

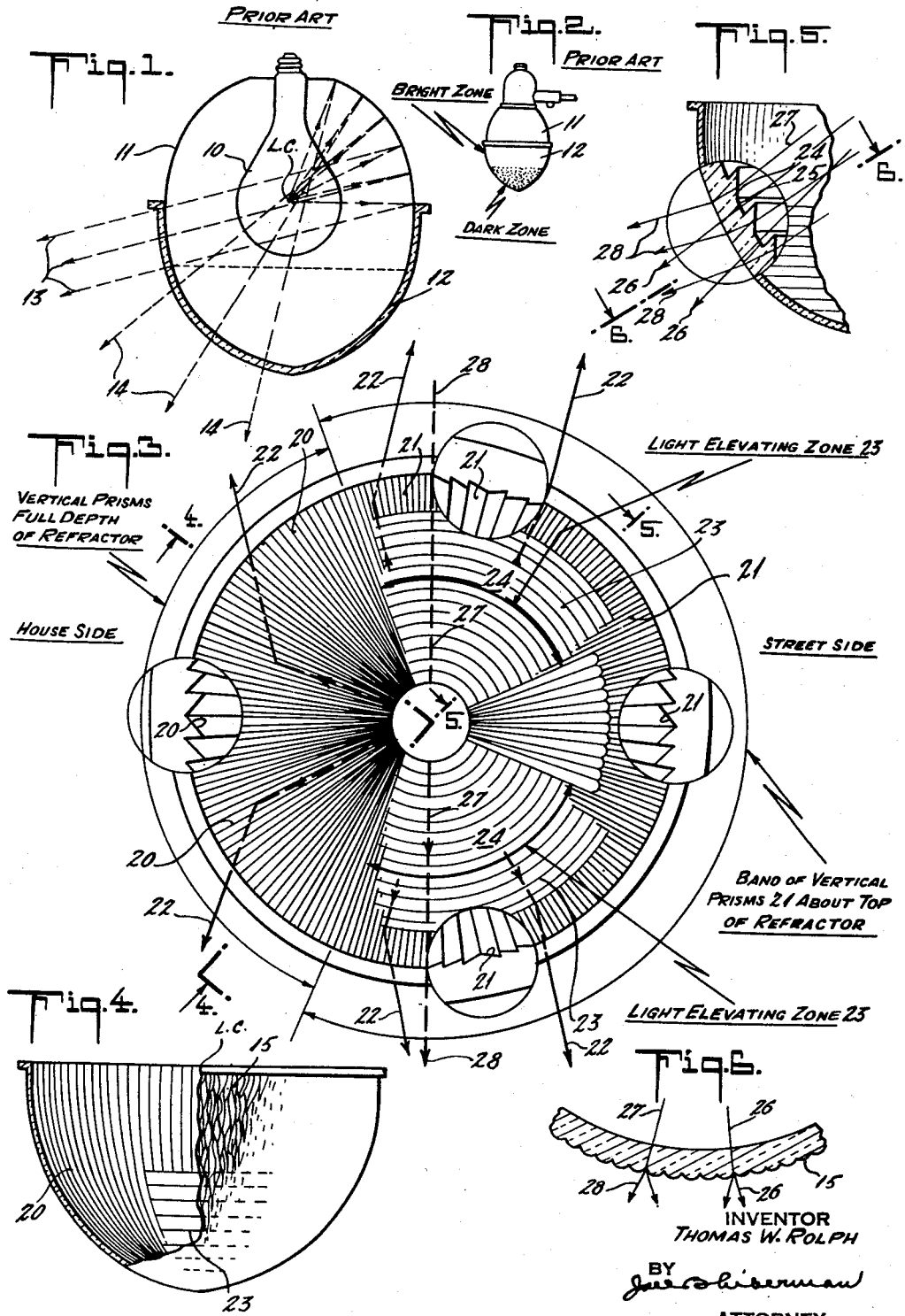
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STREET LIGHTING LUMINAIRE

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STREET LIGHTING LUMINAIRE

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The present invention relates to street lighting luminaires and is more particularly directed toward such luminaires provided with globes underneath the light source.

A common form of street lighting luminaire employs a downwardly acting reflector with a cut-off angle approximately horizontal and having a contour to reflect most of the light out below the mouth of the reflector at angles high enough above the nadir to fall on remote areas of the street. Such reflectors are customarily closed by globes, these globes generally being provided with external vertical diffusing flutes which break up the light rays. Such globes may also be provided with vertical prismatic forms designed to give various asymmetric distributions for employment at various locations along the street.

The type of reflector globe street lighting luminaire just referred to is characterized by very high brightness in the region just below the horizontal where the dominant light rays are reflected out at high angles for lighting remote street areas and below this band of high brightness the globe when viewed from remote points of observation, has very low brightness, the reason being that the lower part of the globe transmits the light at angles substantially below the dominant beam.

The present invention contemplates providing the globes of street lighting luminaires of the type above referred to, with suitable light refracting elements to elevate some of the light which would normally fall on the nearer areas of the street and emit it into the same general direction above the nadir as the dominant beam. In this way the lower part of the globe normally so dimly lighted as to appear dark, is now lighted up with sufficient brightness to appear bright alongside the very high brightness obtained at the top of the globe.

