Jan. 25, 1927. 1,615,548

C. A. MICHEL

AUTOMOBILE LAMP LENS

Filed Sept. 23, 1922 3 Sheets-Sheet 1

Fig. 1

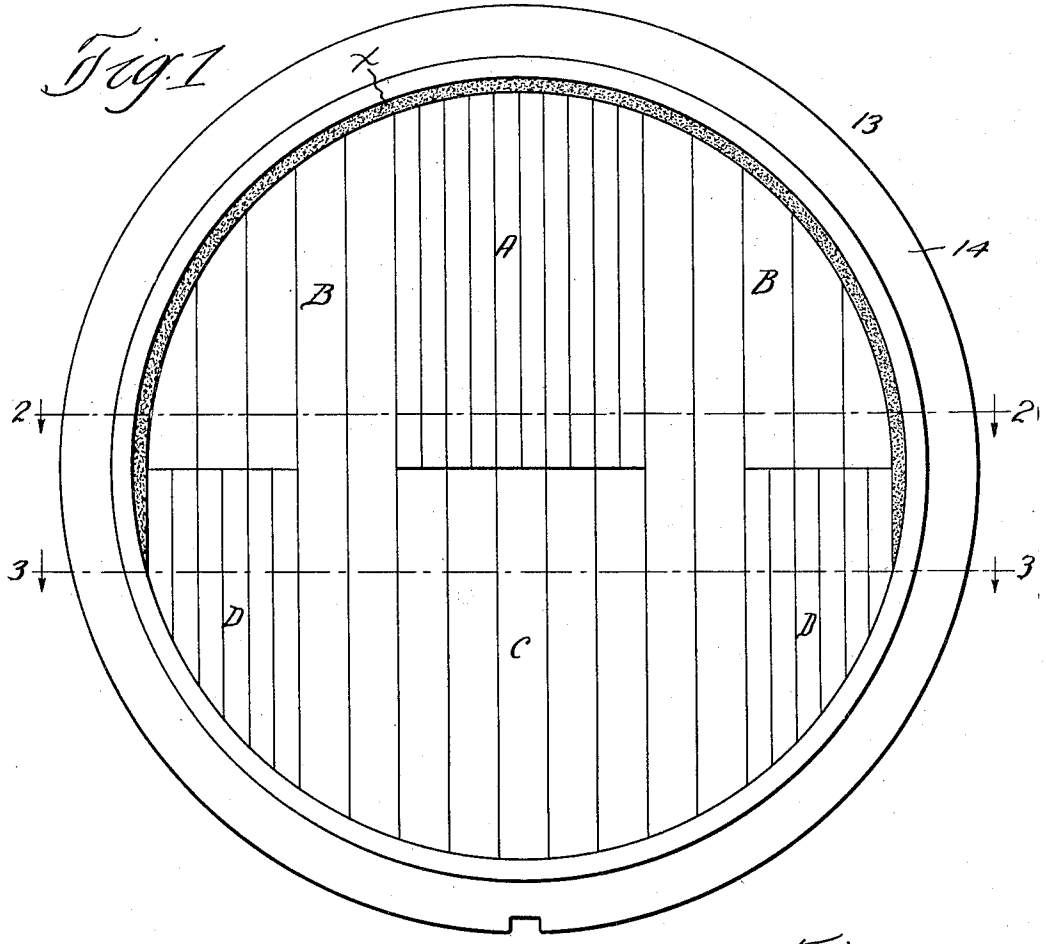


Fig. 2

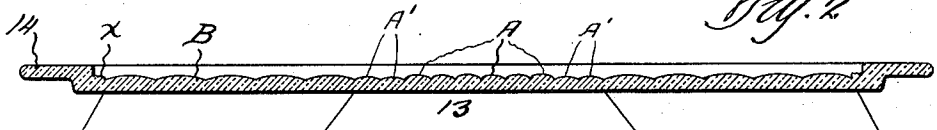


Fig. 3

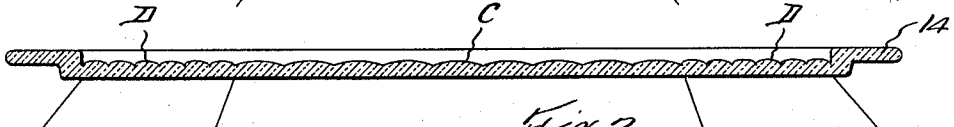




Fig. 4

Inventor
C. A. Michel

By Hull Brock & West
Attys.

