Jan. 8, 1929. 1,698,279

E. SCHIMPFF

HEADLIGHT

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Fig. 2.

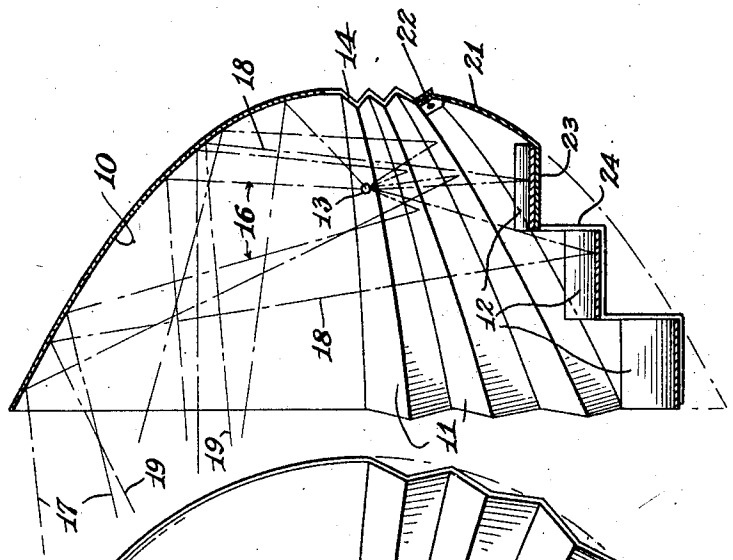
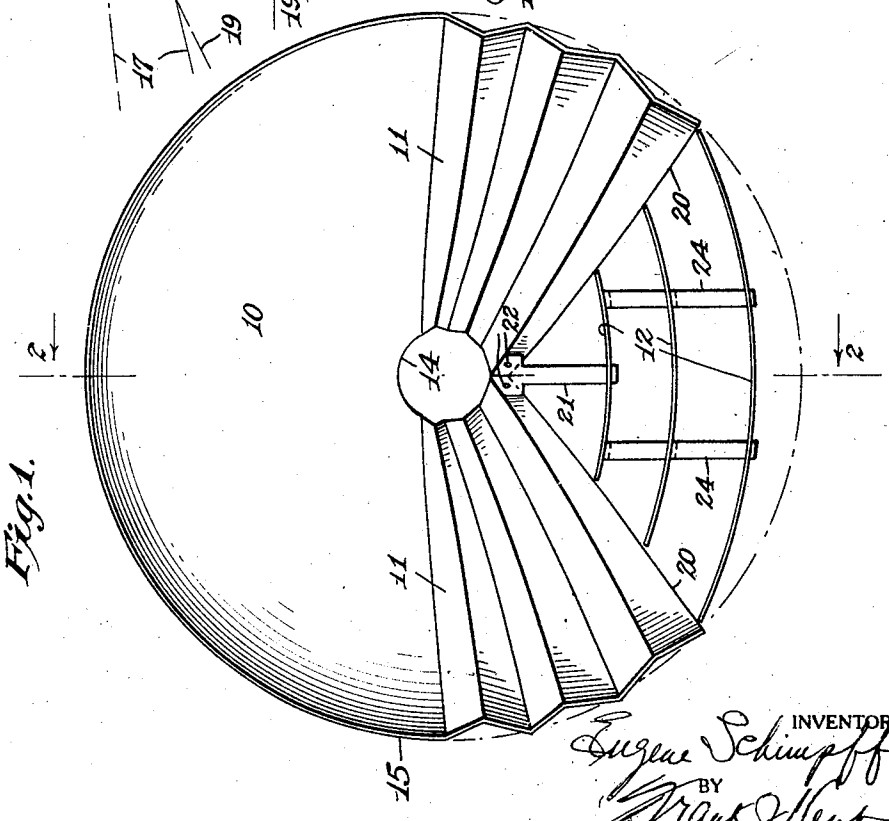


Fig. 1.



