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O. TEMPLIN

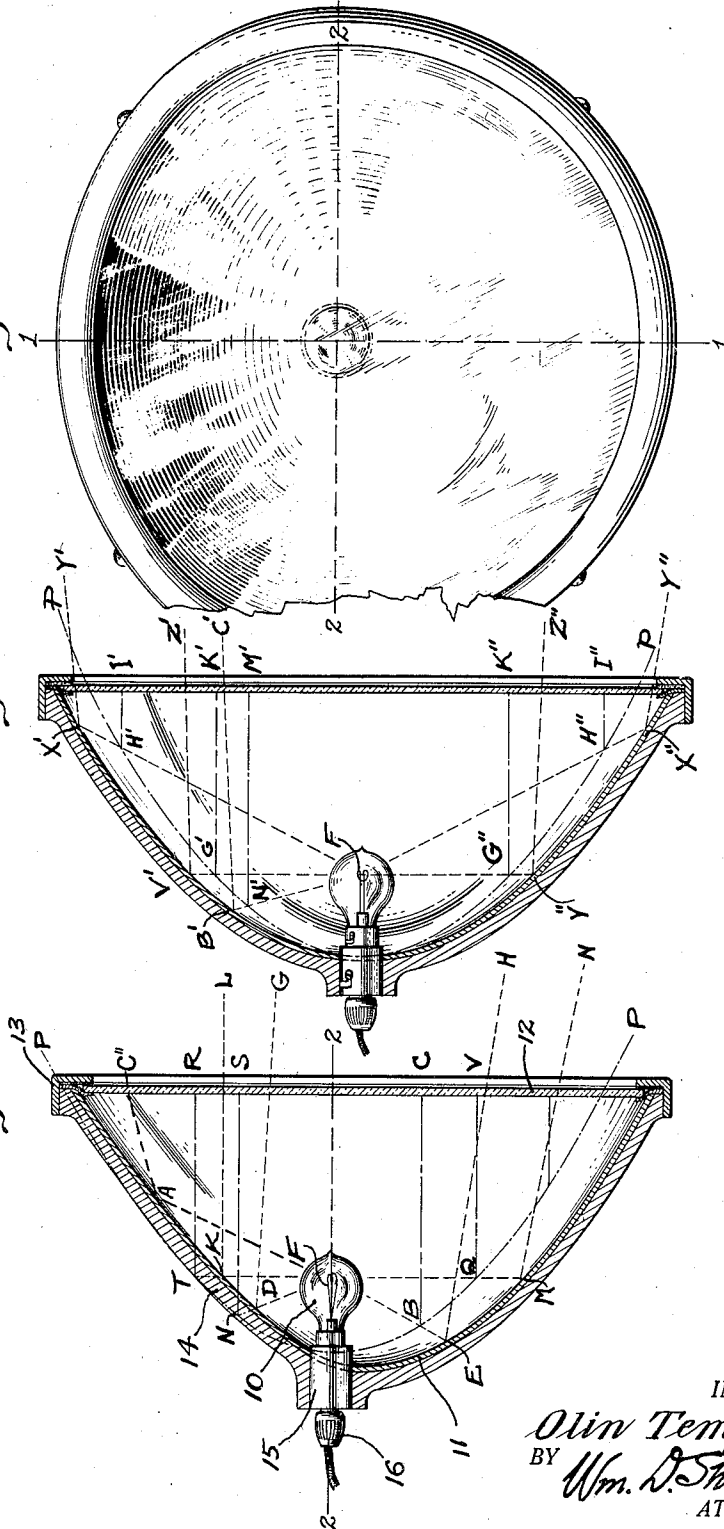
HEADLIGHT REFLECTOR

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Fig. 3.

Fig. 2.

Fig. 1.



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HEADLIGHT REFLECTOR.

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To all whom it may concern:

Be it known that I, OLIN TEMPLIN, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Headlight Reflectors, of which the following is a specification.

This invention relates to headlights and reflectors, and more particularly to such reflectors designed primarily for use as elements of headlights upon motor vehicles, boats and the like, where it is desired to secure high illumination of certain areas of a field and less illumination of other areas.

The invention has for its object the provision of a reflector for automobiles and other vehicles which will distribute the reflected rays of light from an electric bulb so as to secure most effective illumination of a field in front of the automobile and avoid the use of an offensive and dangerous glare from such light sources. A further object is the accumulation and concentration of reflected rays from a source, and the distribution of them over a limited field in such manner as to vary the illumination for different portions of the field in accordance with the needs. Another object of the invention is the securing of a special economy of illumination.

Other objects and advantages of the invention are hereinafter to appear in the following specification and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, in which like reference characters indicate like parts throughout the several figures,

Figure 1 is a vertical section through a headlight embodying my invention, and taken upon the line 1—1 of Figure 3,

Figure 2 is a horizontal section thereof taken upon the line 2—2 of Figures 1 and 3, and

Figure 3 is a front elevation of a headlight of my invention.

