June 13, 1933. W. J. MacDONALD ET AL 1,914,142

SIGN

Filed Feb. 4, 1932

Fig. 1.

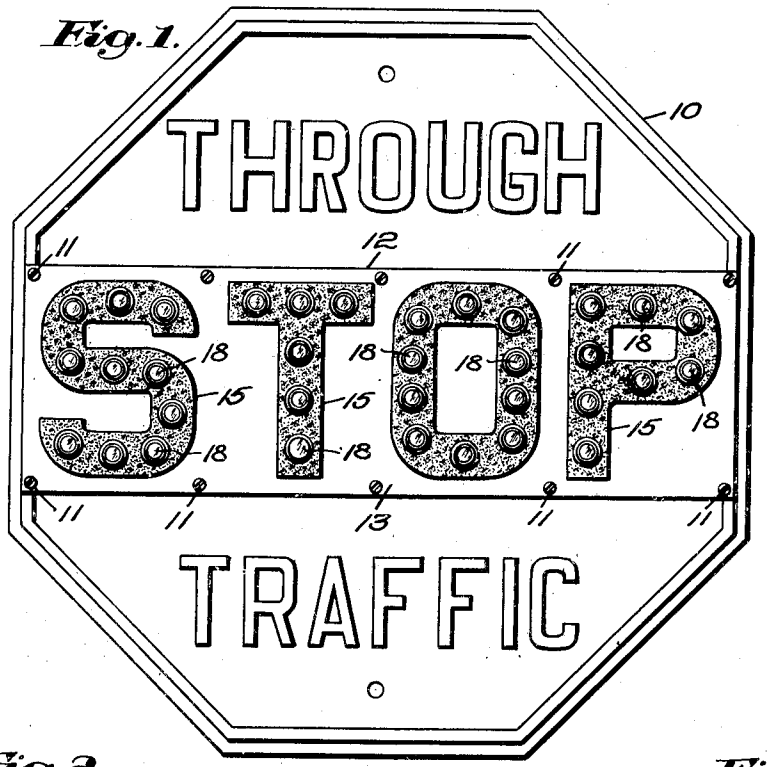


Fig. 2.

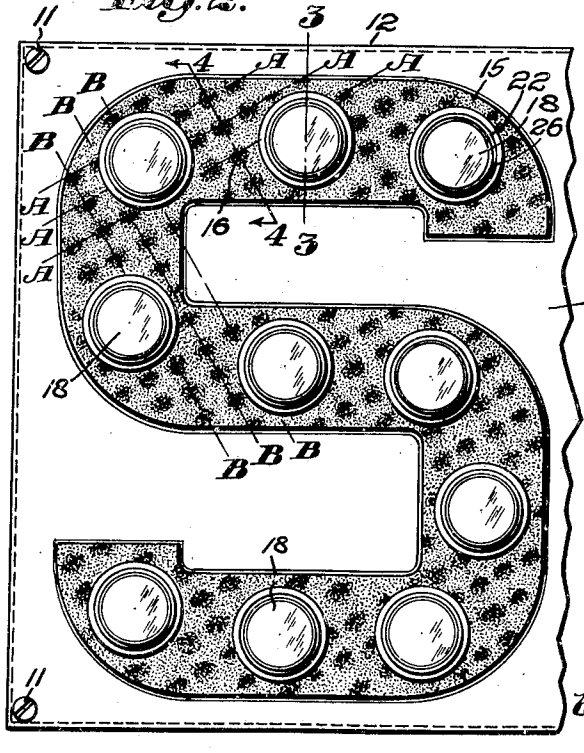


Fig. 3.

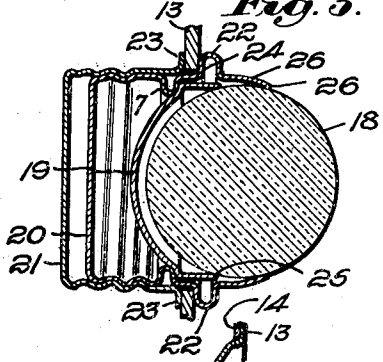
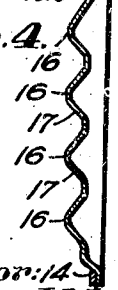


Fig. 4.



