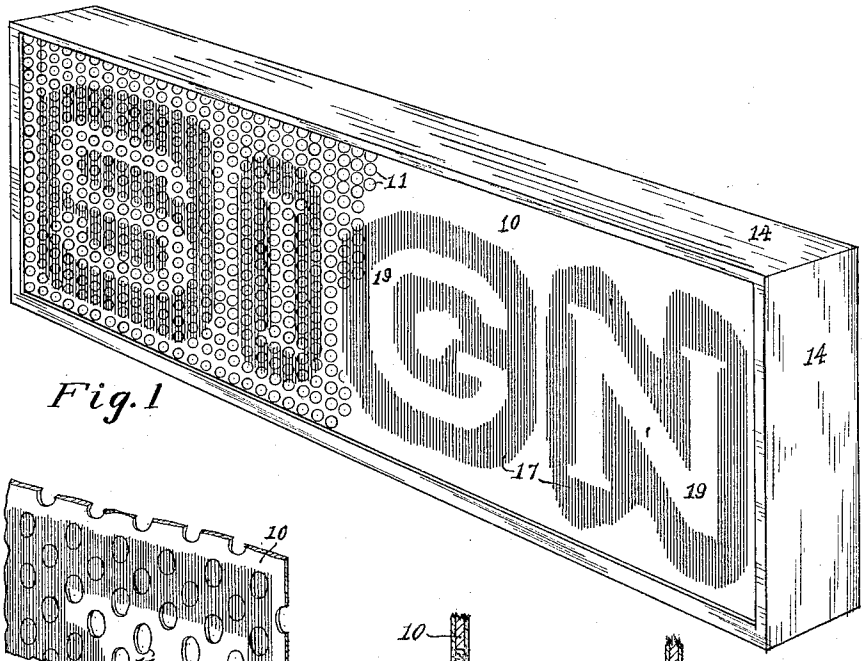


Fig. 1

Fig. 4

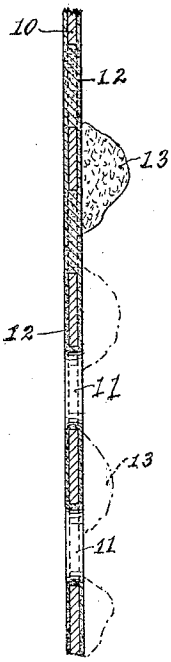


Fig. 2

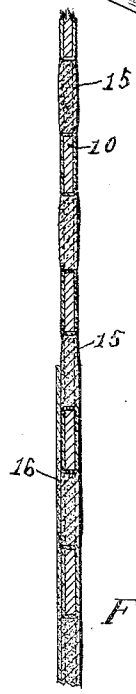


Fig. 3

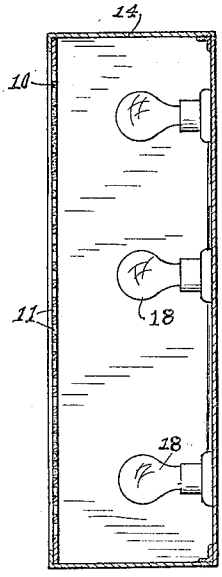


Fig. 5

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UNITED STATES PATENT OFFICE.

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PERFORATED ILLUMINATED SIGN AND ITS MANUFACTURE.

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My invention relates to perforated, illuminated signs and their manufacture and has reference more particularly to metal signs, though not positively limited to such material, which are perforated to permit illumination of one side by the illumination thereof by light rays directed through perforations in the sign. My signs are further provided for display in the daylight without artificial illumination, and it is therefore an object of my new improvements to use a method of constructing the sign that will make more perfect the service of the same sign in both daylight and under artificial illumination, and that will overcome effectively the difficulties heretofore experienced in making such construction.

It has well been understood heretofore that a perforated body may be utilized for displaying information thereon by artificial illumination by filling certain of the apertures with some composition, and leaving uncovered the perforations through which it is desired to direct the illuminating rays. There has always been difficulty however, in this method resulting from painting upon the perforated surfaces of signs because of the holes or apertures tending to spread the coat, and sometimes to smear the surface, as well as to leave certain of the apertures filled with paint and result in the form of certain of the characters being indistinct and often irregular.

To obviate these difficulties, it is a particular object of my novel improvement to fill perforations temporarily with a soluble composition, apply waterproof paint over this surface thus rendered imperforate and later dissolve out the filler from the perforations leaving the waterproof coat on the metal surface in the outline intended.

Other steps in the method will be explained in the description when given in full.

The invention will be disclosed in the following description, illustrated in the accompanying drawings and recited in the appended claims.

