

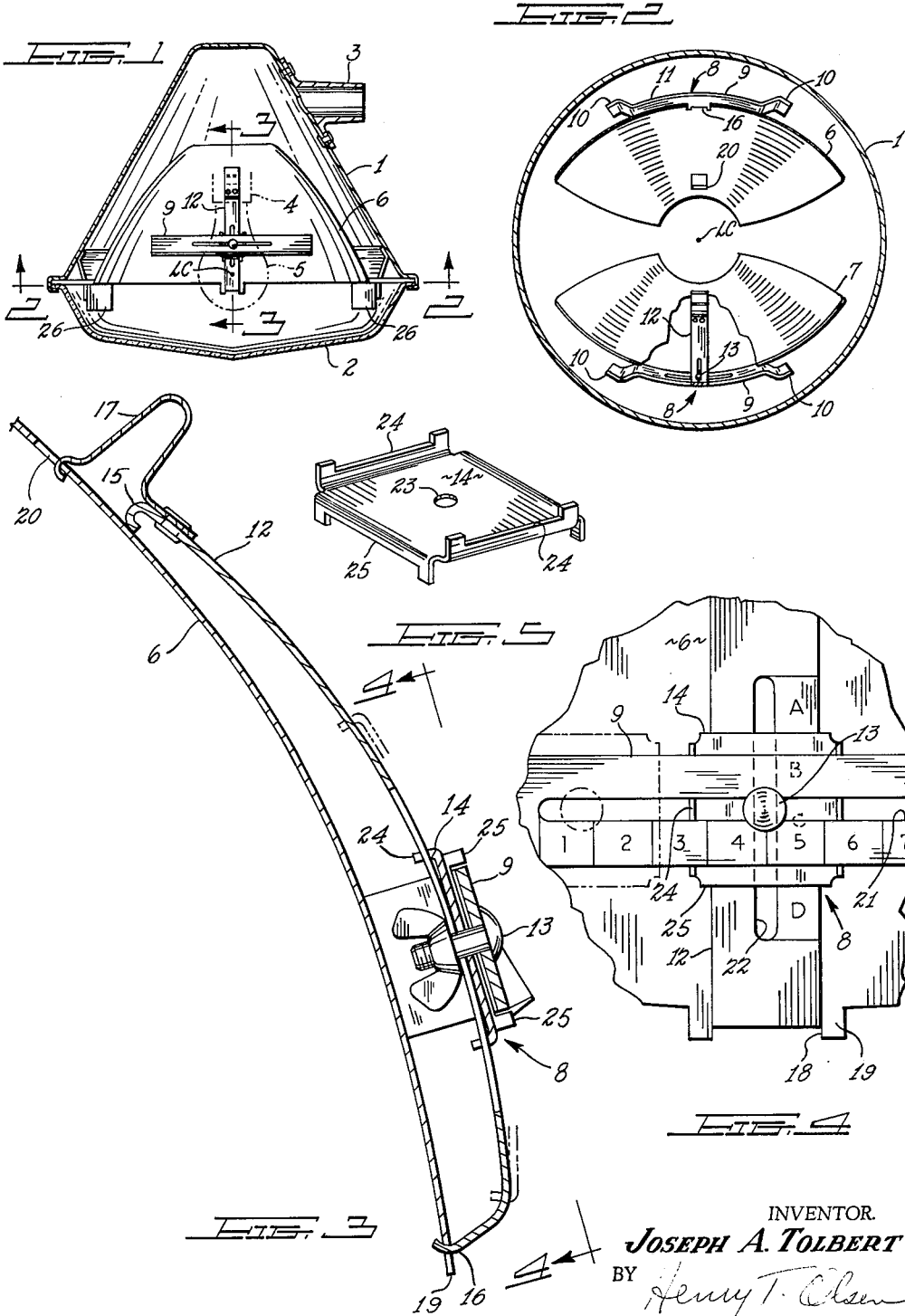
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LUMINAIRE

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LUMINAIRE

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This invention relates to luminaires and more particularly to luminaires for lighting residential streets which are of a hillside nature containing many curves and slopes.