Jan. 25, 1927. 1,615,548

C. A. MICHEL

AUTOMOBILE LAMP LENS

Filed Sept. 23, 1922 3 Sheets-Sheet 2

Fig. 5

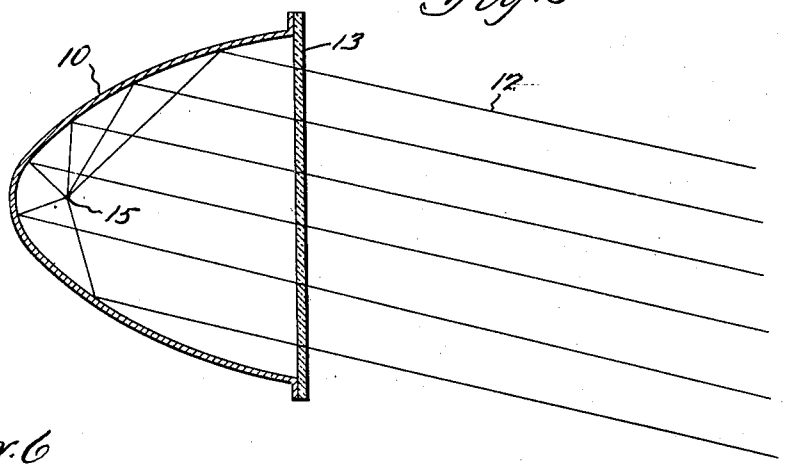


Fig. 6

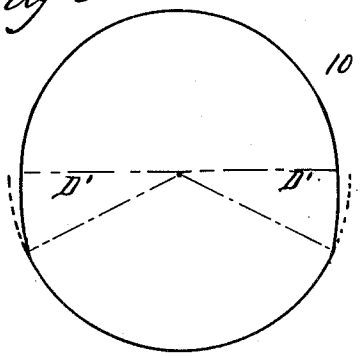
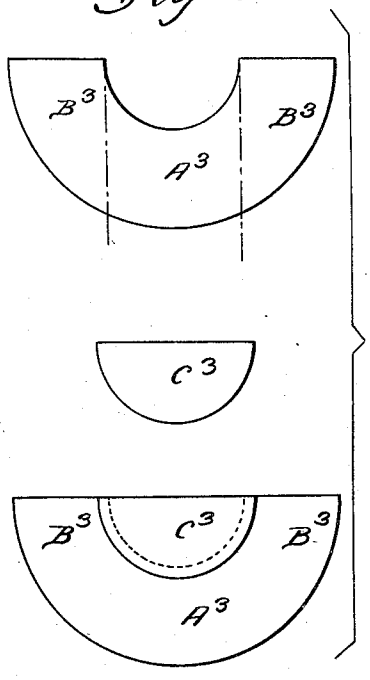


Fig. 8



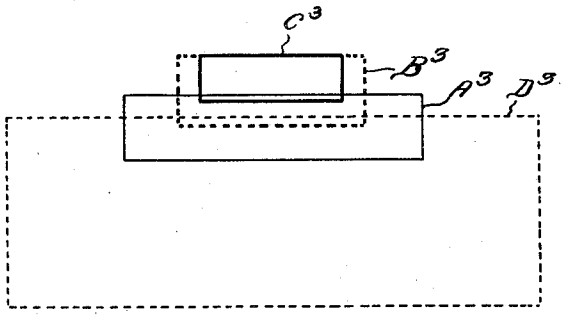


Fig. 7

Inventor
C. A. Michel

By Hunt Brock & West
Attys.

