Nov. 19, 1935. G. KUHN 2,021,790

ANTIGLARE DEVICE

Original Filed Aug. 2, 1929 2 Sheets-Sheet 1

Fig. 1.

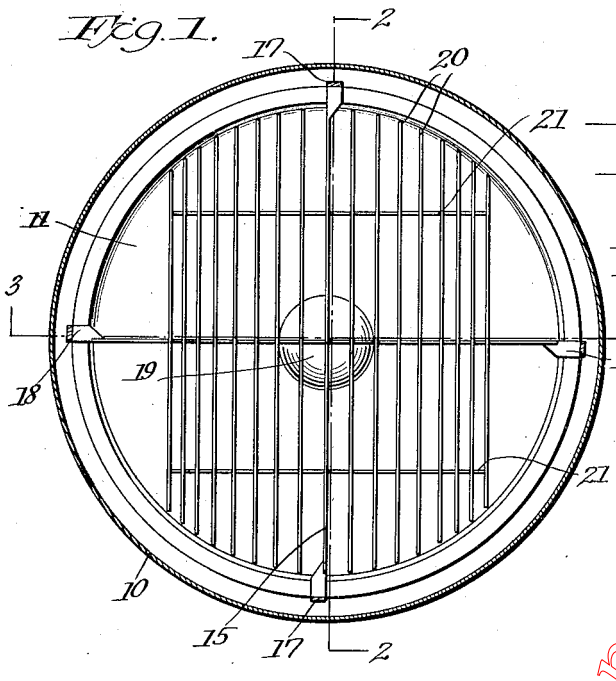


Fig. 2.

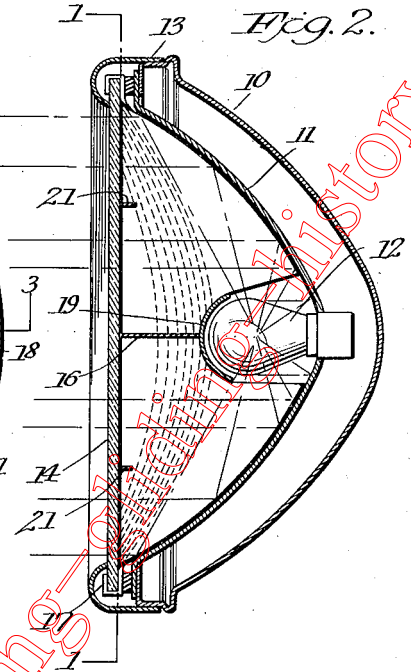


Fig. 3.

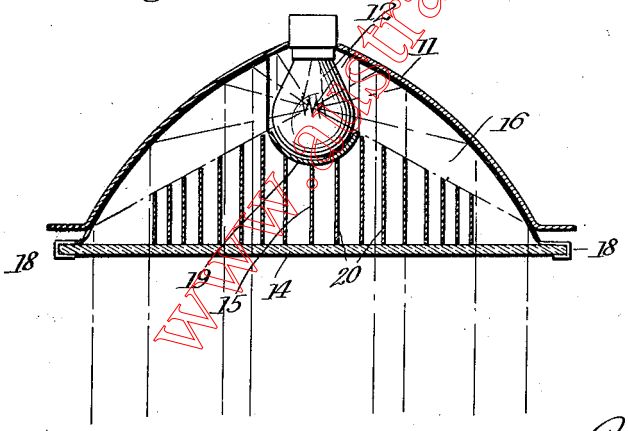
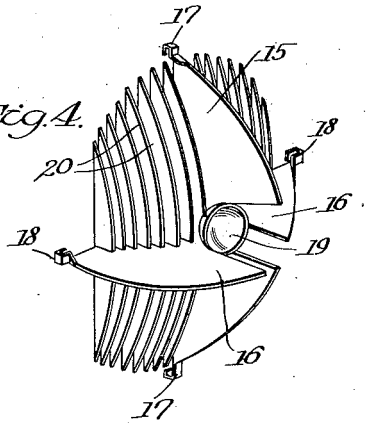


Fig. 4.



