

Aug. 9, 1966

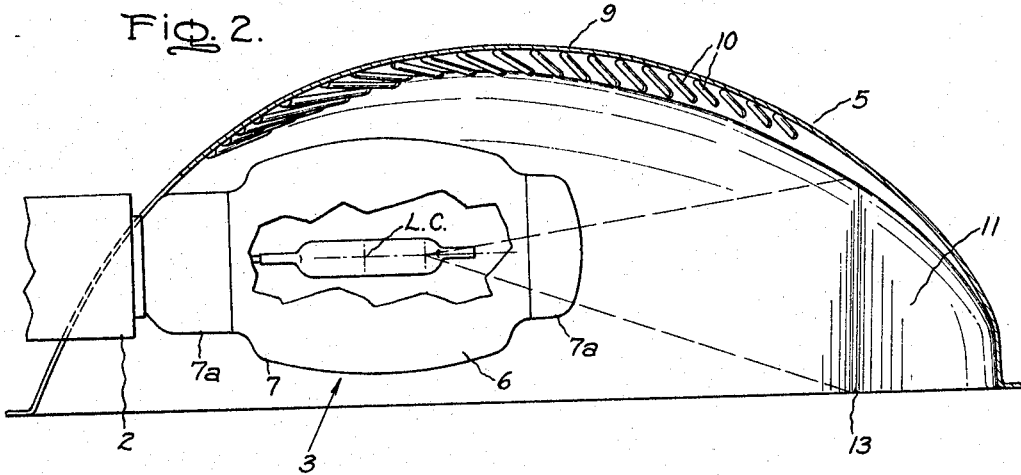
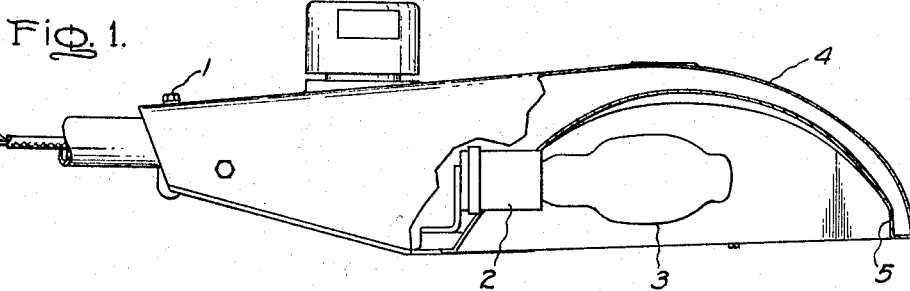
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3,265,883

LUMINAIRE

Filed April 30, 1964

3 Sheets-Sheet 1



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FIG. 3.