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Fig. 4.

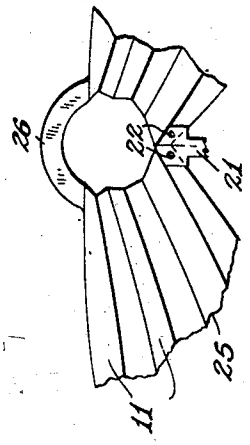
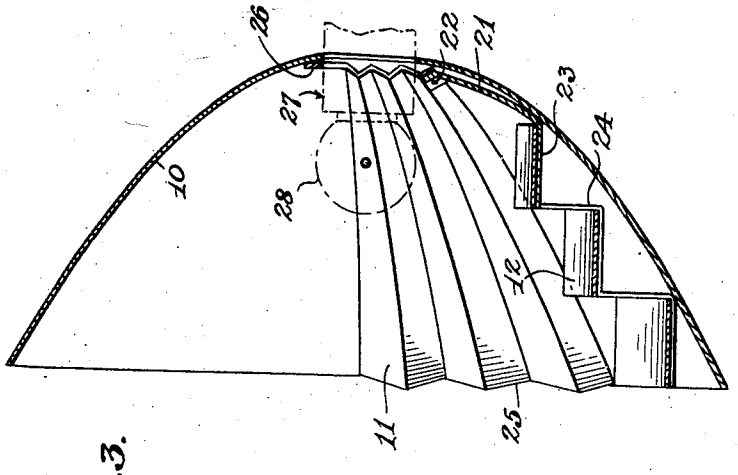


Fig. 3.



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HEADLIGHT

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Fig. 6.

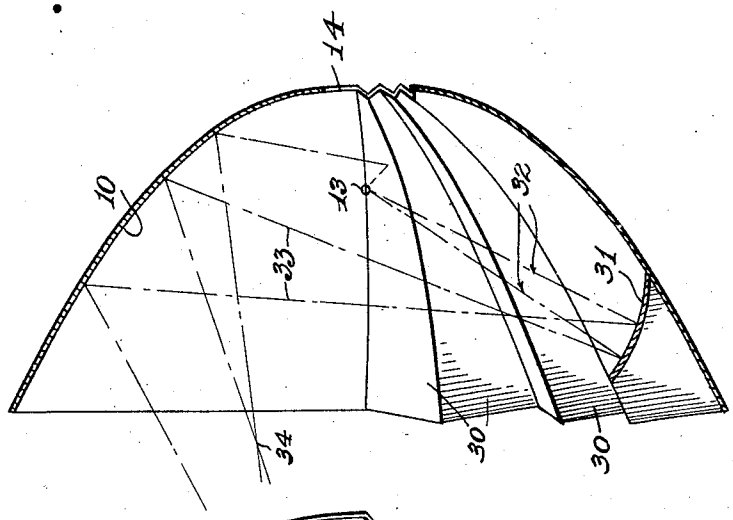
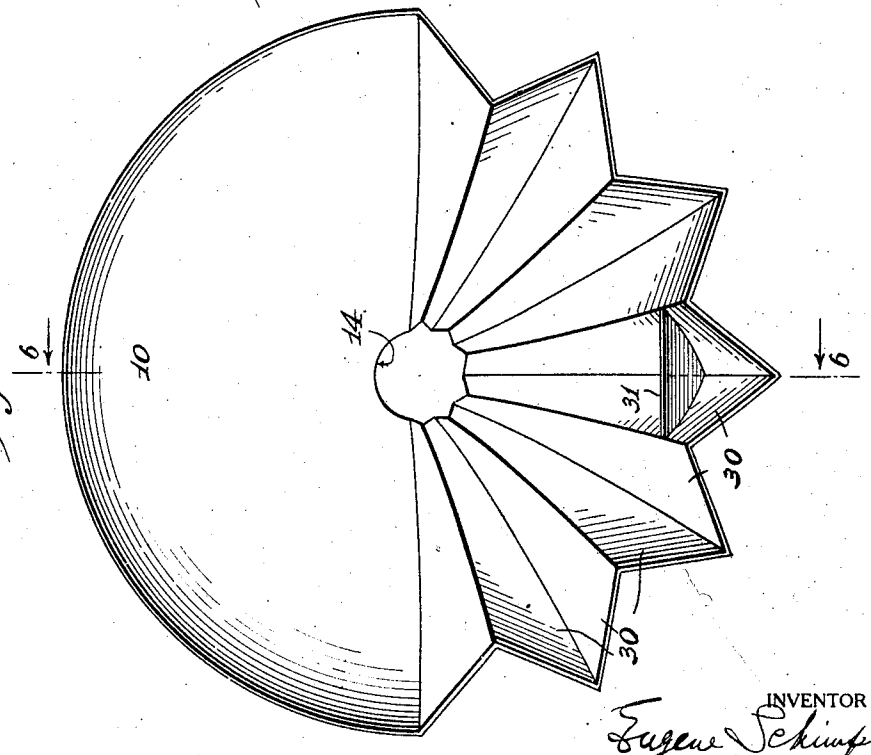