Inventor

George Kuhn

By Cushman & Darby

Attorneys

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Fig. 5.

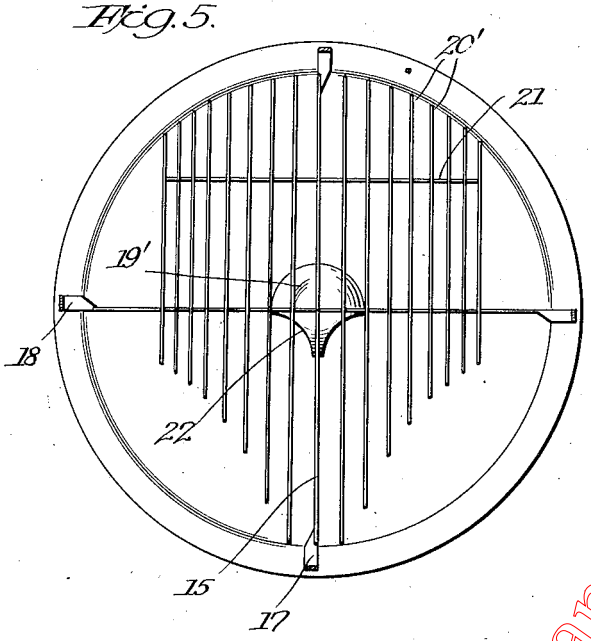


Fig. 6.

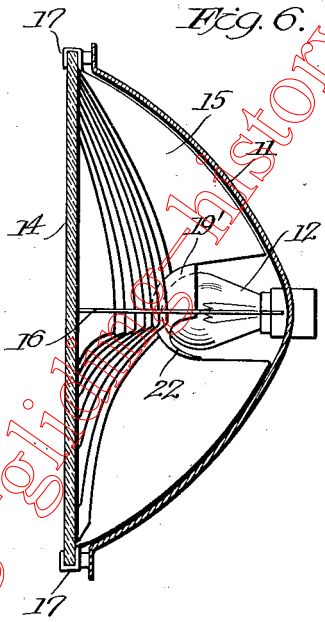
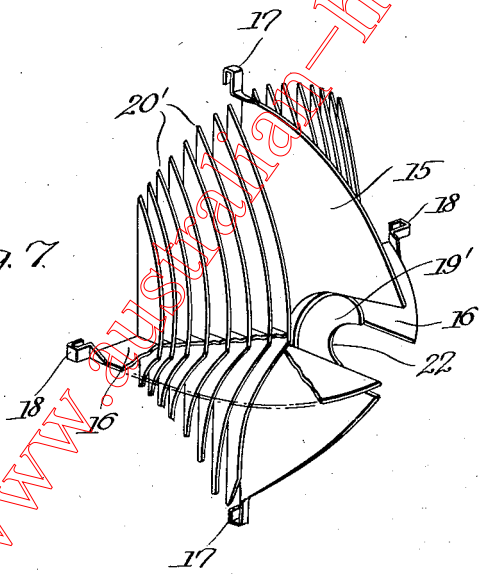


Fig. 7.



Inventor

George Kuhn.

By Cushman Brady & Daley

Attorneys

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UNITED STATES PATENT OFFICE

2,021,790

ANTIGLARE DEVICE

George Kuhn, Takoma Park, Md., assignor to Butler-Kuhn Corporation, Washington, D. C., a corporation of Delaware

Application August 2, 1929, Serial No. 382,938
Renewed March 11, 1933

8 Claims. (Cl. 240—48.4)

The present invention relates particularly to anti-glare devices for vehicle headlights provided with parabolic reflectors, the devices being installable during the headlight assembly, but at the same time constituting self-supporting units readily installable as accessories.

The devices are so designed that while a substantially unimpaired reflected beam will be thrown directly ahead of the headlight, the reflecting surface will be rendered invisible to one looking from an angle in front of the headlight lamp, and means are also provided to intercept irregular rays in the reflector arising from irregularities of the latter and re-reflections from the lens.

