Nov. 15, 1938. S. B. KRAUT ET AL 2,137,089

LIGHTING FIXTURE

Filed March 8, 1935 2 Sheets-Sheet 1

Fig. 1.

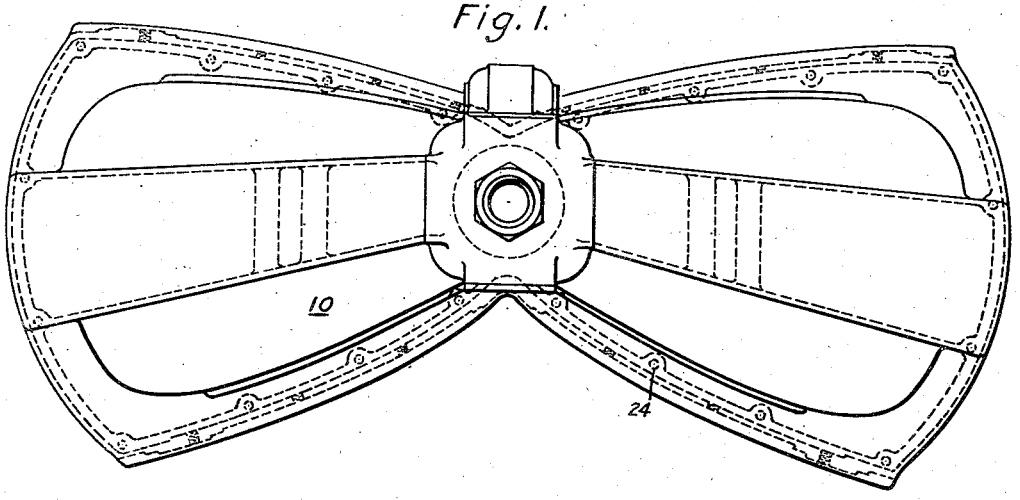

Fig. 2.

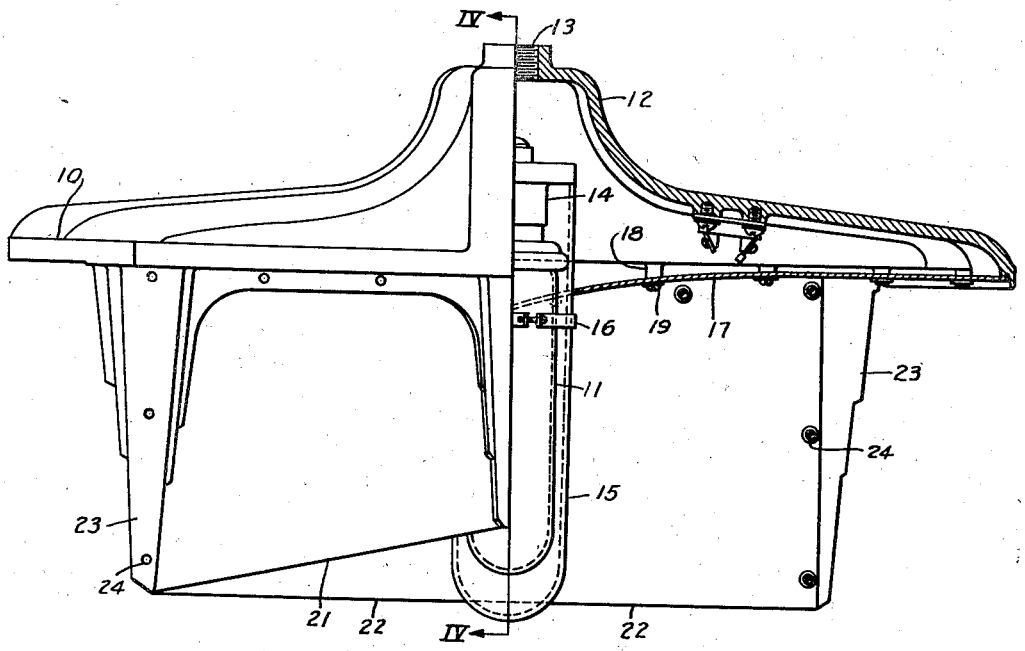

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Fig. 3.