Fig. 5.



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UNITED STATES PATENT OFFICE.

EUGENE SCHIMPFF, OF SCRANTON, PENNSYLVANIA.

HEADLIGHT.

Application filed September 24, 1924. Serial No. 739,475.

This invention relates generally to reflecting devices for automobile headlights.

Headlight reflectors of the types heretofore used comprise a parabolic construction which theoretically projects the light beam forwardly and without upward dispersion such as would interfere with the vision of a person facing the front of the vehicle. In practice, however, actual construction does not provide a clean-cut light beam having this characteristic so that there is a substantial dispersion or scattering of light rays with the result that a blinding effect is produced with relation to persons approaching the vehicle and facing the lamps thereon.

A general object of the present invention is to provide headlight reflectors which will be free from the objections referred to and which will project illuminating beams forwardly and downwardly to light up the roadway but which will not project rays upwardly above the line of vision of persons in the roadway ahead of the vehicle.

The invention includes a reflector in which the upper portion has the construction of the usual parabolic curvature but with the lower portion formed into a series of reflecting surfaces so arranged as to reflect light rays received thereagainst upwardly into engagement with the upper or parabolic section of the reflector. The result of this is that the rays which normally reach the upper portion of the reflector from the light source are projected forwardly and downwardly as in the prior constructions while the light rays engaging the lower portion of the reflector, instead of being projected outwardly and upwardly as in the old constructions are projected forwardly and upwardly against the upper portion of the reflector from whence they are reflected outwardly and downwardly.

The formation of the lower part of the reflector which has thus been generally described is provided to overcome the tendency of the imperfectly formed curves of the reflectors heretofore known and used to project rays not only forwardly but in an upward direction. In other words, the rays which have been heretofore reflected outwardly and upwardly from the lower surface of the reflector, are in the new construction, reflected either directly forwardly or at such an upward angle as to strike the inner surface of the upper portion of the reflector. The rays which are thus directed to strike the upper portion of the reflector are, as is the case with rays received on this surface directly from the lamp, reflected forwardly and downwardly into the roadway for the desired purpose. The result is that with the improved reflector construction described no rays are reflected upwardly into a position to produce a blinding effect on the eyes of an observer.

The improved reflector may form a part of the main body of the reflector or it may take the form of an attachment which may be secured to reflectors of types heretofore known and used.