The accompanying drawings show, for purposes of illustrating the present invention, an embodiment in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a diagrammatic sectional view through a prior art type of luminaire;

Figure 2 is an elevational view of such a luminaire as it appears from a remote point of observation;

Figure 3 is a top plan view of a globe in the form of a refractor designed for mounting at the side of the street;

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Figure 4 is a side elevational view of the refractor of Figure 3 with parts in section on the line 4—4;

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 3; and

Figure 6 is a fragmentary sectional view on the line 6—6 of Figure 5.

In Figure 1 the prior art type of luminaire is illustrated as employing a pendent incandescent lamp 10 with the light center at L. C., a downwardly acting reflector 11 and an enclosing globe 12. The lower part of the reflector 11 is parabolic and is designed to send out the reflected light rays illustrated at 13 at the desired angle, typically 75° above the nadir. Most of the light flux emitted by the filament is transmitted, however, in this reflected beam or in a beam of direct light rays at high angles above the nadir. Some of the flux, however, such as represented by rays 14 emitted directly from the lamp, passes out at such low angles as to fall on nearby street areas.

Such prior art globes are customarily provided with external diffusing ribbing such as illustrated at 15 (Figures 4 and 6), this ribbing extending the full depth of the globe and serving to spread rays such as 13 and 14 laterally to a slight extent. If desired, the region of the globe through which the rays 13 are transmitted may be provided with internal prismatic configurations to provide asymmetric distributions. When such a globe is viewed from a remote street area it has a very bright zone at the top, as indicated in Figure 2 and a dark or relatively dark zone at the bottom, as also indicated in this figure.

The new globe is intended for employment with a reflector such as 11 above referred to. In the particular form shown this globe is what is more generally known as a lateral refractor. It has vertical prisms for the full depth of the refractor occupying a lateral zone somewhat less than 180° as indicated at 20. This vertical prism system extends all the way around the upper part of the refractor as indicated at 21 and these vertical prisms control most of the light flux emitted by the unit and send it along the street in a well known manner, the rays being indicated at 22. On each side of the zone of full depth vertical prisms, the refractor is provided with a zone 23 occupied by light elevating annular prisms such as indicated at 24 in Figure 5. These light elevating prisms are preferably spaced apart as indicated in this figure so that regions 25 are provided for direct light rays to pass through the refractor, such direct rays being indicated at 26. The annular prisms 24 act on light rays 27 and

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elevate them as indicated at 28 so that they are transmitted at substantially the same angle above the horizontal as the light rays 22. The light rays 26 and 28 pass through the diffusing flutes 15 and are spread as indicated in Figure 6. Thus the observer at the remote point not only receives light rays from the upper zone of the refractor, but also from the lower zone so that this lower zone instead of appearing dark is now well lighted up.

While the application of the invention illustrated in Figure 3 shows it as employed in a street lighting refractor for mounting on the side of the street, it will be understood that the light elevating prisms placed on the globe to be viewed lengthwise of the street, may be employed with symmetric globes or various forms of asymmetric refractors.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular form shown is but one of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. The improvement in street lighting luminaires having a pendent concentrated light source, a downwardly acting annular reflector about the source with its mouth at substantially the level of the source and having a contour in the region immediately above the horizontal plane through the source which directs reflected light rays across the luminaire axis at high angles above the nadir in a narrow region below the mouth of the reflector, and a bowl shaped globe fitted across the mouth of the reflector and having an upper zone for transmitting the said reflected rays and higher angled direct light toward remote street areas without vertical deviation and a lower region for intercepting and transmitting direct light rays below the higher angled direct light, which improvement comprises a vertically disposed series of horizontal prisms in the lower region of the globe of variant refracting power to elevate the light emitted by them into substantial parallelism with the reflected rays transmitted by the upper part of the bowl whereby the entire bowl, when viewed from regions into which the dominant reflected light is directed, is luminous.

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2. The improvement of claim 1, wherein the horizontal prisms are separated from one another so that a portion of the direct light passes through the globe without vertical deviation.

3. A street lighting luminaire comprising a concentrated light source, a reflector about the light source with its mouth at substantially the level of the light source for reflecting light across the luminaire axis at high angles above the nadir for lighting distant street areas, a light transmitting globe through which said light passes, the globe carrying, in the region below that through which the reflected light passes, a series of interiorly disposed vertically spaced prisms which elevate portions only of the light into general parallelism with the reflected rays, while allowing the light received between the prisms to pass through the globe without vertical deviation, and on its outer surface minor horizontal curvatures which provide a degree of lateral spread to the transmitted light.

4. A street lighting luminaire as claimed in claim 3, wherein the globe has vertical light concentrating prisms for redistributing the reflected light laterally into beams, and the prisms occupy a relatively narrow sector on each side of the beam axis.

5. A street lighting refractor in the form of a bowl with downwardly and inwardly extending side walls, the upper part of the side walls having systems of vertical light concentrating prisms, the lower parts of the walls below the central portion of each system of prisms having a vertically disposed series of horizontal prisms of variant refracting power which elevate downwardly divergent light rays into parallelism.

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