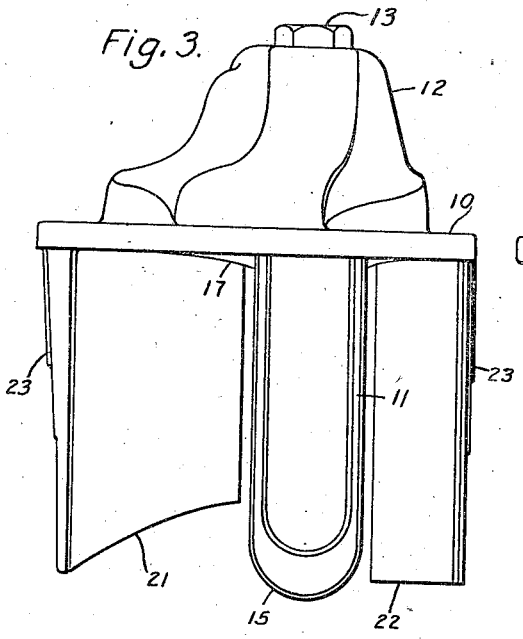


Fig. 4.

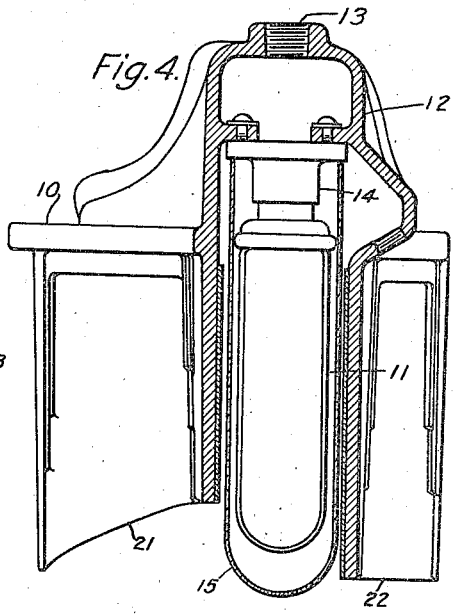
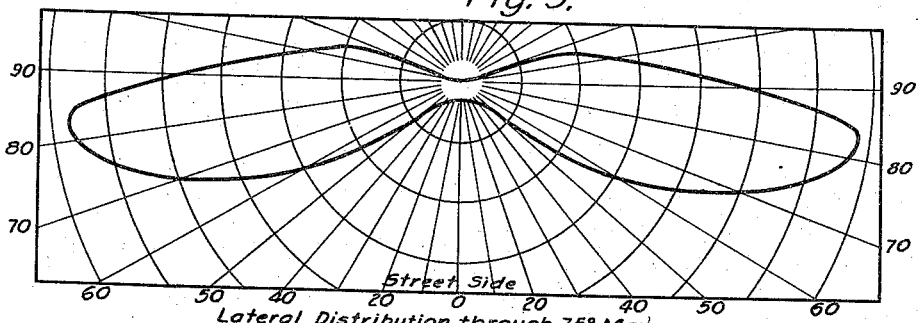
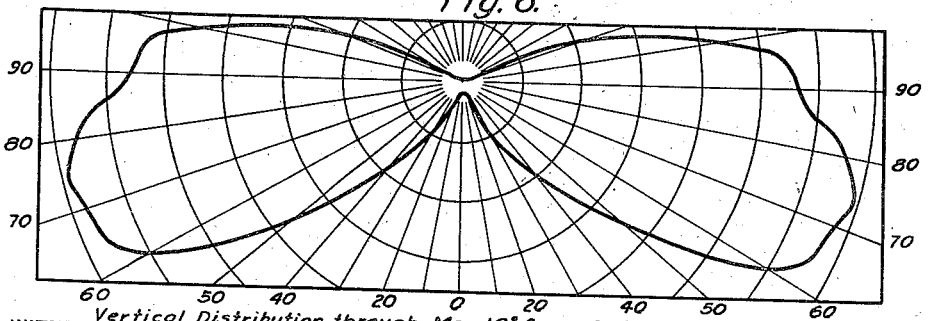


Fig. 5.



Lateral Distribution through 75° Max.

Fig. 6.



Vertical Distribution through Max 10° from Curb toward Street

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2,137,089

LIGHTING FIXTURE

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Application March 8, 1935, Serial No. 9,997

6 Claims. (Cl. 240—25)

Our invention relates, generally, to lighting fixtures, and more particularly, to street or highway lighting units adapted to project beams of light in opposite directions along the street or highway.

The object of our invention generally stated is to provide a street or highway lighting unit of ornamental nature which shall be efficient in operation and economical to manufacture, install and maintain.