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UNITED STATES PATENT OFFICE

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Application filed February 4, 1932. Serial No. 590,874.

This invention relates to reflecting signs, traffic guides, street markers, signals and indicators for roadways, and vehicle number plates, all of the type adapted to be rendered visible by reflected natural or artificial light, and comprising a comparatively non-reflecting, or slightly reflecting background, upon which are light-reflecting characters or symbols which are capable of returning to the eye a large portion of the light falling on the reflecting surfaces from various directions. The invention aims to provide a sign or the like of this class, which shall be of high efficiency as regards visibility under various conditions, the sign being illuminated by daylight, and at night being illuminated by the light emitted from street lamps, vehicle lamps, and from the moon and stars, the construction of the sign or the like being such that the sign is clearly visible to pedestrians, as well as to occupants of vehicles from which the rays of light illuminating the sign or the like are projected.

The invention will best be understood by reference to the following description, when taken in connection with the accompanying drawing of one specific embodiment thereof, while its scope will be pointed out more particularly in the appended claims.

In the drawing:

Fig. 1 is a front elevation of a sign or the like, adapted to serve as a traffic guide, street marker, or other signal or indicator;

Fig. 2 is a front elevation, on an enlarged scale, of a portion of the comparatively non-reflecting, or slightly reflecting background with a character or symbol thereon, provided with light-reflecting means of high efficiency;

Fig. 3 is a sectional view on an enlarged scale on line 3—3 of Fig. 2; and

Fig. 4 is a sectional view, on an enlarged scale, on line 4—4 of Fig. 2.

Referring to the drawing, and to the embodiment of the invention illustrated therein, there is shown a traffic sign or the like comprising a plate 10, which may bear information or instructions of lesser importance, and on this plate there is mounted, as by screws 11, a second plate 12, herein of sheet metal, presenting a comparatively non-reflecting or slightly reflecting background 13, which may be, and herein is, coated with paint or lacquer 14 of appropriate color.

The plate 12 is embossed to provide one or more characters 15, herein projecting forward from the background 13, and having a surface rendered highly reflecting, as by plating the metal with suitable plating, such as chromium, or by making the character or symbol itself, or the plate on which it is formed, of non-corrosive metal, such as stainless steel, polished on the raised surface of the character or symbol. In any event, the face of the character or symbol stands out from the background (see Fig. 4), and it is polished to contrast with the background, and to reflect the light rays.

If the surface of the character or symbol were flat, its utility would be comparatively limited, and to increase its effectiveness by enabling it to reflect light rays impinging thereon from different directions, the surface is irregular. One convenient and highly effective way of rendering the surface capable of reflecting light at various angles is to make the surface corrugated, and as herein shown, we have employed two sets of corrugations along lines A—A and lines B—B, thus forming protuberances 16 (see Fig. 4), having angular or oblique sides 17, capable of reflecting light rays from quite a considerable angle to the plane of the background. In the present example, these rows of protuberances are disposed along lines which are oblique to horizontal and vertical lines.

To increase the effectiveness of the sign at night, each character or symbol is provided with one or more light-reflecting bodies within the outline of the character or symbol, and as shown for example in Fig. 2, the character is provided with several such bodies. The reflecting device herein shown for this purpose is one whose general characteristics are known, but whose details are novel. This comprises a light-transmitting body 18 (see Fig. 3), herein spherical and conveniently made of glass, the same being somewhat in the nature of a lens, and with this there is associated an appropriate reflector 19, herein having a concave reflect-

ing surface concentric with and spaced from the surface of the sphere. This spacing and the degree of spacing are important, as they determine the angle through which the light rays will be reflected. With the spacing shown, the angle is approximately 90 degrees.