According to a modification, direct rays from the lamp are permitted to be thrown downwardly and divergently to each side of the major axis of the reflector.

Embodiments of the invention are shown in the accompanying drawings, wherein

Figure 1 is a front view of the anti-glare device mounted in a headlight, the view being a section on line 1—1 of Figure 2.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a rear perspective of the device, and

Figures 5 to 7 are views of the modified form of the device taken similarly to Figs. 1, 2 and 4 respectively.

Referring first to Figures 1 to 4 of the drawings reference numeral 10 indicates a headlight shell supporting a parabolic reflector 11 which in turn supports an electric bulb 12 with its center in the major axis of the reflector. A ring 13 fitting over the outer periphery of shell 10 supports a lens 14 in front of the reflector.

The anti-glare device which is to fit within the reflector may be most clearly seen in Figure 4. Referring to this figure, intersecting plates are indicated at 15 and 16, the former being vertical and the latter horizontal. These plates are so shaped that when fitted in reflector 11 their edges closely follow the contours of the latter so as to divide the space within the reflector into four divisions, the line of intersection of the plates coinciding with the axial line of the reflector. The forward edges of the plates are rectilinear and are adapted to lie against the rear face of lens 14 and to be secured to the margins of the latter by means of integral strips as at 17 and 18 adapted to be bent thereover (see also Figures 2 and 3). The rear ends of plates 15 and 16 are provided with cut-outs to accommodate bulb 12 and in these cut-outs is positioned a mask 19 adapted to intercept the direct outward rays from the bulb. If desired, mask 19 may be of such shape as to throw the direct rays from the bulb back to the reflector whence they will be directed forwardly through the lens. When the device is designed for use as an accessory, however, it will be preferably in some instances to render the mask non-reflecting inasmuch as accurate adjustment relative to the bulb is required if it is to act as a reflecting medium.

Mounted on the horizontal plate 16 are a series of parallel vertical fins 20, these fins gradually decreasing in width to each side of the axis of the reflector and each fin gradually decreasing in width upwardly and downwardly of the axis so that their rear edges define a conical surface having its apex at the bulb center and its base perimeter substantially at the mouth of the reflector. In this manner the entire inner surface of the reflector receives the direct rays of the bulb, as indicated in Figure 3. Inasmuch as the fins decrease laterally in width, they are successively arranged somewhat closer together as they approach the sides of the reflector. The fins may be conveniently mounted on plate 16 by providing each of them with a kerf and providing plate 18 with complementary kerfs in the same manner in which collapsible egg containers are assembled.

Fins 20 permit the reflected rays to be projected substantially without interference so that objects directly in advance of the headlight will be clearly illumined. The bulb and the reflecting surfaces are, however, entirely invisible to one in front of and at one side of the headlight so that glare is entirely eliminated.

Plates 15 and 16 serve to intercept stray rays caused by imperfections in the reflector and by re-reflections from the lens. It will be noted that these plates serve as supporting means for all the elements of the anti-glare unit and furthermore, they provide means for securing the device as a whole in position in the reflector. If desired, the fins may be additionally strengthened by means of one or more cross members 21, Figures 1 and 2. Preferably, all parts of the device are blackened with the exception, when desired, of the interior of cup 19 which as mentioned above may constitute a reflecting surface.

As above stated, the width of the fins decreases outwardly from the axis of the reflector and the fins are spaced progressively closer together. If the spacing were uniform it would have to be the minimum permissible spacing between any two fins. Due to the increasing width of the fins

as the reflector axis is approached, however, it is possible to space the fins progressively farther apart as the reflector axis is approached, thus enabling a minimum number of fins to be used with a consequent minimum light obstruction. As may be most clearly understood from Figure 3, vertical planes each including the rearmost point of a fin and the forward edge of the next adjacent fin are substantially parallel. This means that from a point of vision in front of the headlamp and to the side thereof, a simultaneously closing effect is produced as the headlamp and point of vision are approached. As the headlamp and the point of vision are approached the light passages between the fins narrow gradually and substantially uniformly until in the central horizontal zone of the headlamp the openings are entirely closed and hereupon the top and bottom zones gradually close. This uniform closing effect is an important feature of the invention in the elimination of glare.