A more specific object of our invention is to provide for obtaining a predetermined light distribution from a light source by means of a plurality of reflectors combined as a unitary structure.

Another object of our invention is to provide for utilizing a plurality of horizontally and vertically disposed reflecting mediums to produce an asymmetric or other predetermined light distribution.

A still further object of the invention is to provide for obtaining an asymmetric light distribution for street and highway illumination by means of a plurality of curved reflectors arranged in a predetermined manner with respect to one another and the light source and combined into a unitary structure.

Other objects and advantages of our invention will become evident from a reading of the following detailed description in conjunction with the drawings in which:

Figure 1 is a top plan view of the unit embodying the principal features of the invention showing the shape of the upper housing,

Fig. 2 is a view partly in elevation and partly in section showing the shape of and position of the horizontal reflectors,

Fig. 3 is an end elevational view of the unit showing the shape of the vertical reflectors and their relative positions with respect to the light source,

Fig. 4 is another end elevational view partly in section through lines IV—IV of Fig. 2, showing the position of the light source and its socket, and

Figs. 5 and 6 are views of typical curves showing lateral and vertical distribution of the light produced by the particular unit illustrated.

Referring now to Figs. 1 through 4 of the drawings, it will be observed that the lighting unit comprises a main or upper housing member 10 which functions as a protective top as well as a supporting means for the light source 11 which is illustrated in this instance as a sodium lamp. It is to be understood, however, that the use of a unit of this general type is not limited to any particular type of lamp as sodium, mercury, incandescent or any other suitable type of lamp may be used to equal advantage as will be referred to hereinafter.

As shown best in Figs. 2 and 4, the housing 10 is provided with a central dome-shaped portion 12 which is provided with a threaded opening 13 at the top thereof to receive a supporting member whereby the unit may be supported above the street or other surface to be illuminated. The light source 11 may be supported in a vertical position from the housing 10 by means of a suitable socket 14, which may be placed within the dome-shaped portion 12 and secured to the housing in any suitable manner as shown in Fig. 4. In this instance, the light source 11 is provided with a flask 15 which may be supported by means of a clamp 16 or in any other suitable manner.

In order to control the light distribution of the source 11 a plurality of reflectors are utilized which may be referred to as horizontal and vertical reflectors. The horizontal reflector 17 is mounted on the underneath side of the housing member 10 and may be secured thereto in any suitable manner such for example, as by means of the studs 18 and screws 19. The horizontal reflector may comprise a single piece or a plurality of pieces, preferably two and so shaped and curved as to give the desired light distribution. In this instance the two upper or horizontal reflectors 17 are curved to the same degree and are identical in shape, flaring outwardly as viewed from the top or bottom, from the central portion of the unit near the light source 11.

The vertically disposed reflectors 21 and 22 may likewise be in one or two pieces and supported from the housing 10 by means of depending supporting arms 23 which may or may not be formed integral with the housing 10. The vertical reflectors may be secured to the arms 23 by screws 24 as shown in Fig. 2.

As in the case of the horizontal reflectors 17 the vertical reflectors 21 and 22 are so shaped and curved as to produce the desired form of light distribution. The unit illustrated is particularly adapted for street or highway lighting and as viewed in Fig. 3 the left side is the street side and the right the curb side. While in this instance, the reflectors on either side are of the same shape, it will be noted that the street side reflectors 21 are of different shape and curvature than the curb side reflectors 22.

The reflectors are so shaped in this instance as to produce an asymmetric light distribution as shown in Figs. 5 and 6 which are typical light distribution curves for the particular embodiment of the invention illustrated. Fig. 5 shows the lateral distribution of light while Fig. 6 illustrates the vertical distribution, the beams being shown as directed approximately 160 degrees apart horizontal and 15 degrees below the vertical.

It will be readily understood that almost any form of light distribution may be obtained by

varying the shape and curvature of certain ones or all of the reflectors to obtain the desired results. Further, the use of different kinds of lamps or light sources may require changes in the shape and curvature of the reflectors in order to obtain the exact form of light distribution desired, but, in general, the shape and curvature of the reflectors is somewhat the same for all of the different types of lamps for any particular form of light distribution, such, for example, as asymmetric distribution as shown.

The reflectors may be made of any suitable material, although we have found that sheet aluminum properly treated to produce a good reflecting surface is a very good material for this purpose as it is easily formed and rust and corrosion resistant.

