

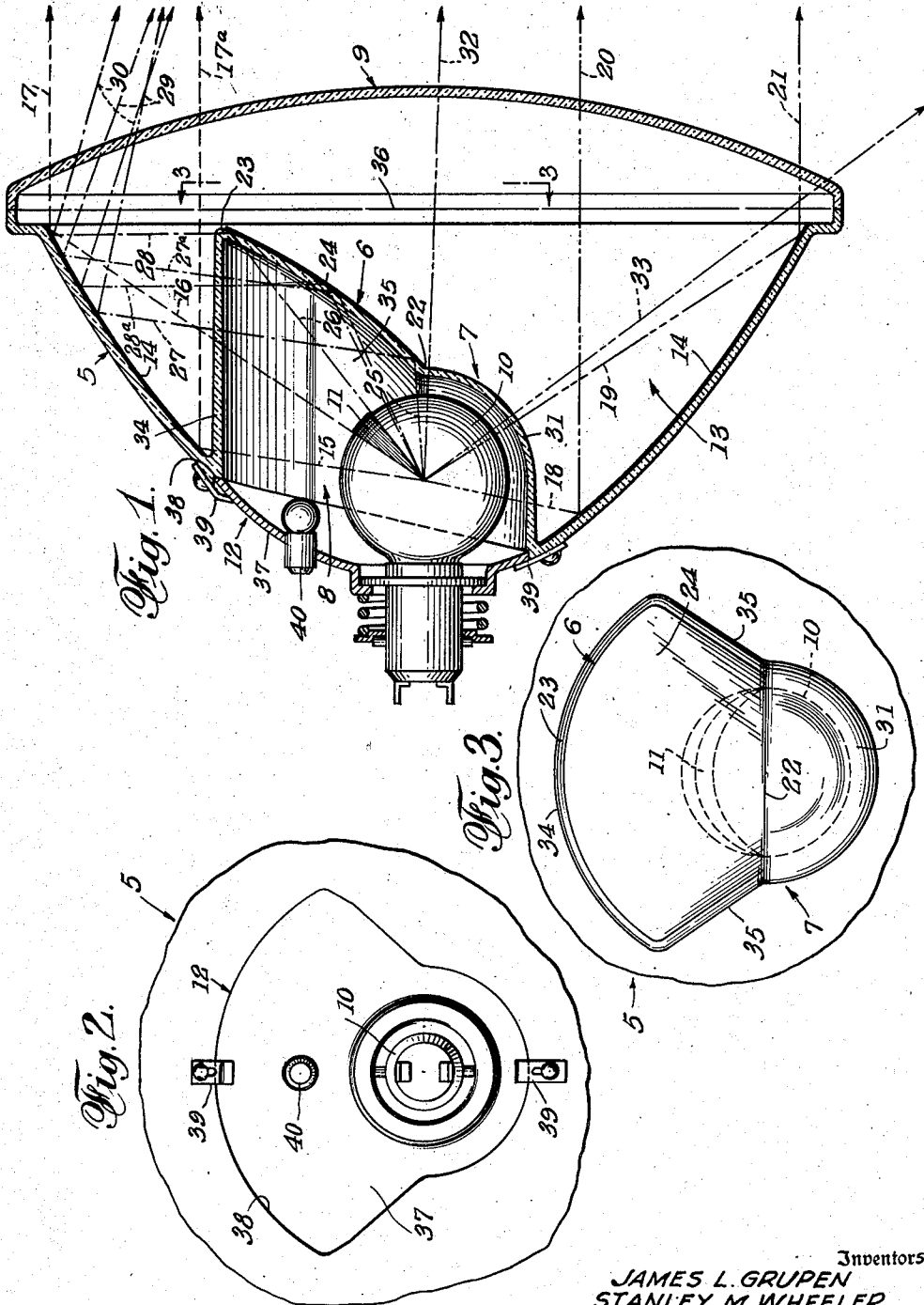
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SEALED HEADLIGHT HAVING AUXILIARY REFLECTOR

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## SEALED HEADLIGHT HAVING AUXILIARY REFLECTOR

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This invention relates to lamps and deals more particularly with improvements in headlights for automobiles, locomotives, etc., the present invention being an improvement of the headlamp disclosed in our pending application entitled Sealed Headlight and the like, S. N. 728,000, filed February 14, 1947.

An object of the present invention is to provide an improved construction relating to the manner of supporting an auxiliary parabolic reflector or mirror within a primary reflector of a headlight whereby manufacture is facilitated.

Another object of the invention is to provide a headlight, as indicated, in which all upwardly directed direct rays of a light source are either masked out or are reflected to become rays that are horizontal or downwardly directed, downwardly directed direct rays being unintercepted since the latter do not contribute to glare.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a vertical sectional view of a light-projecting lamp embodying the present invention.

