This invention relates to means for illuminating street signs, traffic signs, or other objects, and more particularly to lens means for focusing light on existing lamp posts or street signs located across a street or in the vicinity.

Most cities and towns today have street lamp systems of various types. Some towns have street lamps only at intersections while others have them along the street as well. In addition, all cities have street signs at the intersections which identify the streets which make up the intersection. A problem has always existed in being able to read these signs at night. Usually, the street lamp is dependent upon to furnish the light to illuminate the sign. At the present time with the arrangements used today this is accomplished very inefficiently. The light usually has as its prime purpose the illumination of the intersection or street and as a result is placed in a position best suited for this purpose. The street sign on the other hand must be placed at a point where it is convenient to read. This results generally in a physical separation of the sign and the light such that the sign, at best, is poorly illuminated. The present invention is intended to solve this problem.

Accordingly, a principal object of the invention is to provide new and improved means for illuminating street signs, or other objects.

Another object of the invention is to provide new and improved means for illuminating street signs from an existing lamp post comprising lens means adaptably mounted on said lamp post.

Another object of the invention is to provide new and improved means for illuminating street signs from an existing lamp post comprising lens means adaptably mounted on said lamp post and reflector means on said street sign.

These and other objects of the invention will be apparent from the following specification and drawings, of which

FIG. 1 is a perspective view of an embodiment of the invention illustrating the use thereof.

FIG. 2 is a detail view illustrating the operation of the invention.

FIGS. 3, 4 and 5 are diagrams illustrating the operation of the invention.

FIGS. 6 and 7 are side views partly in section of other embodiments of the invention.

Referring to the figures, FIG. 1 shows a typical street intersection with a street lamp 14 on one corner and street signs 10, 11 on another corner of the intersection. A lens 15 has been added to the street lamp with an adjustable mounting 9 for instance of the goose neck type. The lens serves to collect light from the lamp or mantle and project it in a beam on the sign which must be illuminated. It should be noted that with this arrangement the concentration of light will increase the brightness many times at the remote sign. It is also important to point out that this is accomplished without detracting from the main purpose of the light which is to illuminate the intersection. The lens normally will be designed to give the most efficient results for the task. In FIG. 1 the lens 15 is shown mounted on an adjustable mounting which would be adaptable to almost any existing lamp post and so arranged that its position can be adjusted for best illumination depending on its focal length, the distance from the lamp to the sign, the size of the sign and the size and nature of the light source.

FIG. 2 shows a typical street sign having two members 10 and 11 at right angles, each of which contains the street identification. The street lamp 14 is mounted on a post 12 which is located across the street from the lamp post 13 which has a conventional electric light source 14. In order to focus the light from the light source 14 onto the street sign a lens 15 is adaptably mounted on the lamp post 13 by means of a collar 16 which is adapted to be affixed to the lamp post underneath the light bulb, for instance by means of a clamp 17. An adjustable telescoping rod means is provided comprising inner rod 18 affixed to the collar 16. A right angle sleeve member 20 fits rotatably over the rod 18 and is adapted to be adjustably secured thereto with axial adjustment by means of a clamp 21. The lens 15 is mounted on a rod 22 which is adapted to be inserted in the other leg of the sleeve member 20 and adjustably secured thereto by means of a screw type clamp 23. Various equivalent means for mounting the lens may be used, for instance a goose neck type member. However, a rigid adjustable means is preferable.

The lens 15 may be of glass or plastic and is of the type commonly termed a condensing lens, and may be of the fresnel type. FIG. 2 illustrates the optical principle involved in projecting a beam of light from a light source. FIGS. 3, 4 and 5 show how the nature of the beam can be changed by adjusting the distance between the lens and the light source. When the distance between the lens and the light source is exactly one focal length F, the rays of light in the beam from the lens 15 to the sign will be parallel (FIG. 3). If the area to be illuminated is larger the lens may be moved slightly closer to the light source which will cause the rays to diverge (FIG. 4). Moving the lens slightly further than one focal length will give a converging beam 54. These adjustments, about one focal length, will be used to control the beam so that it best illuminates the area which requires illumination. The best light source for this system is a point source or something approximating it such as a filament. Other equivalent lens arrangements may be used. The present system may be used with other type lamps, for instance, the mercury vapor type, by modifying the lens structure with conventional techniques.