The headlight embodying my invention comprises the usual electric bulb 10 fitted within a reflector 11 of special design, having at its open end a plain glass window 12 secured by the clamp ring 13. These parts will now be specifically described and their individual functions pointed out, after which a recital of their conjoint use in the formation of a headlight will be given. The re-

flecting surface is mounted upon a body 14 suitably supported upon an automobile and in which is provided a socket 15 for the electric bulb 10 and for the connector 16 by means of which the bulb is placed into a circuit with a source of electric current. This window 12 is the usual thin plate of glass, which may be used in my headlight due to the peculiar formation of the reflector. The glass plate is held to the body 14 by means of the usual clamping ring 13.

The reflector of my invention may be described as a peculiarly distorted, parabolic reflector, and for the purpose of giving a full, clear and exact description thereof, I have selected vertical and horizontal sections (Figures 1 and 2) as a means of illustration. On these figures, I have shown a dot and dash line to represent the usual outline of a similar section of the parabolic reflector, and have designated that curve as line P—P.

By a careful inspection of the upper half of Figure 1, it will be seen that I have formed the reflector by slightly flattening a paraboloid, and that the reflecting surface of my invention tends to approach a straight line. The effect of this flattening is the diverting of some of the rays which would ordinarily have a horizontal emergence in a parabolic reflector to an upward emergence to destroy their glare effect and others to a downward emergence for the purpose of securing increased illumination upon the roadway proper. This is shown by ray FNS of the parabolic reflector, which has become in my reflector the ray FDG. Rays striking the reflecting surface 11 above the rays FDG, as for instance the ray FT will be reflected as ray TR in the parabolic reflector and as the ray KL in my reflector, these two rays having a substantially horizontal emergence. Rays above the area typified by ray KL will have an upward emergence in my reflector, as typified by ray FAC"; but those below it will be diverted downwardly. This upward emergence of the rays striking the reflector above the point K has for its purpose the distribution of light rays properly to prevent glare effects. If all the rays from the area above KL were allowed to parallel that ray there will result a crescent of blinding illumination. I scatter these rays by curving the reflector to throw them upwards with an increasing degree of divergence.

The field above the horizontal will thus be free from glare and will also be illuminated for comfortable driving. It will be remembered that glare is due to too much light at any point that can be taken by the observer, taken in contrast with the illumination of the adjacent area.

Referring now to the lower half of the reflector of Figure 1, it will be noted that the distortion of the paraboloid in the formation of my reflector is more pronounced. This portion of my reflecting surface may be said to be formed by pressing backwardly and downwardly the parabolic reflector, with the result that all rays subjected to a horizontal emergence in the corresponding parabolic reflector, are given a downwardly or inclined emergence toward the roadbed, whereby a greatly increased illumination of the roadway is produced. This will be readily appreciated by a comparison of the rays FBC and FEH and the rays FGV and FMN.

Referring now to the horizontal section shown in Figure 2, my reflector may be said to be formed at this point by generally broadening the mouth of the parabolic reflector horizontally. This distortion of the parabolic reflector results in a lateral divergence of reflected rays which in a parabolic reflector have a substantially direct and parallel emergence. This is made plain by a comparison of the rays FN'M' and FB'C', FG'K' and FV'Z', FX'Y' and FH'L', and FX'Y' and FH'I'.

In order to obtain a working drawing from which my improved reflector may be molded, a chart is employed having marked thereon a curve approximating that of a vertical section of the reflector (namely, a distorted parabola); and, having estimated the amount of light which should be transmitted from the reflector to various distant points, lines are drawn from the curve representing the direction and number of rays which should be reflected in order that the desired amount of light should be received at these distant places.

The chart is then placed on a suitable surface, with a light located at the focal point of the curve. A mirror is then moved along the curve, deviating at any and all points where it is necessary in order that the light

reflected thereby shall follow the direction of the lines drawn on the chart. A curve showing the path of the mirror is marked on the chart and this curve represents a section of my improved mirror reflector.

Curves representing other sections of the reflector are obtained in the same way. From the curves so obtained, a mold is made and the reflector molded or cast thereon.

It is obvious that the same results could be obtained by plotting a curve mathematically of the amount of light to be reflected from various points on the reflecting curve in order that it will be properly distributed.

Having described my invention, what I claim as new and desire to secure by Letters Patent is—

1. A reflector for projecting light rays from a source situated at its focus, said reflector having the curvature of a distorted paraboloid, a section of said reflector above the axis approaching a paraboloid and projecting parallel rays, a second section above the first named section approaching a tangential plane and projecting rays upwardly with increasing divergence, both said sections being bent inside the limiting paraboloid, a third section above the axis and that portion of the reflector below the axis being bent outside the limiting paraboloid and projecting rays downwardly with increasing divergence, the reflector being also spread laterally, the focus and axis of the reflector being coincident with those of the limiting paraboloid.

2. A reflector for projecting light rays from a source situated at its focus, said reflector having the curvature of a distorted paraboloid, a section of said reflector being bent inside the limiting paraboloid approximately parallel thereto, and projecting parallel rays, a second section above the axis, but below the first named section, and all that portion of the reflector below the axis being bent outside the limiting paraboloid and projecting rays downwardly with increasing divergence, the reflector being also spread laterally, the focus and axis of the reflector being coincident with those of the limiting paraboloid.

In testimony whereof I affix my signature.
OLIN TEMPLIN.