Oct. 18, 1927. 1,646,045

W. VAN ALEN

STREET LIGHTING SYSTEM

Filed June 14, 1923

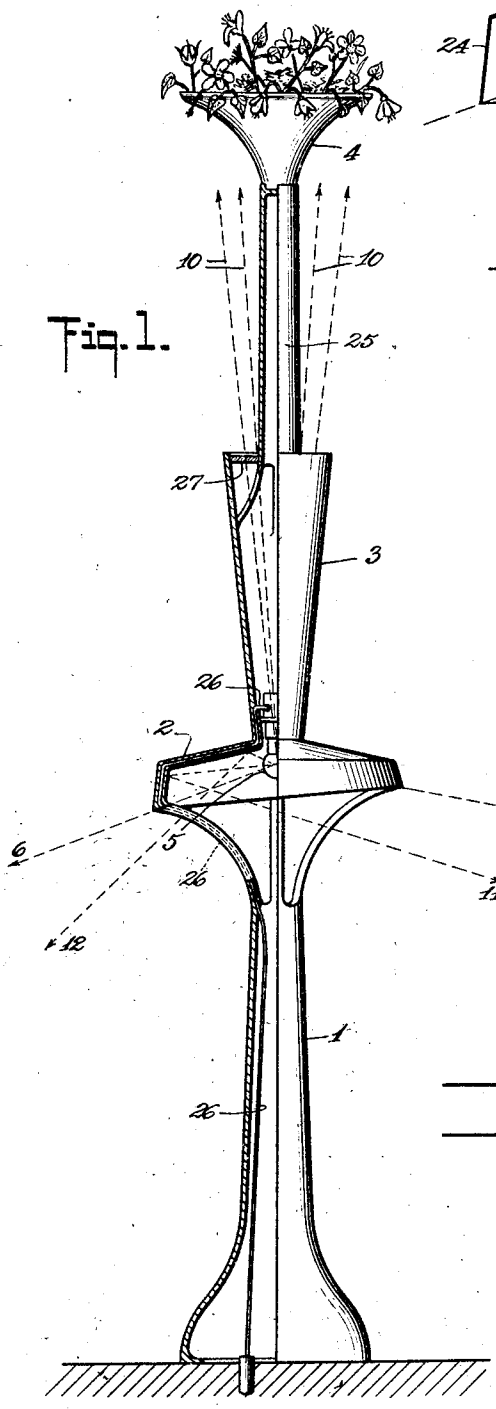

Fig. 1.

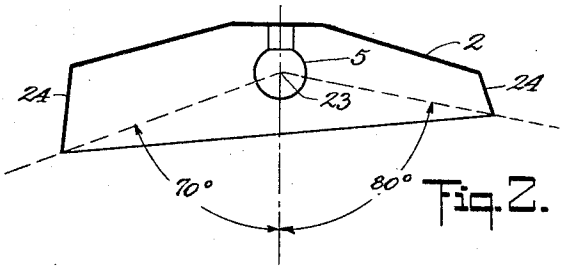

Fig. 2.

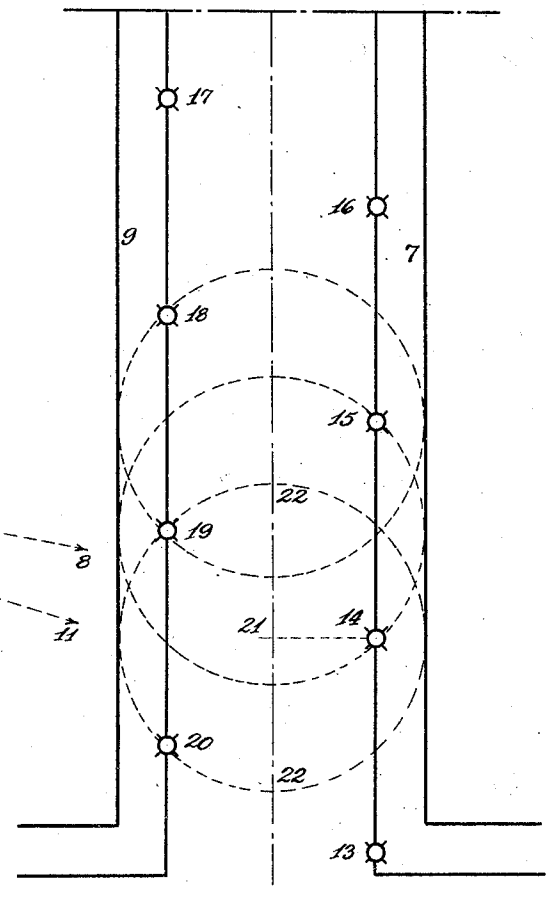

Fig. 3.

INVENTOR
William Van Alen

BY Jules B. Liberman
his ATTORNEY

Patented Oct. 18, 1927. 1,646,045

UNITED STATES PATENT OFFICE.

WILLIAM VAN ALEN, OF BROOKLYN, NEW YORK.

