Nov. 12, 1929. W. L. POLLARD 1,735,090

AUTOMOBILE HEADLIGHT

Filed Oct. 27, 1926

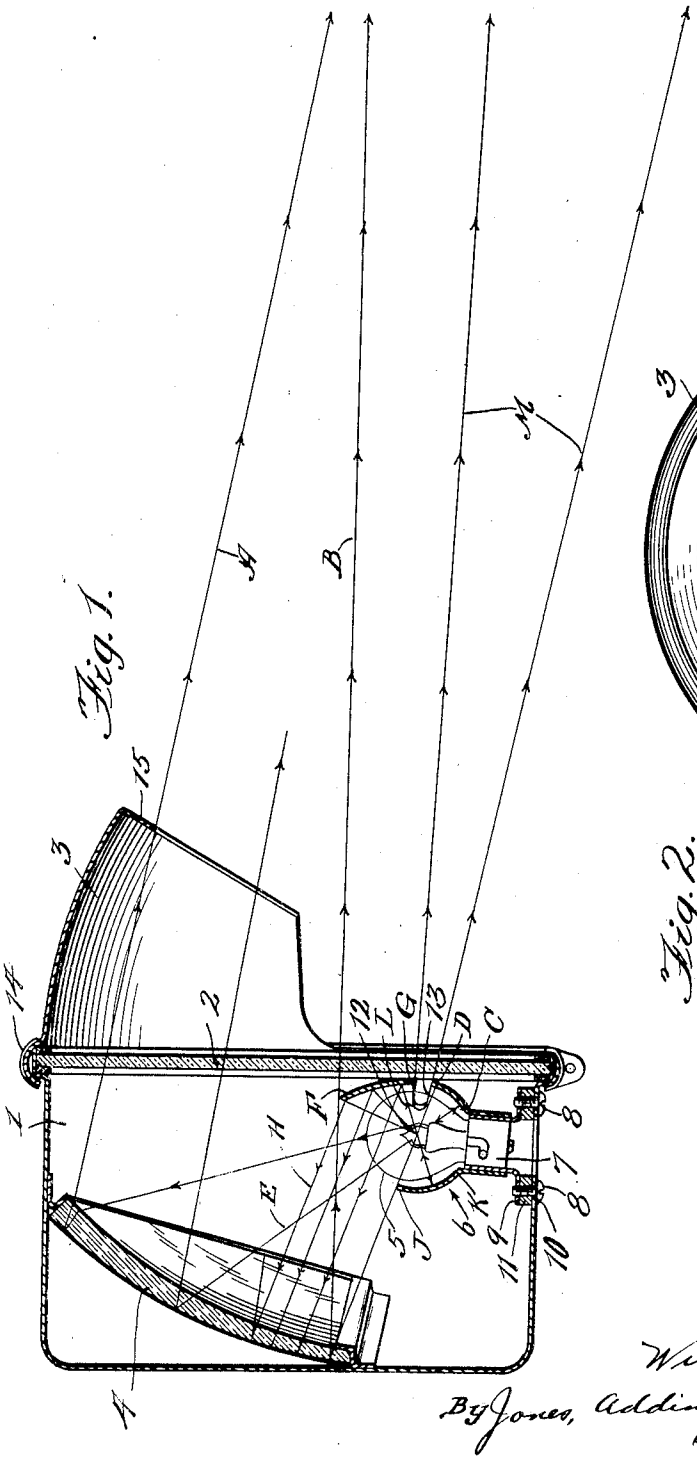


Fig. 1.

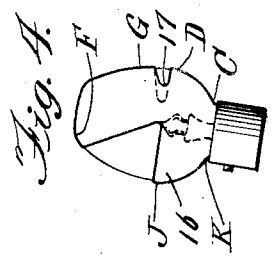


Fig. 4.

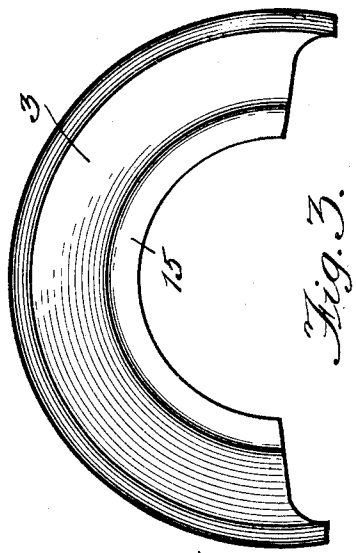


Fig. 3.