Fig. 2 is a fragmentary rear view thereof.

Fig. 3 is a front view as seen in the direction of the arrows of line 3—3 of Fig. 1.

The lamp that is illustrated comprises, generally, a primary parabolic reflector 5, a secondary parabolic reflector 6 within reflector 5, a light-passing housing 7 integrally connecting the two reflectors to define a rearwardly facing cavity 8, a front light-passing lens 9 enclosing the interior of reflector 5, a light source 10 at the focal point of reflector 5, a light ray mask 11 carried by said light source, and a removable closure 12 for cavity 8 and mounting said light source. The construction is such that reflectors 5 and 6 and housing 7 are integrally molded or otherwise suitably formed of transparent material such as glass or one of the light-passing plastics, and the lens 9 is made of a similar material and fused

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to the front edge of reflector 5 to suitably seal the interior chamber 13, said chamber being thus isolated from cavity 8. Closure 12 may be of metal or other suitable material since the same need not embody transparent or reflective properties.

The primary reflector 5 is circular and of generally conventional parabolic form and as shown is one suitable for use as an automotive headlight. The interior of said reflector is provided with a coated surface 14, the same, thereby, being within sealed chamber 13. The light source 10, being on the focal center of reflector 5, upwardly directed light rays, in the range between lines 15 and 16, will be reflected as a beam defined by parallel and horizontal lines 17 and 17a. Also, downwardly directed rays, in the range between lines 18 and 19, will be reflected as a beam defined by parallel and horizontal lines 20 and 21. The beams represented by lines 17 and 17a, at the top, and 20 and 21, at the bottom, are similar to reflected beams around the entire surface of reflector 5. Such beams are, therefore, suggestive of a torus-sectioned beam emanating from reflector 5 around housing 7.

The auxiliary reflector 6 is disposed in front of the light source 10, the lower edge 22 thereof being substantially opposite the center of said light source and the upper edge 23 being forward of edge 22 and considerably thereabove. In any case, edge 23 terminates along a curved line, as indicated in Fig. 3, that is generated around a point located on the central axis of reflector 5, said line being spaced from and parallel to the curvature of the front edge of reflector 5. The face of reflector 6 that is directed toward sealed chamber 13 is provided with a reflective coating 24 so as to reside within said sealed chamber.

It will be noted that reflector 6 has a sector-like shape and is arranged in opposed relation to the upper portion of reflector 5, the relative position being such that rays from the light source, within the range between lines 25 and 26, are reflected as a beam, defined by lines 27 and 28, toward the opposed portion of reflector 5, and then reflected downwardly outward as a light beam defined between lines 29 and 30.

The housing 7 serves as a support for reflector 6, said housing comprising a spherically curved transparent wall 31 which extends from edge 22 downward to connect to reflector 5 at the rear thereof. Said wall 31 is in front of the lower portion of light source 10 and freely passes light rays in a range between lines 32 and 33 that are directed outwardly downward. Lines 32 and 33 represent only a portion of the rays that pass

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through wall 31, the remaining rays, in the range between the mentioned lines 18 and 19, being reflected from the lower portion of reflector 5, as the beam 20-21.

Housing 7 further includes a top curved transparent wall 34 that extends between curved edge 23 and the upper rear of reflector 5, said wall freely passing the mentioned rays 15, 16, 26 and 27. The housing is completed by opposed side walls 35 that extend angularly upward from the lateral upper edges of wall 31 to the lateral edges of wall 34, and transversely between the lateral edges of reflector 6 to the rear of reflector 5. Since edge 22 has a curved form in plan, reflector 6 is generally flat across the top and then is gradually curved to join wall 31 along said curved edge 22. The rear cavity 8 is defined by the mentioned walls of housing 7.

The light rays above described pass from the headlight either horizontally or downwardly. Between ray lines 16 and 26 there is a range of direct rays from the light source that normally would pass upwardly outward between the front upper edge of reflector 5 and the curved upper edge 23 of reflector 6. In the present instance, the rays in this range are intercepted by the mask 11. This mask is of suitable form to intercept only the rays between lines 16 and 26 and is shown as applied directly to the transparent envelope of the light source 10. However, said mask may be carried by housing 7 as by an upwardly and inwardly curved extension of wall 31, thus locating the mask independently of the light source. It should be understood that the shape of the envelope of the light source may vary from the spherical and conventional form shown.

The light-passing lens 9 is applied to the front edge of reflector 5 and is fused thereto along line 36 to hermetically seal the interior chamber 13 and thereby obviate oxidation that may result in deterioration of reflector surfaces 14 and 24.