Jan. 25, 1927. 1,615,548

C. A. MICHEL

AUTOMOBILE LAMP LENS

Filed Sept. 23, 1922 3 Sheets-Sheet 3

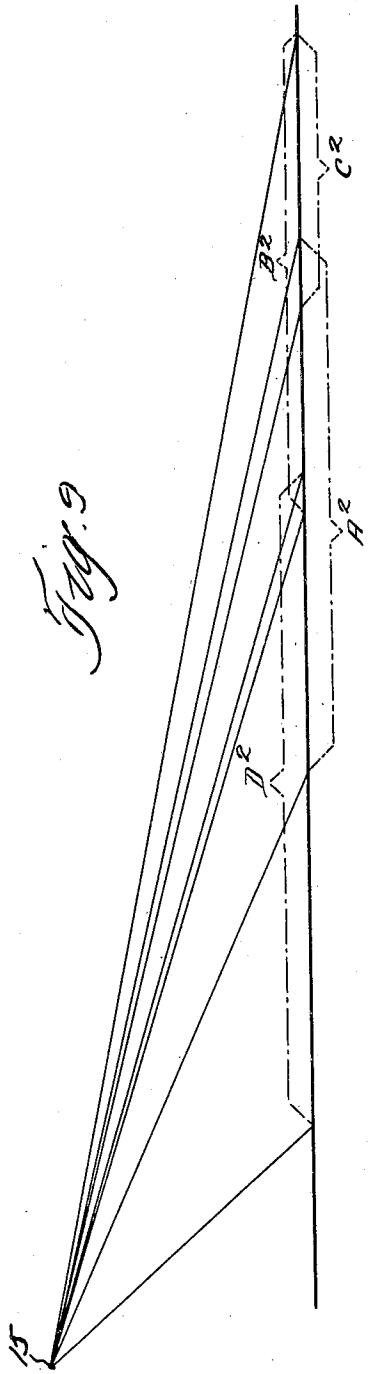


Fig. 9

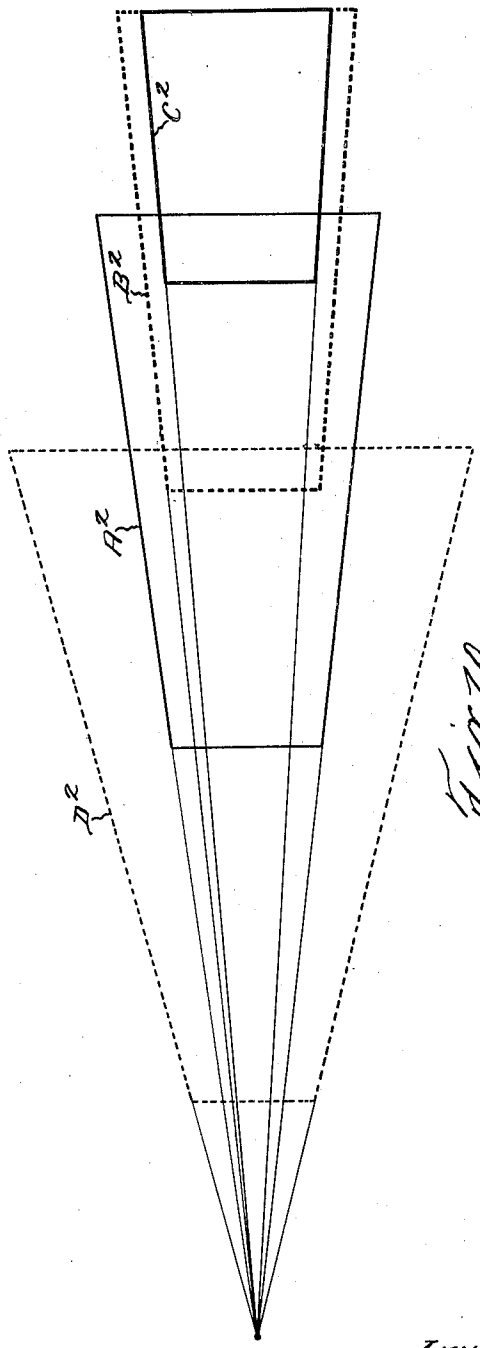


Fig. 10

Inventor
C. A. Michel
By
Hull Brock & West
Attys.