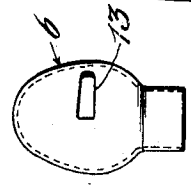


Fig. 2.

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UNITED STATES PATENT OFFICE

WILLARD L. POLLARD, OF EVANSTON, ILLINOIS

AUTOMOBILE HEADLIGHT

Application filed October 27, 1926. Serial No. 144,486.

My invention relates to automobile headlights.

One of the objects of my invention is to provide an improved automobile headlight which will prevent glare, which will throw a strong beam of light a long distance along the roadway, and which will give a smooth even distribution of light on the roadway.

A further object of my invention is to provide a deflector which will prevent snow, rain, and other foreign substances from accumulating on the lens in front of the lamp.

Further objects will appear from the description and claims.

In the drawings, in which my invention is illustrated,

Figure 1 is a vertical axial section showing an automobile headlight;

Fig. 2 is a front view of a small reflector which embraces the bulb;

Fig. 3 is a front view of the hood with the deflector, and

Fig. 4 is a sectional view of a bulb showing a different form of my invention.

Referring to the drawings in detail, and first to Figs. 1, 2, and 3, the headlight shown comprises a drum-shaped casing 1, a glass lens, or plate 2, secured across the front of the casing, a hood 3 secured to the upper front part of the casing, a concave reflector 4 in the upper rear part of the casing, an electric lamp bulb 5 in the lower front part of the casing, and a small reflector member 6 embracing or partially surrounding the bulb for causing rays from the lamp to be reflected back onto the concave reflector 4. The bulb has the usual bayonet joint connection with a socket member 7 which is mounted in the lower part of the casing. This socket may be adjusted from front to rear by loosening the two screws 8 which are threaded into the ears 9 of the socket, which screws extend through slots 10 in the casing. The socket may be adjusted vertically by using shims 11 of different thicknesses underneath the ears of the socket.

The light source, or center 12, is in front of the focal point of incident parallel rays striking the concave reflector 4 so that the direct rays from the bulb falling on the concave reflector will be convergent. The lower edge of the concave reflector 4 lies substantially in a horizontal plane so that the upper edge of the light pattern beyond the focal point of the reflected rays from the light source will be substantially horizontal. The bulb of the lamp is below the reflected beam AB, thus preventing bulb absorption, bulb refraction and filament shadows in the light pattern.

The small enclosing reflector 6 is also below the reflected beam AB so as not to interfere with the light pattern of the reflected beam.

The interior surface of the small reflector is coated with reflecting material 6. The interior of this reflector may be considered as providing three reflecting surfaces as follows:

1. A substantially spherical surface CD below and in front of the light source which reflects rays E directly back through the light source onto the concave reflector 4 which rays are reflected from this concave reflector and serve to re-enforce the beam AB;

2. A reflecting surface FG above and in front of the light source, which may be parabolic, in vertical axial section, so that the rays from the light source will be reflected rearwardly as indicated at H, substantially parallel to each other to fall on the lower portion of the concave reflector from whence they are again reflected to re-enforce portions of the beam AB;

3. A substantially spherical reflecting surface JK below and in the rear of the light source, which third surface reflects rays L directly back through the light source to fall on the second reflecting surface FG referred to, from whence they are again reflected onto the lower part of the concave reflector and again reflected to re-enforce the beam AB.

This third reflecting surface also serves as a screen to prevent any stray reflected rays from the first reflecting surface CD from falling on the extreme lower portion of the concave reflector, which stray rays might have a tendency to cause glare by causing rays from the concave reflector to rise above the horizontal.

A slot 13 may be provided in the front

part of the small reflector member, thereby providing a space between the reflecting surface CD and the reflecting surface FG referred to, which permits a small proportion of direct rays M from the light source to escape forwardly and laterally to provide illumination at the side of the roadway, to facilitate turning and to show up ditches, etc. at the sides of the roadway. The concave reflector 4 is preferably made as non-diffusing as possible, and good results have been obtained by the use of a glass reflector having a quicksilver coating on its rear face. This reflector may be semi-circular in outline.