Closure 12 for cavity 8 comprises a suitably formed plate 37 that resides in a cavity 38 generally following the rear shape of housing 7. Means such as clips 39 removably hold said closure in place. The light source—an electric lamp—is carried by said closure so as to be on the focal center of reflector 5. Said light source, of course, is replaceable. Said closure, also may mount a parking light lamp 40, the rays of which, in part, pass directly outward and, in part, are reflected outward by reflectors 5 and 6.

It will be noted that, as in the mentioned pending application, reflector 6 comprises a series of parabolic sections, the ray lines 27a and 28a reflecting from an approximate point where two such sections join, said latter lines being respectively parallel to lines 27 and 28.

While the invention that has been illustrated and described is now regarded as the preferred embodiment, the construction is, of course, subject to modifications without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A sealed light beam reflecting unit comprising a primary parabolic reflector having a circular form, a light-passing lens enclosing the front end of said reflector, a housing extending from the rear end of said reflector into the interior

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thereof and defining a rear-open cavity, one wall of said housing comprising an auxiliary parabolic reflector arranged forward of and in opposed relation to the upper portion of the primary reflector, said auxiliary reflector being substantially sector-shaped and having a top edge curved around a point on the axial center of the circular parabolic reflector and having lateral edges that diverge upwardly, transparent top and lateral walls extending rearwardly from the top and lateral edges of said auxiliary reflector and joining the primary reflector, the other walls of said housing being transparent and below the auxiliary reflector, a closure for the mentioned cavity, and a light source mounted on said closure at the focal point of said primary reflector and rearward of the auxiliary reflector.

2. A sealed light beam reflecting unit comprising a primary parabolic reflector having a circular form, a light-passing lens enclosing the front end of said reflector, a housing extending from the rear end of said reflector into the interior thereof and defining a rear-open cavity, one wall of said housing comprising an auxiliary parabolic reflector arranged forward of and in opposed relation to the upper portion of the primary reflector, said auxiliary reflector being substantially sector-shaped and having a top edge curved around a point on the axial center of the circular parabolic reflector and having lateral edges that diverge upwardly, transparent top and lateral walls extending rearwardly from the top and lateral edges of said auxiliary reflector and joining the primary reflector, the other walls of said housing being transparent and below the auxiliary reflector, a closure for the mentioned cavity, and a light source mounted on said closure at the focal point of said primary reflector and rearward of the auxiliary reflector, said housing closing the rear of said reflector and, together with the mentioned front lens, sealing the interior thereof.

3. A sealed light beam reflecting unit comprising a primary parabolic reflector having a circular form, a light-passing lens enclosing the front end of said reflector, a housing extending from the rear end of said reflector into the interior thereof and defining a rear-open cavity, said housing comprising upper, lower and side transparent walls, and a parabolically curved front reflector wall that is arranged forward of in opposed relation to the upper portion of the primary reflector and extends upwardly from the center of the latter reflector, said reflector wall having an upwardly diverging substantially sector-like shape and constituting an auxiliary reflector, a closure for the mentioned cavity, and a light source mounted on said closure at the focal point of said primary reflector and rearward of the auxiliary reflector.

4. In a headlight unit of the character described, a circular parabolic reflector, means mounting a light source at the focal point of said reflector, an auxiliary parabolic reflector extending from a point immediately in front of the center of said light source upwardly and forwardly toward but spaced from the forward edge of the primary reflector, said auxiliary reflector being opposed to the upper portion of the primary reflector and having an upwardly diverging substantially sector-like shape, a portion of the rays from the light source being adapted to strike both reflectors, and a mask to intercept a second portion of said rays, the remainder of the rays passing directly outward and downward beneath the auxiliary reflector.

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5. A sealed light beam reflecting unit comprising a primary parabolic reflector having a circular form, a light-passing lens enclosing the front end of said reflector, a housing extending from the rear end of said reflector into the interior thereof and defining a rear-open cavity, one wall of said housing comprising an auxiliary parabolic reflector arranged forward of and in opposed relation to the upper portion of the primary reflector, said auxiliary reflector being substantially sector-shaped and having a top edge curved around a point on the axial center of the circular parabolic reflector and having lateral edges that diverge upwardly, transparent top and lateral walls extending rearwardly from the top and lateral edges of said auxiliary reflector and joining the primary reflector, the other walls of said housing being transparent and below the auxiliary reflector, a closure for the mentioned cavity, and a light source mounted on said closure at the focal point of said primary reflector and rearward of the auxiliary reflector, and a mask for those rays from the light source that are directed to pass outward between the two reflectors.

6. In a headlight having a light source, a rearwardly open housing for said light source, said

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housing comprising top, bottom and side transparent walls directly passing rays from the light source and a parabolic reflector in front of the upper half of the light source and reflecting rays therefrom upwardly through the top transparent wall, said reflector being sector-shaped and having an upper curved edge substantially wider than the lower edge thereof.

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