Most street signs comprise two signs 10, 11 at right angles to each other. One of the signs 10 is generally parallel to the curb line and in a plane perpendicular to a line between the center of the sign and the light source which may be referred to as the optical axis. Therefore, the lens 15 is placed on this axis by means of the adjustable mounting means and adjustably mounted along the axis to obtain the best illumination for the sign.

The other sign 11 at right angles to the first sign 10 may be in line with the light rays or be shadowed by the first sign. In order to illuminate the surface of this second sign 11, it is preferable to mount one or more reflectors or mirrors 25 to receive the light from the light source and lens and reflect it onto the surface of the second sign. These reflectors are preferably mounted on a bracket which is attached to the second sign and they are a half and split socket joint which may be clamped after adjustment or on gooseneck extensions in general to obtain the best adjustment for the maximum illumination. Adjustable mounting means similar to that of lens 15 may also be used.

FIG. 6 shows another embodiment of the invention wherein a mirror 30 and lens 31 are mounted with the globe 32 on the lamp post. The mirror and lens are mounted on a spring wire mounting 33 which is mounted on the light bulb 34 in similar manner to conventional
lamp shades. The globe 32 has a transparent window 32'. The wire mounting 33 comprises two or more wire loops which are adapted to be adjustably clamped against the light bulb 34. A pair of extension members 33a, 33b are connected to the loops 33. The mirror 30 is 5 mounted on one end of the extension 33a and the lens 31 is mounted on the end of the extension 33b. The extension wires 33a and 33b may be bent to adjust the proper positioning of the mirror 30 and the lens 31. Fig. 7 shows an arrangement similar to that of Fig. 6 using a parabolic mirror 36 or equivalent mounted on the bulb 34 by means of a flexible extension member 37. The throat of the globe may be made large enough so that it may be inserted over the mirror 30 and lens 31 after they have been adjusted.

The globes in Fig. 6 and 7 may be made in two pieces in order to permit mounting the focusing mirrors and lens on the bulb and making proper adjustment; for instance the globe 32 may have a removable top.

The invention is not limited for use with street signs but may be used to illuminate traffic signs, fire alarms, emergency phones, or other objects.

The lens may be mounted in the globe in place of the window with an adjustable mounting, for instance a bellows type mounting.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof which is defined by the following claims.

I claim:

1. Means to illuminate street signs of the type having two signs on a first pole at right angles to each other, comprising an existing general illumination street light on a second pole spaced from said signs, a focusing means,

2. Means to illuminate a street sign on a first pole from an existing street light on a second pole of the type casting general illumination.

3. Means to mount said focusing means on said light, means connected to adjust the position of said focusing means, and reflector means adjustably mounted on at least one of said street signs, said reflector being positioned to reflect light from said street light onto at least one of said signs, said focusing means being positioned to focus light from said street light onto said reflector.

4. Means to illuminate a street sign on a first pole from an existing street light on a second pole of the type casting general illumination.

Means for directing concentrated illumination onto said sign spaced from said existing street type lamp without substantially detaching from the normal general illumination light function of said street light including, a focusing means, and means to adjust said focusing means on said street light to thereby control the area of illumination on said remote sign.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 20,640 Stimson December 25, 1938
1,204,425 Gall November 14, 1916
1,594,042 Bruggeman July 27, 1926
1,746,921 Amyot February 11, 1930
1,766,119 Gebauer June 24, 1930
2,442,807 Gramer June 8, 1948
2,875,323 Harling February 24, 1959
3,080,475 Corwin March 5, 1963