The lens 2 and hood 3 may be secured to the casing in a suitable manner as by means of a clamping band 14. The front portion of the hood is provided with a semi-circular downwardly and rearwardly extending deflecting shield 15 which causes the air to be deflected downwardly, thus minimizing the accumulation of rain, snow and foreign material on the lens.

In Fig. 4 is shown a different form of my invention in which the small reflector is provided by coating the bulb of the lamp itself with a reflecting material 16 such as quicksilver. The bulb is made a special shape to provide the three reflecting surfaces CD, FG and JK referred to, and may be slightly flattened on top to prevent interference with the main reflected beam from the concave reflector. In this form the reflecting surface FG is shown as considerably greater in extent than the corresponding surface FG of Fig. 1, so that practically all of the light escaping between the points F and J will fall on the reflector 4. An opening 17 is provided between the first and second reflecting surfaces to permit a small proportion of direct rays to escape forwardly to provide the desired illumination at the side of the roadway.

I claim:

1. An automobile headlight construction, comprising a concave reflector, the lower edge of the reflecting surface lying substantially in a horizontal plane, an electric lamp bulb having its light source in front of the focus whereby the beam reflected from said reflector will be convergent, and the upper edge of the light pattern beyond the focal point of the reflected rays from the light source will be substantially horizontal, a reflecting surface above and in front of said light source for reflecting rays from said light source back onto said concave reflector and a second reflecting surface below and in the rear of said light source for reflecting rays from said light source forwardly onto said first reflecting surface, to be again reflected rearwardly onto said concave reflector, said bulb and reflecting surfaces being below said convergent reflected beam whereby a smooth unshadowed light pattern is obtained.

2. An automobile headlight construction, comprising a concave reflector, the lower edge of the reflecting surface lying substantially in a horizontal plane, an electric lamp bulb having its light source in front of the focus whereby the beam reflected from said reflector will be convergent, and the upper edge of the light pattern beyond the focal point of the reflected rays from the light source will be substantially horizontal, a reflecting surface above and in front of said light source for reflecting rays from said light source back onto said concave reflector and a second reflecting surface below and in the rear of said light source for reflecting rays from said light source forwardly onto said first reflecting surface, to be again reflected rearwardly onto said concave reflector, said second reflecting surface being concave and said first reflecting surface being parabolic, said bulb and reflecting surfaces being below said convergent reflected beam whereby a smooth unshadowed light pattern is obtained.

3. An automobile headlight construction, comprising a concave reflector, the lower edge of the reflecting surface lying substantially in a horizontal plane, an electric lamp bulb having its light source in front of the focus whereby the beam reflected from said reflector will be convergent, and the upper edge of the light pattern beyond the focal point of the reflected rays from the light source will be substantially horizontal, a reflecting surface below and in front of said light source for reflecting rays from said light source back onto said concave reflector, and a second reflecting surface above and in front of said light source for reflecting rays from said light source back onto said concave reflector, said two reflecting surfaces being spaced apart to permit direct rays from the light source to pass forwardly therebetween, said bulb and reflecting surfaces being below said convergent reflected beam whereby a smooth unshadowed light pattern is obtained.

4. An automobile headlight construction, comprising a concave reflector, the lower edge of the reflecting surface lying substantially in a horizontal plane, an electric lamp bulb having its light source in front of the focus whereby the beam reflected from said reflector will be convergent, and the upper edge of the light pattern beyond the focal point of the reflected rays from the light source will be substantially horizontal, a reflecting surface above and in front of said light source for reflecting rays from said light source back onto said concave reflector, a second reflecting surface below and in the rear of said light source for reflecting rays from said light source forwardly onto said first reflecting surface, to be again reflected rearwardly onto said concave reflector, and a third reflecting surface below and in front of said light source for reflecting rays from

said light source back onto said concave reflector, said second reflecting surface serving as a screen to prevent stray reflected or deflected rays from said third reflector from striking the lower part of said concave reflector, said bulb and reflecting surfaces being below said convergent reflected beam whereby a smooth unshadowed light pattern is obtained.

In witness whereof, I have hereunto subscribed my name.

WILLARD L. POLLARD.