With the use of a suitable tool, ring **13** may be pried from shell **10**. Herein the tool is intended to be applied at the bottom of the ring causing the latter to swing about an axis at its upper edge, this axis being substantially perpendicular to the plane of plate **15**. The upper edge of the cut-out in plate **15** is suitably inclined rearwardly and away from the axis of the reflector so as to be able to clear the light source as the lens is swung, Figures 2 and 4. The other edges of the cut-outs may be parallel to each other as particularly shown in Figure 4 and equi-distant from the reflector axis at a distance only slightly greater than the maximum radial dimension of the source.

The structure illustrated in Figures 5 to 7 is exactly the same as that illustrated in Figures 1 and 4 so far as general characteristics are concerned. Plates **15** and **16**, Figure 7, are identically the same as those already described. The mask **19'**, however, differs from mask **19** in that below plate **16** and laterally of plate **15** it is provided with arcuate cut-outs as at **22**, Figures 6 and 7. Also the portions of fins **20'** above plate **16** are the same as the corresponding portions of the fins **20**. However, the portions of fins **20'** below plate **16** and at each side of plate **15** are cut away so as to define, with cut-outs **22**, a reverse conical surface, that is, reverse relative to the conical surface defined by their upper portions, with its apex at the center of the bulb and its base arc re-entrant to the perimeter of the reflector. Thus a semi-conical surface is defined by fins **20'** above plate **16**, while two quarter conical surfaces are defined by the fins below plate **16**. As will be understood this configuration of the lower portions of the fins permits, due to cut-outs **22**, direct rays of the bulb to issue downwardly and divergently from the reflector. Those parts of the structure of Figures 5 to 7 identical with the structure of Figures 1 to 4 have been given the same reference numerals as the latter.

It will be seen from the above that I have provided an anti-glare device of valuable characteristics which may be easily constructed and readily applied to a reflector, the device as a whole constituting a self-sustaining unit.

It will be understood that the embodiments shown and described are merely illustrative of my invention and that I do not limit myself except as determined in the following claims.

I claim:

1. An anti-glare device for use with a parabolic reflector provided with a source of light arranged in the major axis thereof, said device comprising a series of vertical parallel fins adapted to be mounted within the reflector at the mouth thereof, said fins, when so mounted gradually diminishing in width in both directions laterally of said axis, and each fin diminishing gradually in width upwardly of said axis whereby the portions of the fins above said axis define a semi-conical surface having its apex at the source and its base arc at substantially the outer edge of the reflector, the portions of the fins below said axis and at each side thereof defining a reverse quarter-conical surface with its apex at the source and its base arc re-entrant to the perimeter of the reflector.

2. An anti-glare device for use with a parabolic reflector provided with a source of light in the major axis thereof, said device comprising a horizontal and a vertical plate in intersecting relation adapted to be mounted within the reflector, the plates being so shaped as to follow closely the inner contours of the reflector with their line of intersection coincident with said axis, the inner ends of said plates being provided with cut-outs to accommodate said source, and a series of vertical parallel fins mounted upon the horizontal plate, said fins gradually diminishing in width in both directions laterally of said axis, and each fin diminishing gradually in width upwardly of said axis, whereby the portions of the fins above said axis define a semi-conical surface having its apex at the source and its base arc at substantially the outer edge of the reflector, the portions of the fins below the horizontal plate and at each side of the vertical plate defining a reverse quarter-conical surface with its apex at the source and its base arc re-entrant to the perimeter of the reflector.