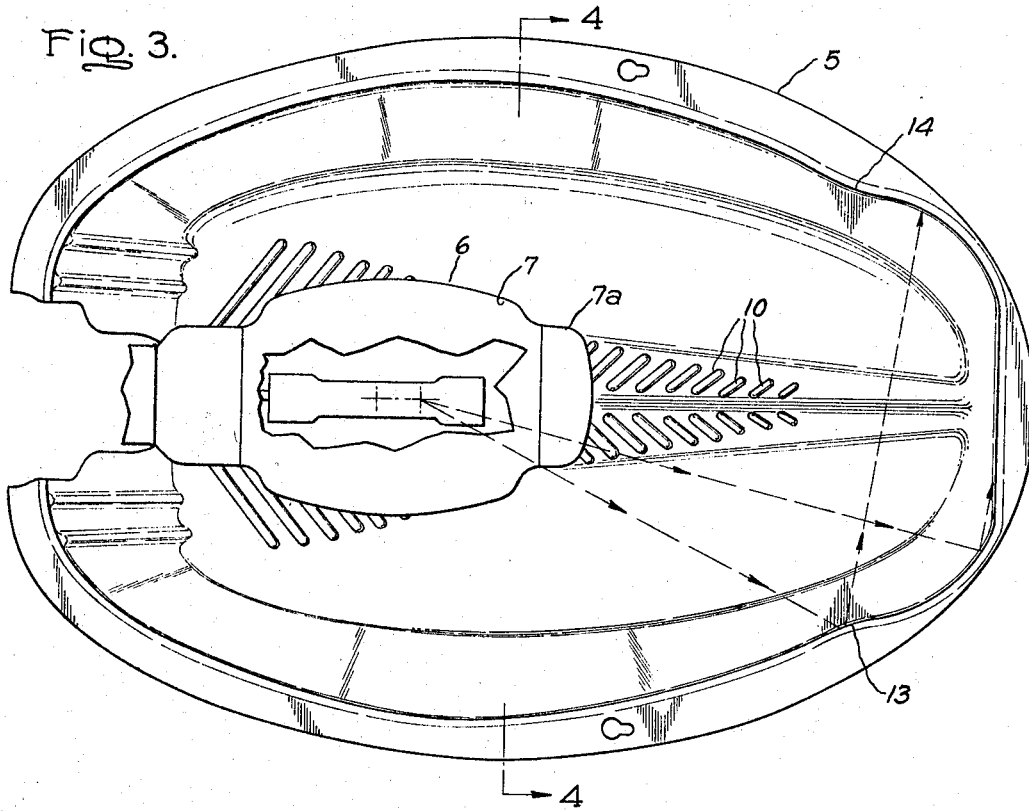
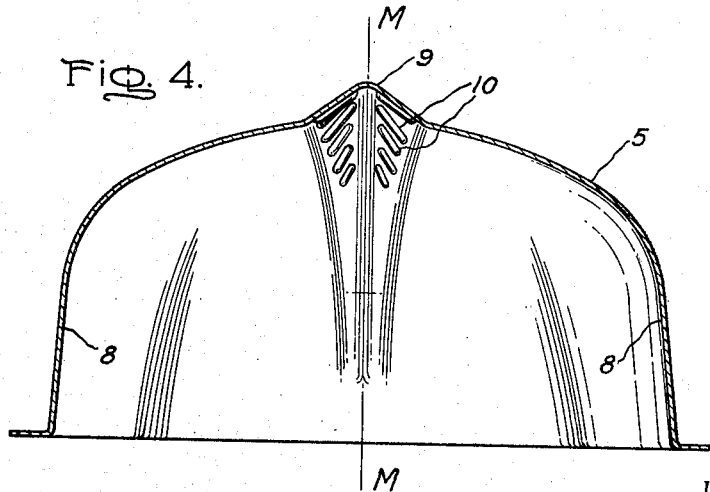


FIG. 4.



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Fig. 5.