In view of the fact that the reflectors are so positioned as to obtain the greatest degree of protection, there is a minimum possibility for the accumulation of dust and dirt which causes the unit to function at a high efficiency with a minimum of maintenance.

The great simplicity of the design produces a decorative type of unit and at the same time makes it possible to easily service and maintain the unit as it may be relamped without removing a heavy globe or the reflectors may be cleaned by simply wiping them off.

In view of the foregoing description, it is evident that we have provided a lighting unit or fixture for street or highway lighting which produces a highly uniform and efficient light distribution, although of simple construction and economical to build and which is equally decorative both day and night.

It may be stated in conclusion, that, while the illustrated example constitutes a practical embodiment of our invention, we do not wish to limit ourselves strictly to the exact details herein illustrated, since modifications of the same may be made without departing from the spirit of the invention, as defined by the appended claims.

We claim as our invention:

1. A lighting fixture comprising in combination, a housing having a dome-shaped central portion and oppositely disposed wing portions, a lamp, a socket mounted within the dome-shaped central portion of the housing for supporting the lamp in a vertical position beneath the housing, a plurality of reflector plates supported by the main housing in vertical relation thereto and on opposite sides of the lamp, said reflector plates extending along the edges of the wing portions, and reflector plate means disposed in a substantially horizontal position underneath the wing portions of the housing above the lamp and in abutting relation to the upper edges of the said vertically disposed reflector plates.

2. In a street lighting fixture, in combination, an elongated housing having oppositely disposed wing portions, a lamp supported beneath the central part of the housing in a vertical position, elongated longitudinally-curved metallic reflector plate means mounted beneath the housing and above the lamp in a substantially horizontal position and having an opening therein through which the lamp extends, and elongated longitudinally-curved metallic reflector plate means supported from the housing in a substantially vertical position on two opposite sides of the lamp and extending along and in abutting relation to the sides of said horizontally mounted elongated reflector plate means to provide joined horizontal and vertical reflecting surfaces above and on two opposite sides of the lamp, thereby to distribute light on a roadway in opposite directions.

3. A lighting fixture comprising in combination, a housing member provided with oppositely disposed wing portions having supporting arms depending downwardly therefrom in a vertical position, a lamp supported in a vertical position beneath the housing and centrally thereof, an elongated reflector plate means secured to the housing above the lamp in a substantially horizontal position, and additional reflector plate means secured to the supporting arms on opposite sides of the lamp in a substantially vertical position, the upper edges of the said vertical reflector plate means being disposed in abutting relation to the side edges of the said horizontal reflector plate means.

4. A lighting unit comprising an elongated housing having oppositely disposed wing members, a socket secured to the housing for supporting a lamp in a vertical position beneath and centrally of the housing, a pair of symmetrically shaped curved upper reflector plates secured to the underside of the housing above the lamp in end-to-end relation, a plurality of support arms along the opposite sides of the housing and extending vertically downward therefrom, and a pair of symmetrically shaped curved side reflector plates secured in end-to-end relation to the support arms along the opposite sides of the housing in abutting relation to the upper reflector plates.

5. In a street lighting fixture for lighting the roadway surface in opposite directions beneath the fixture, the combination of an elongated lamp mounted vertically, aluminum reflector plate means having oppositely disposed wing-shaped portions mounted horizontally above the lamp to direct light downwardly and having an opening through which the lamp extends, and a curved aluminum reflector plate means mounted vertically on two opposite sides of the lamp, the curvature of the said vertically disposed reflector plate means generally conforming to the shape of the longitudinal edges of the wing-shaped reflector plate means, thereby to provide a continuous reflecting surface above and on two opposite sides only of the lamp.

6. In a street lighting fixture, in combination, an elongated housing having oppositely disposed wing members a lamp supported beneath and centrally of the housing in a vertical position, an upper reflecting surface above the lamp comprising a pair of wing-shaped reflector plates supported by the housing in end-to-end relation and having their abutting ends curved downwardly and joining in a plane coincident with the longitudinal axis of the lamp, and a vertical reflecting surface on two opposite sides of the lamp each comprising a pair of reflector plates supported in a vertical position from the housing in end-to-end relation and curved to conform to the shape of the wing-shaped reflector plates, said vertically-mounted reflector plates having their upper edges in abutting relation to the wing-shaped reflector plates, thereby to provide reflecting surfaces above and on two opposite sides of the lamp to direct light therefrom upon the roadway in opposite directions.

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