Patented Jan. 25, 1927. 1,615,548

UNITED STATES PATENT OFFICE.

CLARENCE A. MICHEL, OF CLEVELAND, OHIO, ASSIGNOR TO THE GUIDE MOTOR LAMP MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

AUTOMOBILE LAMP LENS.

Application filed September 23, 1922. Serial No. 589,967.

This invention relates generally to automobile headlights and more particularly to a novel construction of lens used in connection with an unsymmetrical reflector, the object being to provide a headlight in which the usual type of commercial incandescent filament is employed and the rays of light initially directed downwardly due to the unsymmetrical form of the reflector and then laterally widen the downwardly deflected rays so as to provide the best road illumination, that is, widen the beam at the point nearest the car and strengthen the beam at the remote point in advance of the car and these objects I accomplish by providing zones of refracting surfaces for the purpose of taking care of the vertical rays of light due to the unsymmetrical formation of the reflector.

The invention consists also in certain details of construction hereinafter fully described and pointed out in the claims.

In the drawings forming a part of this invention—

Figure 1 is a face view of a headlight lens constructed in accordance with my invention;

Figure 2 is a transverse sectional view on the line 2—2 of Figure 1;

Figure 3 is a transverse section on the line 3—3 of Figure 1;

Figure 4 is an enlarged section of the same in order to illustrate the formation of the refracting portions of the screen;

Figure 5 is a vertical sectional view of the reflector and refracting screen;

Figure 6 is a view showing the transverse shape of the unsymmetrical reflector;

Figure 7 is a diagrammatic view showing the relative positions of the various portions of the beam of light projected upon the roadway;

Figure 8 is a disassociated diagrammatic view showing the relative positions of the beam emanating from the lamp;

Figure 9 is a view illustrating in a vertical manner the path of light; and

Figure 10 is a view diagrammatically illustrating in plan view the path of light at its point of interception with the roadway.

In carrying out my invention I employ an unsymmetrical reflector 10, that is the upper and lower halves are unlike and also have their foci separated, although preferably arranged in the longitudinal axis of the reflector, although it is not absolutely necessary that the foci should be so positioned.

In practice the ordinary commercial filament is arranged in the longitudinal axis of the reflector and so positioned that the rays of light 12 reflected from the unlike sections of the reflector will be directed downwardly and in order to utilize these downwardly directed rays to the best advantage, I provide the refractive screen 13 at the front of the reflector, said screen having a plain marginal portion 14 by means of which it is positioned within the lamp body not shown.

The outer face of this transparent refractive screen is preferably made smooth, but the interior thereof is prismed or fluted in order to laterally spread the rays of light passing therethrough and I prefer to arrange these refractive portions of the screen in zones so that the proper road illumination can be had.

With this particular object in view I provide a series of flutes or prisms A at the upper central portion of the screen, there being ten such flutes shown and the six central flutes are of slightly different curvature from the other four A′ disposed in series of two each upon opposite sides of the central six.

Upon opposite sides of the flutes or prisms A and A′ and in the upper half of the refractive screen, I provide the flutes or prisms B, there being five such prisms shown on each side of the centrally disposed prisms or flutes A and A′ and it will be noted that the two flutes or prisms B nearest the center extend or continue to the lower edge of the refractive screen as most clearly shown in Figure 1 and between these two continuous flutes or prisms B I provide a series of five flutes or prisms of the same curvature as the flutes or prisms B and directly beneath the flutes or prisms A, and these prisms in the lower half of the screen I designate as C, and upon opposite sides of the flutes or prisms C I provide six flutes or prisms D, which are of the same curvature as six of the flutes or prisms A.