Two different types of reflecting surfaces may be used in forming the improved reflecting areas for the lower portion of the lamp reflector. One type of such reflecting surfaces may be provided by forming corrugated regions in the body of the reflector in which the corrugations extend from the central part of the reflector outwardly and downwardly to the outer edge thereof. In this case the reflecting areas take the form of substantially plane surfaces extending from the center to the outer edge of the reflector and progressively increasing in width to conform to the general shape of the reflector. The other type of reflecting surface is preferably in the form of arc-shaped or curved areas following in a general way the curvature of the outer edge of the reflector but with a greater radius of curvature. The latter reflecting surfaces are located directly beneath the source of light so that rays reflected downwardly and, to a considerable extent laterally, are reflected by these surfaces against the upper portion of the reflector as a whole.

Other features of the invention will be hereinafter referred to.

In the drawings,

Figure 1 is a view in front elevation of a headlight reflector embodying the invention.

Figure 2 is a view in vertical section taken on the line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 2 but showing the improved reflecting element formed as a detachable element for attachment to known types of headlight reflectors.

Figure 4 is a fragmentary view showing a detail of the construction shown in Figure 3.

Figure 5 is a view similar to Figure 1 showing a modified form of the invention.

Figure 6 is a view similar to Figure 2 taken on the line 6—6 of Figure 5.

Referring to the drawings for a more detailed description of the invention in Figures 1 and 2 is shown a headlight reflector having the upper portion thereof formed as a section of a parabola and with the lower portion formed in a plurality of light reflecting areas 11 and 12 designed to reflect light received thereon from the light source 13 against the parabolic reflecting surface 10.

The reflecting surface 11 has a formation of elongated areas extending from a central opening 14 in the reflector to the outer edge 15 thereof. These surfaces are formed in the embodiment of the invention shown in Figures 1 and 2 by providing angular corrugations in the shell of the reflector. The reflecting areas 11 are so spaced that light rays directed thereagainst from the source 13 are reflected upwardly as is indicated by the broken lines 16 in Figure 2 of the drawing against the inner surface of the parabolic section 10. The rays are then reflected forwardly and downwardly as is indicated by the broken lines 17 so that there is no upward and outward reflection of rays from the surfaces 11 to the space forwardly of the lines.

The reflecting surfaces 12 extend substantially transversely to the surfaces 11 and occupy a position underneath the light source so that rays projected downwardly and forwardly from the light source are reflected from the surfaces 12 upwardly along the broken lines 18 against the inner surface of the reflecting section 10 as before, whence they are reflected outwardly and forwardly along lines 19. The reflecting areas 12 have a longitudinally extending arcuate conformation following in general the peripheral lines of the reflector itself but on an arc of curvature whose radius of curvature is longer than the radius of curvature of the outer edge 15 of the reflector shell.

The construction shown in Figures 1 and 2 of the drawing contemplates the formation of the radially extending reflecting areas 11 as an integral part of the construction which includes the parabolic section 10. The reflecting section including the reflecting areas 12 may however be separately formed and attached in place in the sector-shaped opening 20 formed between the confronting edges of the radially extending sections 11. Convenient means of supporting the reflecting members 12 in place consists in the use of a bracket 21 attached at 22 to the radial sections 11 and provided with an angularly extending supporting end 23 on which the uppermost reflecting member 12 is supported. Other bracket members 24 connect together in a supporting relation the remaining reflecting members 12 and the uppermost reflecting member already referred to.

With the construction described it will be seen that rays which are reflected laterally and downwardly to each side of the lamp source which in ordinary parabolic constructions tend to be in part dispersed upwardly and outwardly from the reflecting shell, are in this case reflected upwardly against the inner part of the parabolic section 10 from whence they are reflected outwardly and downwardly into the roadway. In a similar manner rays from the light source 13 which are projected downwardly and forwardly and which in prior constructions would then be reflected in part upwardly and outwardly to a blinding position, are in this case reflected upwardly at a more acute angle such that the rays engage the inner surface of the parabolic section 10 and are thence reflected outwardly and downwardly to be usefully applied in lighting the roadway.