Conventional luminaires are built on the assumption that the roadway beside which the luminaires are to be mounted is a relatively straight, level area to be lighted and, therefore, the luminaires are designed to efficiently illuminate such an area in an asymmetric pattern up and down the road. This assumption is correct for most freeways or turnpikes since in the construction of the roadway large deviations in slope and curvature are avoided. However, in many residential areas, particularly in mountainous, hilly regions, the roadways merely follow the terrain and, hence, contain many curves and high slopes. Thus, a conventional luminaire constructed for lighting level, straight roadways is not suitable for efficiently lighting the roadway. It is an object of this invention to provide a luminaire which will efficiently control the light distribution up and down the roadway on hilly and curved residential streets.

A conventional luminaire in providing, for example, Type III IES distribution directs main beams of light in opposite directions at equal angles toward the center line of the roadway. Such a conventional luminaire if mounted on a curve will either be compromised so that neither beam of light is directed toward the center line of the roadway or one of the main beams will be directed at the center line, the other beam will fall far short of the center line or be on the opposite side of the roadway. It is an object of this invention to provide a luminaire in which the main beams of light may be directed at the center line of the roadway, both up and down the roadway.

In accordance with the above-mentioned objects, there is provided a luminaire in which the oppositely directed main beams of light may be individually controlled so that irrespective of the curvature or slope of the roadway such main beams of light are each directed toward the center line of the roadway. This is accomplished by providing oppositely directed individual reflectors, which may be adjusted in an arc about the light center of the luminaire in both vertical and horizontal planes to direct the light in the desired manner. Thus, the individual reflectors are mounted on adjustable support members, each of which includes a cross arm which may be individually adjusted relative to a supporting cross bar to provide main beams of light in the direction desired.

Further objects and advantages of the invention shall be understood from the following complete description of the preferred embodiment of the invention and from the drawing wherein:

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

FIG. 2 is a bottom view thereof with certain parts removed to more clearly show the interior of the luminaire;

FIG. 3 is an enlarged section view taken along the line 3—3 of FIG. 2;

FIG. 4 is a side view of FIG. 3; and

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FIG. 5 is a perspective view of the cross-piece spacer.

As shown in FIG. 1, the luminaire comprises a generally conical housing 1 to which is secured a globe 2. The globe 2 may be provided with refracting prisms to redirect the light in a desired pattern or may be of a diffusing type to merely eliminate glare. Suitable gasketing means (not shown) may be provided to more perfectly seal the globe 2 to the housing 1. A slipfitter 3 is secured to the housing 1 at an upper portion thereof for mounting the luminaire on a suitable pole support bracket. Conventional mounting means (not shown) are secured in the upper end of the housing 1 to provide support for the socket 4 and lamp 5 (shown in dotted lines). The lamp 5 is held so that its light center LC is on the vertical center line of the luminaire hood and refractor slightly above the plane of the lower edge of the hood; thus, approximately one-half of the direct light from the lamp is emitted downwardly and outwardly directly through the globe 2 to light the central area beneath the luminaire. Since the luminaire is normally attached on a support bracket which extends outwardly over the street, the direct light referred to above lights the portion of the street directly beneath the luminaire.

To direct most of the rest of the light from the lamp in a utilizable manner, i.e. to light further areas up and down the street, a pair of generally oppositely directed reflectors 6 and 7 (FIG. 2) are provided. The reflectors 6 and 7, which are composed of parabolic and ellipsoidal surfaces with a focal center at the light center LC, reflect the light emitted upwardly and outwardly from the lamp 5 toward the center line of the street in reflected light beam sections on opposite sides of the luminaire.