In the drawings:

Figure 1 is a perspective view of a sign showing in front view the face of the sign made in accordance with my new method;

Figure 2 is a transverse section of the front plate of a sign showing the step of removing a filler from perforations in a plate;

Figure 3 is a similar view showing a filler coat in the apertures and covering both surfaces of a portion of the plate;

Figure 4 shows a face view of a portion of a sign plate with part of the perforations filled with paint and other part open for admitting light therethrough; Figs. 2, 3 and 4 are shown on a much larger scale, and

Figure 5 is a transverse view in section of a completed sign.

The production of the front plate of my sign will be described in particular detail, since the illumination of the sign is made in a rather conventional manner by mounting light sources back of the perforated plate, and requires no special description. It is of particular importance that the metal, if that material is used for the front plate, shall be free of rust at all times, and I therefore provide a stock that is perforated with relatively small apertures very slightly spaced and coat the front surface of the plate permitting the paint to pass into the apertures and even protrude over the rear surface. This operation fills the apertures of the entire plate, and the coat is rust-proof to prevent the plate including the inner surfaces from rusting from outside exposure. In the drawings, the perforated plate is designated by numeral 10 having perforations 11, the latter being shown in Fig. 2 filled with the rust-proof coat 12, all parts being shown in rather exaggerated form and size.

To reopen the apertures 11 in the plate, an agent such as a sponge or cloth 13 is rubbed over the rear surface of the plate 10, as shown in Fig. 2. This being done while the first coat is wet, the holes will be opened throughout the entire plate. This is the first step, unless the plate may be bought in stock already coated with such preservative qualities. Usually this cannot be done. If plate material already preserved is used, I can of course, omit this first step. The plate is usually of sheet metal, the perforations 11 may be of any shape or outline and the suggestive size varies from $\frac{1}{16}''$ to $\frac{3}{32}''$ or even $\frac{1}{8}''$ in diameter. Such sizes are chosen so that they will not be clearly visible at the distance ordinarily the sign is shown from the viewer, though applicant is not restricted to these limits as to perforation sizes named. The plate 10 is ordinarily very thin, but the thickness thereof must vary with the size of the sign that is to be suspended, the larger the plate, the thicker must the plate be. The

latter condition may be obviated somewhat by bracing the edges of the plate 10 however by the frame part 14 as shown in Figs. 1 and 5.

When the coated plate 10 is dry, I fill the perforations 11 with a soluble composition such as a rather thick mucilage or starch, or other soluble coat designated15 in the drawings. This easily soluble composition 15 will ordinarily fill all the perforations 11 again, but may be applied directly to the plate at once provided the plate material is already preserved throughout the surfaces of the aperatures as well as the front and rear surfaces of the sheet metal itself. It is also to be noted that the latter product is easier to find upon the market—i. e, the surfaces of the plate itself covered, than with the preserved inner surfaces of the apertures. This last-mentioned condition makes quite essential that the first step, that of coating with a rust-proof composition, shall be used.

The purpose of filling with the starch or other soluble material is to make the front surface flat and smooth so that a suitable colored paint coat can well and effectively be applied in the regular and delicate outline of the characters 19 which are to appear on the sign when finished. The soluble filler here used therefore very conveniently effects the desired result, since after the outer paint coat is dried, the filler can then well be removed by a suitable solvent—often plain water.

The final or waterproof paint is applied over the surface of plate 10 in the design intended, covering over the plate surface and over the soluble coat which fills the openings 11. This perforated plate rendered smooth by the filler 15 may be readily and accurately coated in a particular design even though the edge of the outline of said design shall cover a portion only of an aperture. This coating a perforated plate heretofore by a good waterproof has presented the great difficulty of causing irregular borders of letters or artistic views because of the open apertures. I have overcome this disadvantage by filling the apertures while applying the waterproof paint coat. In the drawings, the last paint coat is designated by 16. The lower portion of the plate 10 is shown in Fig. 3 as coated by 16 and the apertures 11 filled at 15. In the upper portion of this view only the filler coat 15 is shown.

The manner of removing the filler 15 may be much the same as that above described as a means of removing the first filler 12—some means as a sponge or cloth, or in some cases, a rubber web, is wiped over the reverse side of the plate 10 which operation dissolves and removes by washing away, the soluble coat 15 after the latter has served its purpose—that of supporting the last paint coat while being applied. The paint being waterproof will not be removed but will remain in its original outline.