In Figures 3 and 4 of the drawing there is shown a modified form of the invention in which a parabolic reflector 10 of the type heretofore known and used is provided with a supplemental and detachable reflecting device 25 which includes an arrangement and relation of reflecting areas similar to that already shown at 11 and 12 in Figures 1 and 2 of the drawing. In other words, the reflecting device 25 includes reflecting elements 11 and 12 which serve to divert light rays, which in the older constructions would be reflected upwardly into a blinding position, into reflecting engagement with the inner surface of the upper portion of the parabolic reflecting shell 10 whence the rays are diverted forwardly and downwardly as is desired.

It will be seen that the reflecting device 25 is provided at its central portion with a loop 26 adapted to be placed over the stem 27 of a lamp 28 and to be held in place within the parabolic section 10 by the frame member which holds the glass or lens in place. The reflecting device 25 is accordingly capable of being placed in position in reflectors of known types and constitutes a separate and distinct article of manufacture and sale.

In Figures 5 and 6 of the drawing there is shown still another modification of the invention which consists in a reflector having, as in the other modifications referred to, an upper parabolic section 10 and with the lower section formed into radially extending surfaces 30 which form what are in effect angular corrugations in the lower part of the reflecting shell. The reflecting areas extend from the centrally disposed opening 14 to the outer extremity of the shell edge and are formed with a longitudinal curvature approximating that of a parabola and with a progressively increasing width from the inner to the outer ends thereof.

With this construction it will be clear that light rays reflected laterally outward and downward from the source of light are in turn reflected upwardly against the inner

surface of the upper parabolic section 10 as is the case with the reflecting surfaces 11 in the modification of the invention shown in Figures 1 to 4, inclusive.

In order to divert upwardly light rays which are reflected downwardly and forwardly from the lamp the central areas 30, which form what is in effect a V-shaped channel as will be seen in Figure 5, are connected by a curved bridging member 31 so formed that light rays 32 projected thereon from the light source 13 are reflected upwardly as at 33 against the inner surface of the reflecting section 10 and are thence reflected outwardly and downwardly as at 34 to illuminate the roadway in front of the vehicle.

With either of the general forms of invention which have been described, the object of the invention may be accomplished, that is, light rays from the headlight reflecting shells which have been heretofore reflected upwardly and outwardly in a blinding and unsatisfactory direction are, by the use of the reflecting means described herein, diverted to a downward direction where they are usefully employed in lighting the roadway in front of the vehicle.

What I claim is:—

1. A headlight reflector having its upper portion in the form of a parabolic section, the lateral walls of the lower portion of the reflector being formed with radial corrugations extending from the center of the reflector to the outer edge thereof, and that portion of the reflector beneath the light source carrying a surface projecting forwardly and upwardly from the normal contour of the reflector and acting to reflect light rays upwardly and to prevent any light rays passing directly forward from the area covered by it.

2. A headlight reflector having its upper portion in the form of a parabolic section, the lateral walls of the lower portion of the reflector being formed into a plurality of elongated reflector members extending diagonally outward and downward from the center of the reflector to the outer edge thereof, and the sector-shaped space between the elongated reflector members and beneath the source of light being provided with a plurality of transversely extending reflector members occupying a downwardly and outwardly stepped relation, said reflecting members acting to reflect light rays upwardly against the parabolic section of the reflector.

3. An attachment for headlight reflectors comprising: a reflecting device adapted to fit into the lower portion of a parabolic reflector, said reflecting device including corrugated portions providing two oppositely disposed sets of elongated reflecting surfaces extending from the center of the reflector diagonally downward and outward to the outer edge thereof, and a set of transversely extending arcuate reflecting members mounted between the oppositely disposed sets of elongated reflecting surfaces, said reflecting surfaces and members acting to reflect light rays upwardly against the upper portion of the parabolic reflector.

In testimony whereof I affix my signature.

EUGENE SCHIMPFF.