The reflectors 6 and 7 are secured in the housing 1 by adjustable support means 8 so that the luminaires may be adjusted to direct each main reflected light beam section toward the center line of the roadway at a proper distance from the luminaire even when the luminaire is mounted beside a hilly or curved roadway. As best seen in FIGS. 3 and 4, the support means 8 (each of which is identical and therefore shall be described with reference to reflector 6) includes a cross bar 9, the cross bar 9 having at its ends feet 10 which are secured to the housing 1 by suitable means such as rivets. The central portion 11 of the cross bar 9 between the feet 10 is bent into an arcuate shape so as to be concentric with the light center LC. A support cross arm 12 is secured to cross bar 9 by suitable securing means such as the bolt and wing nut 13, shown. An aligning spacer 14 is interposed between the cross bar 9 and support arm 12. At its upper end, the support arm 12 is provided with a short leg 15 and at its lower end with a generally hook shaped portion 16. A spring clip 17 which biased the reflector 6 toward the support arm 12 is secured to the support arm 12 adjacent the upper leg 15. The reflector 6 is releasably secured to the support arm 12 by the engagement of the hook shaped portion 16 with a notch 18 in an outstanding tab 19 provided on the lower edge of the reflector and engagement of spring clip 17 within an aperture 20 provided near the top of the reflector. The support arm 12 being of relatively rigid material, the lower edge of the reflector 6 is securely oriented relative to the support arm 12 by the hook shaped portion 16 thereof and the upper portion of the reflector is oriented by the engagement of leg 15 with the rear surface of the reflector 6.

To provide for adjustment of the main light beam section, the support arm 12 and the cross bar 9 are arcuate in shape so as to be concentric with the light center LC. The cross bar 9 is provided with an adjustment slot 21 and the support arm 12 with adjustment slot 22; thus, with the reflector 6 removed and securing means 13 loosened, the support arm 12 may be moved in an arc about the light center LC and, hence, the reflector 6 may be adjusted to provide the main reflected light beam in a direction toward the center line of the roadway wherever said center line may be located. As indicated in FIG. 4, indicia may be provided on the cross bar 9 and cross arm 12 to indicate the setting of the cross pieces relative to each other. The spacer 14, shown separately in FIG. 5 for better clarity, maintains the support arm 12 and cross bar 9 at right angles to each other, the spacer 14 being provided with a central aperture 23 through which the bolt and wing nut 13 is passed. The spacer 14 is basically a flat sheet metal plate having tabs 24 and 25 bent out in opposite directions on adjacent sides so that the opposed sides have tabs extending in the same direction, each of the tabs 24 and 25 being suitably recessed to receive the cross bar 9 and support arm 12, respectively. Another function of the spacer plate 14 is to cause the clamping action of bolt and wing nut 13 to resiliently bias the cross bar 9, spacer 14 and support arm 12 together, such that the pieces are secured together rigidly and the likelihood that the securing means will come loose is greatly reduced.

Therefore, in accordance with the invention, there is provided a luminaire which by a simple adjustment of the independent side reflectors 6 and 7 thereof provides for redirecting the main reflected light beams of the luminaire toward the center of the roadway, regardless of the terrain of the roadway. For example, if the luminaire were mounted by the side of the roadway where the roadway was at a slope, the reflector on the uphill side of the luminaire could be shifted upwardly so as to direct the main reflected light beam of the downhill side of the luminaire at a lower vertical angle from the nadir so as to direct the light at a more usable distance from the luminaire. Similarly, the reflector on the downhill side of the luminaire could be shifted downwardly so as to direct the main light beam at a higher angle to the nadir so as to lengthen the distance at its effective area. If the luminaire is mounted on a curve, the reflector sections again could be independently adjusted to redirect the main reflected light beam sections toward the center line of the roadway by adjusting from side to side. Obviously, if there were a combination of a hill and curve, both vertical and lateral adjustments may be made to compensate for these conditions.

The shields 26 (FIG. 1) may be provided to reduce the stray light directed toward the opposite side of the roadway or toward the front of the houses, respectively.

While the invention has been described by way of the preferred embodiment thereof, it will be understood that many modifications may be made within the spirit and scope of the appended claims.

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

1. Reflector supporting means for a luminaire comprising a first arcuately-shaped member, a second arcuately-shaped member, means for maintaining and releasably securing said members together at right angles to each other including a spacer having tabs on adjacent sides extending in opposite directions, said tabs being recessed and receiving said members and means on one of said members for releasably securing a reflector thereto.