STREET-LIGHTING SYSTEM.

Application filed June 14, 1923. Serial No. 645,237.

This invention consists of a new and useful street lighting system employing a novel form of street lighting unit, which departs from the ordinary high post system in that the light source and reflector are placed below the normal eye level of the usual pedestrian or driver. The object of the invention is thus to eliminate all glare due to the light source being shaded practically to all angles in the normal line of vision. Other objects with resultant advantages are hereinafter set forth.

Fig. 1 is an elevation of a novel street lighting unit used in my system bisected to show a vertical cross section thereof.

Fig. 2 is a vertical cross section of the reflector part of such unit showing the path of the light rays,

Fig. 3 is a diagram of a street and roadway with typical placing of units and resultant intersecting light fields,

A typical post and equipment is shown in Fig. 1, in which a pedestal 1 approximately 4 feet 6 inches high supports a reflector 2, which in turn supports a secondary reflector 3. Upon the top of the post is mounted a basket 4 adapted to receive flowers or other ornamental forms. The lamp 5 is mounted in the reflector. Typical light rays to explain the desired type of distribution have been traced and operate as follows: The lamp 5 is mounted in a position relative to the reflector 2, so that the light cut off in the direction of ray 6 occurs at the pavement and building line 7 of Fig. 3. The cut-off in the direction of ray 8 is such that the light cut-off occurs at the pavement and building line intersection on the side of the street opposite to the post. Rays 11 and 12 show the path of typical reflected rays from the lamp and reflector intermediate to limiting rays 6 and 8. Rays in a plane at right angles to ray 8 will have the same light cut-off as ray 8. A translucent glass ring 27 completely covers the opening of reflector 3 to prevent dirt and moisture from reaching the interior parts of the post.

Fig. 2 is a more or less diagrammatic cross-section showing the approximate outline of the reflector 2 and its relative position to the lamp filament 23 of the lamp 5. The sides 24 of the reflector 2 are arranged so as to deliver a large vertical component of light from the lamp 5 and the cut-off near the pavement is approximately 70° while the cut-off toward the far pavement is approximately 80°.

Referring to Fig. 3 in which a typical street plan is presented, the sidewalks are respectively represented by the numbers 7 and 9 and the units as shown in Fig. 1 as numbers 13 to 20 inclusive, placed in staggered relation on opposite sides of the street. The light cut-off from the reflector is arranged so that the street lighting unit 14, will give a cut-off as indicated by circular area 22, having its center at 21. The extremities of these circular lighting fields are shown at 21 and 22 and the intersections of neighboring fields indicated.

In Fig. 1, certain additional features have been added for ornamental installations in which 3 is a supplementary reflector mounted above the main reflector into which light rays 10 from the light source escape upwardly illuminating the upper post 25 and the base of the flower receptacle 4. In place of such flower receptacle a statue or other ornamental form can be used.

It is contemplated in a lighting system using the units above described that the post shall be approximately 4 feet 6 inches in height, the ornamental forms reaching to any desired height suitable in the system of decoration.

An extremely simple system of wiring 26 has been shown and the units employed are designed so that they can practically be cast in one piece.

The advantages of a street lighting system employing the units shown herein are that glare is practically eliminated due to the fact that the light is below the normal plane of vision and by means of the reflector the eye of the driver or pedestrian is shaded at all angles in the normal plane of vision. There will be an economical distribution of energy due to the fact that the light sources are placed near to the ground and because all of the reflected light is confined to the street and pavement surface with the exception of the small amount utilized to illuminate the ornamental post top. In the present system light is not wasted on building fronts and the absence of direct light showing into the windows of adjoining houses does away with this hitherto annoying feature. There will still be

sufficient light from surface reflection from the sidewalk to illuminate the buildings for artistic effect.

It should be understood that the essential feature of the invention is the low post and reflector of proper design as the system can be carried out without further elements. The supplementary features such as the secondary reflector, the ornamental forms and supporting post are additional details which may be employed to secure artistic effects to which the system is readily adapted.

In the claims the expression "normal plane of vision" has been used. This relates to the normal plane of the ordinary pedestrian, the eyes being at a level somewhat under five feet. For this reason, as previously set forth, the pedestals are approximately four feet, six inches.

I claim:

1. A street lighting unit comprising a hollow post comprising a base, an intermediate dual reflector, and an upper ornamental extension, a light source enclosed by the reflector, the lower reflector being flared and situate below the normal plane of vision, and the upper reflector being adapted to reflect light rays to the ornamental forms on the upper extension.

2. A street lighting unit comprising a hollow post comprising a base, an intermediate dual reflector, and an upper ornamental extension, a light source below the normal plane of vision enclosed by the reflector, the lower reflector being flared and situate below the normal plane of vision, and the upper reflector being adapted to reflect light rays to the ornamental forms on the upper extension.

Signed at New York city in the county of New York and State of New York this 9th day of June, 1923.

WILLIAM VAN ALEN.