Around the upper edge of the screen and extending at the sides a short distance below the horizontal diameter the screen is pebbled or ground as shown at X in order to keep out

any of the stray rays that might be projected owing to slight inaccuracies in the manufacture of the reflector.

In making an unsymmetrical reflector, there are, of course, at each side, surfaces of transition D′ where the upper section and lower section blend together and it is for the purpose of taking care of the rays reflected from these transition surfaces that the zones of flutes or prisms D are provided. In Fig. 6 I have indicated in a general way the cross sectional shape of the reflector comprising the upper and lower sections and the intermediate transition surfaces.

When a refractive screen, such as shown in Figure 1, is used in connection with an unsymmetrical reflector and an electric bulb arranged at the point 15, the rays of light will pass through the screen in the manner indicated in Figures 9 and 10 at A^2, B^2, C^2 and D^2 and diagrammed in plan view in Figures 7 and 8 at A^3, B^3, C^3 and D^3 and by referring to these figures it will be noted that the prisms D will spread the light at the point nearest the car, which is highly advantageous as it enables the driver to observe the exact position of the car with reference to the edge of the roadway.

The zones A^2 and A^3 and B^2 and B^3 overlap each other to a certain extent as shown in Figs. 7, 9 and 10 and likewise the part illuminated by prisms D and the rays projected through the prisms C are spread the least and reach the roadway at the most remote point from the car as shown at C^2 in Figs. 9 and 10. In this manner I eliminate the objectionable glare of the high-power automobile headlight and break up the downwardly deflected beam so as to obtain road illumination both in advance of the car and in a wide zone at a point adjacent the car.

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

1. In an automobile headlight, the combination with a reflector and a source of light, said reflector being adapted to reflect the rays of light downwardly, and a refractive screen arranged in advance of said reflector, said refractive screen having vertically extending prisms adapted to laterally refract the rays of light passing therethrough, the centrally disposed prisms in the upper half of the screen being of a curvature to give the greatest lateral spread, the prisms at each side of the lower half of the screen being of the same curvature as the centrally disposed prisms of the upper half and adapted to give a greater spread to the rays of light than the prisms of the lower half intermediate said prisms at each side of the lower half, the prisms at each side of the upper half of the screen being of the same curvature and refractive power as the intermediate prisms of the lower half.

2. In an automobile headlight the combination with a source of light and a reflector, said reflector being constructed to reflect the rays of light downwardly, and a refractive screen arranged in advance of the reflector, said screen having a series of vertically extending prisms adapted to refract the rays of light laterally, the centrally disposed prisms A in the upper half of the screen being of a different curvature from the prisms A′ upon opposite sides of the centrally disposed prisms A and of greater refractive power than said prisms A′, vertical prisms D at each side of the lower half of the screen and being of the same curvature and refractive power as the centrally disposed prisms A of the upper half, prisms B upon opposite sides of the prisms A′ and of a curvature having less refractive power than the prisms A′ and prisms C in the lower half of the screen of the same curvature and refractive power as the prisms B.

3. In an automobile headlight, the combination with a source of light, of a reflector comprising upper and lower halves of different curvatures and intermediate transition surfaces, and a refractive screen arranged in advance of said reflector, said screen having a series of vertical prisms adapted to laterally refract the rays of light passing therethrough, the centrally disposed prisms A of the upper half of the screen being of a curvature to produce a greater refraction than the adjacent prisms A′ in the upper half of the screen, the prisms D at each side of the lower half of the screen being of the same curvature and refractive power as the centrally disposed prisms A and adapted to refract the rays of light reflected from the transition surfaces, the prisms C in the lower half of the screen intermediate the prisms D being of a curvature having less refractive power than the prisms D and the prisms B in the upper half of the screen having the same curvature and refractive power as the prisms C in the lower half, as and for the purpose set forth.

In testimony whereof, I hereunto affix my signature.

CLARENCE A. MICHEL.