2. In a luminaire, means for supporting a pair of independently adjustable generally oppositely directed reflectors, said supporting means including an arcuately-shaped cross bar, an arcuately-shaped cross arm, an aligning spacer for maintaining said cross bar and said cross arm at right angles to each other including a spacer having tabs on adjacent sides extending in opposite direc-

tions, said tabs being recessed and receiving said members and means releasably securing said cross bar, said spacer and said cross arm together.

3. A luminaire comprising, in combination, a housing, a pair of separate independently adjustable generally oppositely directed reflectors in said housing, means for positioning a light source between said reflectors, and means for independently supporting each said reflector on said housing for movement vertically and horizontally independently of one another in arcs having their centers substantially at the light source.

4. A luminaire comprising, in combination, a housing, a pair of independently adjustable generally oppositely directed reflectors in said housing, means for positioning a light source between said reflectors, and means for independently supporting each said reflector on said housing for movement in an arc having its center substantially at the light source, said means comprising an arcuately-shaped cross bar secured to said housing, an arcuately-shaped cross arm secured to one of said reflectors, and attaching means releasably holding said cross bar and said cross arm transverse to one another and for selective movement of said cross arm in directions along and transverse said cross bar.

5. A luminaire comprising, in combination, a housing, a pair of independently adjustable generally oppositely directed reflectors in said housing, means for positioning a light source between said reflectors, and means for independently supporting each said reflector on said housing for movement in an arc having its center substantially at the light source, said means comprising an arcuately-shaped cross bar secured to one of said reflectors, and attaching means releasably holding said cross bar and said cross arm at right angles to one another and for selective movement of said cross arm in directions along and at right angles to said cross bar.

6. A luminaire comprising, in combination, a housing, a pair of separate generally oppositely directed concave reflectors arranged in said housing with their focal points substantially coinciding with one another, means for positioning a light source between said reflectors with the light center thereof located substantially at said focal points, and means for independently adjustably supporting each said reflector on said housing for adjustment of each reflector vertically and horizontally independently of one another in arcs having their centers substantially at the light source.

7. A luminaire comprising, in combination, a housing, a pair of independently adjustable generally oppositely directed concave reflectors in said housing arranged with their focal points substantially coinciding with one another, means for positioning a light source between said reflectors with the light center thereof substantially at said coinciding focal points, and means for independently adjustably supporting each said reflector on said housing for adjustment of each reflector along an arc having its center substantially at said focal points, said means comprising an arcuately-shaped cross bar secured to said housing, an arcuately-shaped cross arm secured to one of said reflectors, and attaching means releasably holding said cross bar and said cross arm transverse one another and for selective movement of said cross arm in directions along and transverse said cross bar, said cross bar and said cross arm extending in arcs substantially concentric with said substantially coincident focal points.

8. A luminaire comprising, in combination, a housing, a pair of independently adjustable generally oppositely directed concave reflectors in said housing arranged with their focal points substantially coinciding with one another, means for positioning a light source between said reflectors with the light center thereof substantially at said coinciding focal points, and means for independently adjustably supporting each said reflector on said housing for adjustment of each reflector along an arc having its

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center substantially at said focal points, said means comprising an arcuately-shaped cross bar secured to said housing, an arcuately-shaped cross arm secured to one of said reflectors, and attaching means releasably holding said cross bar and said cross arm at right angles to one another and for selective movement of said cross arm in directions along and at right angles to said cross bar, said cross bar and said cross arm extending in arcs substantially concentric with said substantially coincident focal points.

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10 NORTON ANSHER, *Primary Examiner.*

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References Cited by the Examiner

UNITED STATES PATENTS

1,295,701	2/19	Cumming	-----	240-44.1
1,375,418	4/21	Schroeder	-----	240-46.03
1,431,005	10/22	Kawaguchi	-----	240-103
1,480,295	1/24	O'Connor	-----	240-44.1
2,649,535	8/53	Feder	-----	240-78
2,888,227	5/59	McGrath et al.	-----	248-279