3. An anti-glare device for use with a parabolic reflector provided with a source of light in the major axis thereof, said device comprising a horizontal and a vertical plate in intersecting relation adapted to be mounted within the reflector, the plates being so shaped as to follow closely the inner contours of the reflector with their line of intersection coincident with said axis, the inner ends of said plates being provided with cut-outs to accommodate said source, and a series of vertical parallel fins mounted upon the horizontal plate, said fins gradually diminishing in width in both directions laterally of said axis, and each fin diminishing gradually in width upwardly of said axis. whereby the portions of the fins above said axis define a semi-conical surface having its apex at the source and its base arc at substantially the outer edge of the reflector, the portions of the fins below the horizontal plate and at each side of the vertical plate defining a reverse quarter-conical surface with its apex at the source and its base arc re-entrant to the perimeter of the reflector, and a mask supported in said cut-outs in front of said source to intercept the direct outward rays of the latter above the horizontal plate.

4. The combination with a headlight comprising a parabolic reflector, a source of light disposed in the major axis of the reflector, and a lens at the mouth of the reflector, of an anti-glare device comprising a horizontal and a vertical plate within the reflector and intersecting each other along said axis, the edges of said plates closely following the inner contours of said reflector, the inner ends of said plates being pro-

vided with cut-outs to accommodate said source, the outer ends of said plates terminating in strips adapted to be bent over the lens to secure the plates in position, a mask supported in said cut-outs in position to intercept the direct rays of the source above the horizontal plate, and a series of vertical parallel fins mounted upon the horizontal plate, said fins gradually diminishing in width in both directions laterally of said axis and each fin diminishing gradually in width upwardly of said axis whereby the portions of the fins above said axis define a semi-conical surface having its apex at the source and its base arc at substantially the outer edge of the reflector, the portions of the fins below the horizontal plate and at each side of the vertical plate defining a reverse quarter-conical surface with its apex at the source and its base arc re-entrant to the perimeter of the reflector.

5. For use with an automobile headlamp comprising a parabolic reflector with a source of light in the major axis thereof, and a removable lens, an anti-glare device comprising a horizontal and a vertical plate rigidly connected together in intersecting relation and adapted for insertion in the reflector, the plates having non-reflecting surfaces and being so shaped as to follow closely the inner contours of the reflector with their line of intersection coincident with said axis, and means for securing said plates to said lens for insertion and removal therewith, the inner ends of said plates being provided with cut-outs to accommodate said source, the cut-out in each of said plates being throughout of a width greater than the maximum transverse dimension of said source and the cut-out in one of said plates having at one side of the source an edge inclined relative to said axis to provide clearance so that the lens may be swung to and from operative position about an axis perpendicular to the plane of said last named plate without interference of said plates with said source, said cut-outs being of a size to afford substantially minimum clearance without interference with said source.

6. For use in an automobile headlamp comprising a reflector, a light source, and a lens, an anti-glare device positionable within the reflector and comprising a series of opaque vertical fins substantially perpendicular to the plane of the lens and variably spaced between the axis of the reflector and one side of the reflector, said fins defining light passages between them and diminishing in width from said axis outwardly, the spacing of the fins being such that, from a point of vision in advance of the headlamp and spaced laterally of the headlamp on that side of the reflector axis on which the fins are disposed, a simultaneous closing effect is secured in a horizontal zone of the headlamp as the headlamp and point of vision are approached, there being a similar series of fins on the other side of the reflector axis.

7. Structure according to claim 6 wherein the inner edges of the fins of the two series are shaped to lie substantially in the surface of a cone coaxial with the reflector and having its apex substantially at the light source.

8. For use in an automobile headlamp comprising a reflector, a light source, and a lens, an anti-glare device positionable within the reflector and comprising a series of opaque vertical fins substantially perpendicular to the plane of the lens and spaced apart between the reflector axis and one side of the reflector, the inner edges of said fins being shaped to lie substantially in the surface of a cone coaxial with the reflector and having its apex substantially at the light source, the spacing of said fins decreasing outwardly from said axis so that vertical planes inclined relative to said axis and each including the rearmost point of one fin and the forward edge of the outwardly adjacent fin are substantially parallel, there being a similar series of fins on the other side of said axis.

GEORGE KUHN.