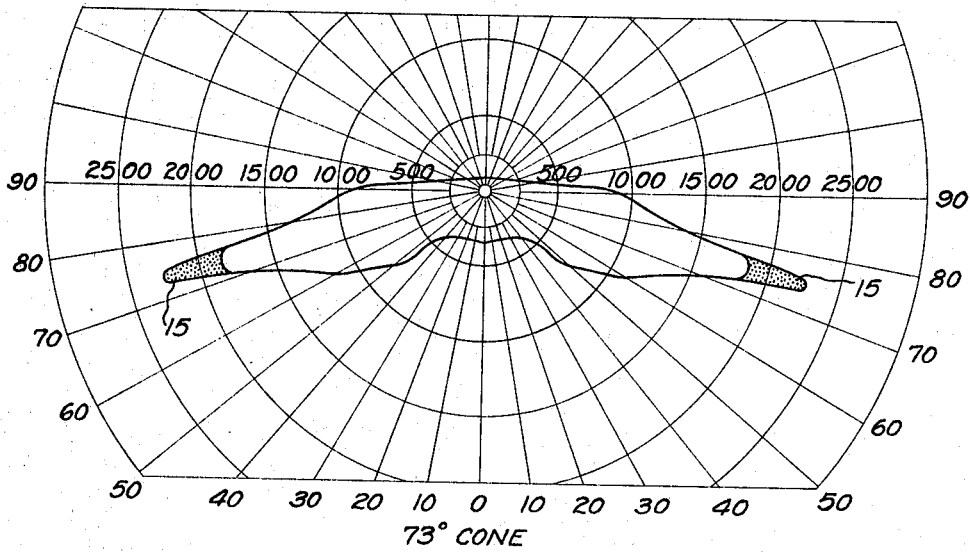
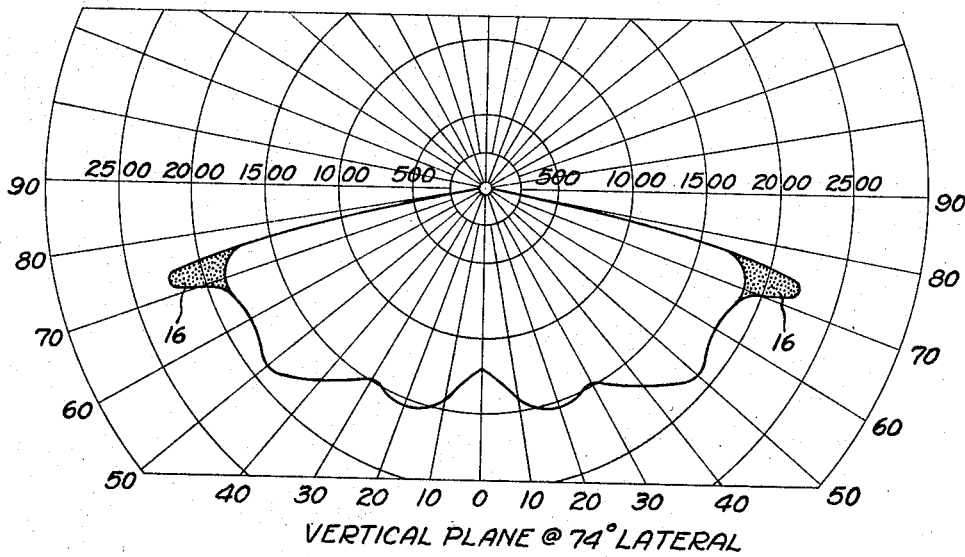


Fig. 6.



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3,265,883

LUMINAIRE

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3 Claims. (Cl. 240-25)

This invention relates to a luminaire and more particularly to luminaires intended for asymmetric up-and-down the roadway lighting of streets or highways.

It has become a standard practice to design luminaires for disposition at one side of a roadway. Proper distribution of the light from luminaries in this position is one of the essential factors in efficient roadway lighting. In such luminaries it is necessary to provide a roadway lighting pattern which is asymmetric with respect to a line parallel to the road and passing through the nadir. It is an object of this invention to provide such a luminaire which more advantageously uses the light from the source and hence is more efficient.

It is a further object of this invention to provide for directional lighting utilizing an essentially open reflector whereby the use of high cost refracting means may be essentially eliminated.

A better understanding of the invention and the further appreciation of its various objects and advantages may be had with reference to the following detailed specification, taken in conjunction with the accompanying drawing wherein:

FIG. 1 is a side elevation of a luminaire embodying the invention;

FIG. 2 is a side sectional view of a part of FIG. 1;

FIG. 3 is a bottom view of the luminaire shown in FIG. 1, showing the reflector;

FIG. 4 is a sectional view of the reflector taken on line 4-4 of FIG. 3; and

FIGS. 5 and 6 are graphs showing the light distribution therefrom.

As shown in FIG. 1, the luminaire includes mounting means 1, electric lampholding means 2 and a lamp 3, which is one of the high pressure mercury types, having a light center LC. An upper inverted U-shaped open bottom housing 4, which as shown is an integral die cast piece, covers and is a part of the luminaire. It will be understood that the upper housing need not be made as an integral piece. The mounting means 1 is more specifically shown and disclosed in copending application Serial No. 246,560, filed December 21, 1962, and assigned to the same assignee as herein, now abandoned, which disclosure is incorporated by reference herein.