My method of applying the waterproof coat to the front face of the plate 10, is to apply it as a border outside of the letters or other design intended to be shown effectively as a sign. In other words, in the completed sign, the apertures in the plate 10 that are within the outline of the design are to be open and positively so. The filling with coat 15 and later washing away, effects this very certainly. The design intended will therefore be shown by the illumination from the lights 18 at the rear of the plate shining through these apertures. The border is rendered positively opaque by the waterproof coat 16. Applicant desires not to be limited to the coating of the entire plate surface other than the surface of the design only. In some cases it will only be necessary to paint an opaque border such as 17 about the design, leaving the remainder of the plate 10, other than the design and border, open and uncovered. Either plan may be followed.

Attention is called to the plan of coating of the plate by the composition 12, if such be used, as a colored coat. No restriction being made to any character of color or shade, it being only desired that 12 and 16 shall be different shades. This renders the sharacters of the design visible in daylight. Usually, the first coat 12 is a light shade, as white or straw, while the waterproof coat 16 may be black, or blue or green. If the space on the plate 10 beyond the border 16 is uncovered by the waterproof coat, it may remain of the color of the first shade 12.

The method described is desirable because of the small size of the apertures 11. This small size is advantageous as providing a smoother surface, as seen in the daylight, and some expedient is rendered quite essential to prevent permanently filling the perforations by the coat for the opaque surface. By my novel method I am able to use sufficiently small apertures to make an apparently unobstructed flood of light therethrough, and still retain advantages of contrasting colors on the plate surface, to show an artistic sign in daylight.

It is noted that the rubbing of the reverse side of the plate after coating with 12, in effect "drawing out" that coat from the apertures, does not remove the same from the front face of the plate, since this operation is performed by the agent 13 at the rear face and is done while 12 is wet. After 12 is dry, it is not so easily removable.

Under some conditions, as when exceedingly small apertures are provided in the plate 10, though such apertures are effective in permitting light to flow therethrough sufficiently to show a design at the front surface of the plate, I may paint the border 17

directly upon the plate surface at the same time enclosing the design characters intended with uncovered apertures. Ordinarily however, filling with the composition 15 will be preferred.

In some cases, I may use galvanized iron for the sheet, and for some purposes, and sometimes I will apply a first coat for the design outline by using a stencil in the usual way, but this does not preclude filling the openings before applying the border 17, and later washing out as described. The advantage remains of filling the apertures as a smooth surface while painting on the finish coat. This enables me to paint the border, or coat outside the outline of the design intended, with entire regularity of outline not before attained when applied on perforated sheet metal.

While I have above described the method of painting my signs as one of temporarily filling the perforations in the outline of the designs, and coating the border or background, or both, and subsequently removing the filler; I may in some instances, fill as before and coat with waterproof paint, the designs themselves, and remove the filler from the border and background, so that in the latter case, the letters would show dark with the border and background illuminated, as will be evident.

As a further proposed alternative, when the designed and coated plate is otherwise complete, as above described, I may apply varnish to the entire surface, and dry the same, after withdrawing such composition from the back as before explained, or bake the varnished plate, after such removal, in an oven. Many such expedients are possible and practicable, but I contemplate especially in this method as claimed, the operation of treating a perforated plate for illuminating the same from the rear at night, and showing the same design in daylight by contrast of color, and do this with positive accuracy and regularity of outline not before attempted to my knowledge.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The method of manufacturing a plate bearing sign characters thereon shown in color by direct light and by illumination through minute apertures in the plate by artificial light comprising, filling temporarily the perforations of a perforated plate with a readily soluble composition, coating in limited design areas on one side with waterproof paint while the perforations are closed and subsequently washing out the filler coat from the reverse surface, whereby the painted area will be shown by contrast by daylight or other direct rays and the open perforated area or design will be shown by rays of light passing through the perforations from the reverse side.

2. The method of coating the surface of a sheet metal plate perforated, with a rust-proof coating filling the perforations, rubbing the reverse face of the plate to withdraw the coating material from the apertures, filling the apertures with a readily soluble composition and drying, applying a waterproof coat to the front side of the plate in a design area, washing out from the reverse side the washable composition leaving the apertures in the design area open, but the others closed by the waterproof coat.

3. The method of manufacturing a sign plate adapted for illumination from light source at the rear of the same comprising, filling temporarily the perforations of a finely-perforated metal plate with a readily soluble composition, painting with an opaque coating portions of the front surface of said metal plate which enclose a design area while the perforations are closed and subsequently washing out the filler coat from the reverse surface, leaving uncovered the perforations in said design area, whereby light directed towards the reverse face of the plate will outline the design area with a flood of light.

In witness whereof I have hereunto set my hand this 23rd day of December, 1925.

HENRY GLOBUS.