The light-transmitting element and its associated reflector are mounted in a holder, herein comprising two bodies 20 and 21, having screw-threaded engagement with each other, said bodies having clamping abutments 22 and 23, respectively, on opposite sides of the plate 12, and about the margin of an aperture 24 provided in the plate to receive the body 20. The light-transmitting element is conveniently held in place as by providing the reflector 19 with a seat 25, on which said element is seated and which prevents inward movement of said element, while outward movement is prevented by providing the body 20 with a contracted portion 26, which is spun inwardly on and about the light-transmitting element forwardly of the center of the latter. The reflector is seated upon an abutment 27 presented by the body 20, and this limits inward movement of the reflector, and hence inward movement of the light-transmitting element. In assembling the parts, the reflector plate is first dropped into its place against the seat 27, the light-transmitting element is then placed against the seat presented by the reflector, and finally the forwardly projecting portion 26 of the body 20 is spun, or squeezed, inwardly about and onto the surface of the light-transmitting element, to hold the latter, as well as the reflector, firmly in place. These parts then constitute a unit which may be inserted into the aperture 24 from the front of the plate 10, and the unit is secured in place by screwing the body 21 onto the body 20, until the abutment 23 bears against the rear face of the plate 12, and draws the abutment 22 firmly against the front face. Replacement of parts can easily be made.

The sign, if located beside the highway, will be clearly visible by day or at night, because of the raised reflecting surface of the character or symbol, and at night the sign is especially effective, because of the additional light-reflecting device set into the character or symbol within the outline of the character. Thus the sign is highly efficient and satisfactory because it is capable of reflecting in various directions light rays emanating from surfaces throughout a wide area.

Having thus described one embodiment of our invention, but without limiting ourselves thereto, what we claim and desire by Letters Patent to secure is:—

1. In a sign, the combination of means presenting a comparatively non-reflecting background and a character whose surface is highly reflecting; a transparent body within the outline of said character, and means at the rear of said body to reflect light rays.

2. In a sign, the combination of a plate provided with an aperture, a light-transmitting element, and a holder for said element, said holder comprising two bodies having screw-threaded engagement with each other, said bodies having clamping abutments on opposite sides, respectively, of said plate about said aperture.

3. In a sign, the combination of a plate provided with an aperture, a light-transmitting element, and a holder for said element, said holder comprising two bodies having screw-threaded engagement with each other, said bodies being provided with outwardly directed flanges on opposite sides, respectively, of said plate about said aperture.

4. In a sign, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, and a mounting for said element and said reflector, said mounting comprising two bodies, one of which has a seat for said reflector, said bodies having screw-threaded engagement with each other and having clamping abutments, and a plate provided with an aperture whose margin is clamped between said abutments.

5. In a sign, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, and a mounting for said element and said reflector, said mounting comprising two bodies, one of which has an inwardly directed seat for said reflector, said bodies having screw-threaded engagement with each other and having outwardly directed clamping abutments, and a plate provided with an aperture whose margin is clamped between said abutments.

6. In a sign, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, said reflector having a marginal seat in which said element is seated and by which said element is held in spaced relationship with the reflecting surface of said reflector, and a mounting for said element and said reflector, said mounting comprising two bodies having screw-threaded engagement with each other, one of said bodies having an inwardly directed seat for said reflector, said bodies having outwardly directed clamping abutments, and a plate provided with an aperture whose margin is clamped between said abutments.

7. In a device of the class described, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, said reflector having a marginal seat on which said element is seated and by which said element is spaced from the reflecting surface of said reflector, and a mounting for said element and said reflector, said mounting comprising two clamping abutments adapted to engage opposite faces,

respectively, of a support having an aperture to receive the device.

8. In a device of the class described, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, means spacing said element from the reflecting surface of said reflector, means maintaining said element against said spacing means, and a mounting for said element and said reflector, said mounting comprising clamping means for engagement with opposite sides, respectively, of a support.

9. In a device of the class described, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, front and rear abutments which maintain said element in spaced relationship with said reflector, and a support having an aperture within which said element is disposed, said element projecting from opposite sides, respectively, of said support.

10. In a device of the class described, the combination of a light-transmitting element, a reflector associated with and disposed behind said element, front and rear abutments which maintain said element in spaced relationship with said reflector, a support having an aperture within which said element is disposed, said element projecting from opposite sides, respectively, of said support, and means engaging said support about said aperture on opposite sides, respectively, of said support.

In testimony whereof, we have signed our names to this specification.

WILLIAM J. MacDONALD.
WILLIAM R. MILLER.