The light output of the lamp 3 is controlled by an inverted bowl-shaped reflector 5 which is secured within the end of the housing 4 by any suitable means so as to generally surround the lamp.

The lamp 3 has an envelope or bulb 6 having thereon a phosphor coating 7 except at the outer ends 7a of the bulb. With the phosphor coating on the envelope the lamp is color-improved and more efficient, but the size of the source is increased. Therefore, good light control has been difficult to attain.

As shown in FIG. 1, the luminaire is positioned with the plane of the bottom opening of the reflector 5 at an acute angle of about approximately 2° and with the elongated light source 3 tilted upward toward the roadway to make better use of the candle power and lumen output of mercury arc lamps, which is highest at angles perpendicular to the lamp axis. With the light source tilted and the reflector opening inclined, more of the direct light falls, and more reflected light can be easily directed, into the roadway pattern and a desirable low

angle of cut-off is obtained on the house side of the luminaire.

The reflector is of a generally ovate shape in horizontal and vertical cross-section with a plurality of reflecting surfaces to direct the light onto the roadway in an asymmetric pattern.

The reflector is generally symmetrical on either side of median plane M—M and has paraboloidal surfaces 8 on either side thereof for reflecting light from the phosphor-coated area of the source downwardly at an angle of 70°-78° vertical and toward the center of the roadway at an angle of approximately 70° lateral into two main beam sections on opposite sides of the reflector. The upper area of the reflector is provided with a ridge 9 which serves to direct light downwardly and around the side of the source. This ridge 9 is provided with flutes 10 which serve to diffuse the reflected light and eliminate spot distribution of light on the roadway. Because of the use of the phosphor coating on the lamp, the control of the light and obtaining of, for example, I.E.S. Type III distribution, is difficult. In accordance with the invention, this difficulty is overcome and efficiency increased by providing reflector surfaces 11 at the street side end of the reflector which direct light from the clear end of the lamp downwardly at 70°-78° vertical and at a lateral angle of approximately 73° into the main reflected beams. To accomplish this the reflector is indented at areas 13 and 14 which, as best shown in FIG. 3, are located on a line drawn between the end of the arc within the source and the terminal edge of the phosphor coating. The increased utilization of the light for the luminaire is depicted by the shaded areas 15 and 16 in FIG. 5 and FIG. 6. From this the advantage of using the light emitted from the clear end of the lamp is readily apparent.

While the present invention has been described with reference to particular embodiments thereof, it will be understood that numerous modifications may be made by those skilled in the art without actually departing from the scope of the invention. Therefore, the appended claims are intended to cover all such equivalent variations as come within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A luminaire adapted to be mounted adjacent a roadway comprising an elongated inverted bowl-shaped reflector having a rim extending in a plane and having reflecting surfaces on opposite sides with a contour which is paraboloidal in vertical and horizontal cross-section, a lamp comprising an elongated bulb having a base mounted at one end of said reflector and extending therein toward the other end thereof substantially along said plane, said lamp emitting a principal amount of light from its side portions toward said reflecting side surfaces of said reflector, and an additional amount of light from its end portion generally toward said other end of said reflector, the light source of said lamp being so positioned with respect to said reflecting side surfaces that said principal amount of light from said lamp is reflected therefrom downwardly and outwardly toward the center of the roadway in main beams on opposite sides of the luminaire, said reflector being formed with inwardly convex reflecting portions on its interior surface between said lamp end portion and said other end of said reflector and in the path of said additional amount of light for reflecting the same into said main beams.

2. A luminaire as defined in claim 1, said reflector having reflector surfaces at its top forming a ridge and having flutes for diffusing light downwardly about said lamp.

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3. A luminaire as defined in claim 1, wherein said lamp comprises a phosphor-coated bulb having a clear end.

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