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A. CHITI

2,338,901

VEHICLE LAMP

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Fig. 1

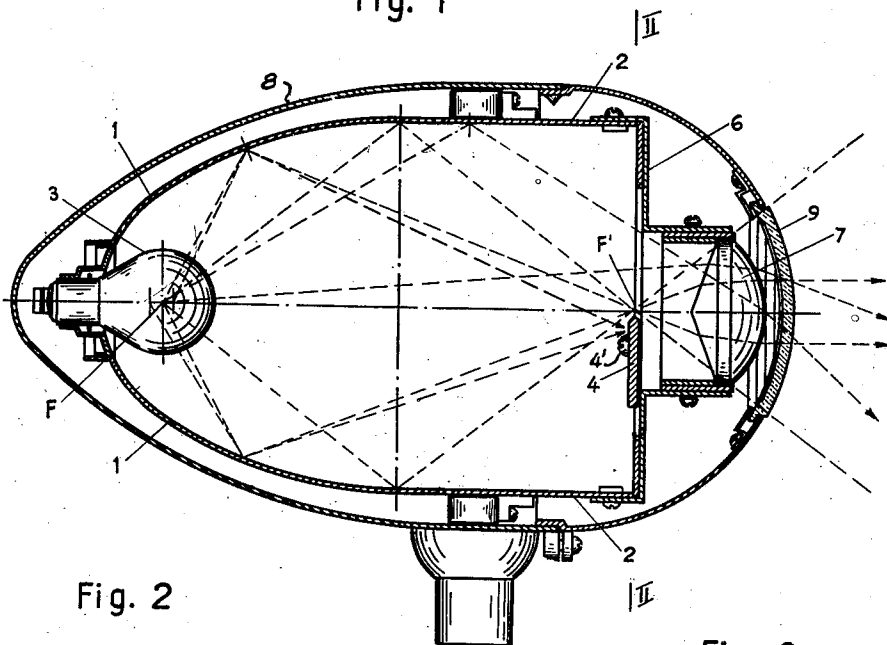


Fig. 2

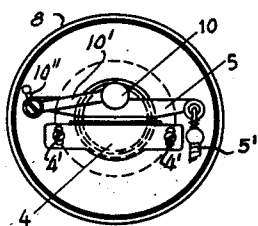


Fig. 3

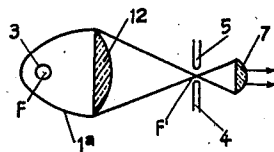
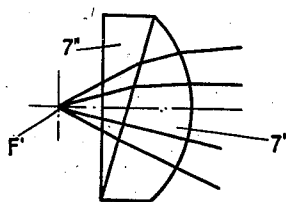


Fig. 4.



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UNITED STATES PATENT OFFICE

2,338,901

VEHICLE LAMP

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Property CustodianApplication May 14, 1940, Serial No. 335,177
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1 Claim. (Cl. 240—41.3)

This invention relates to lamps for motor vehicles and mechanized troop transports. An object of this invention is to provide a lamp emitting a light beam, from which the passive rays, issuing from the lamp filament and the rays incorrectly reflected by the reflecting surface are eliminated by means of screens arranged above and under the caustic formed by the rays reflected by the reflector and converging towards a focal point, in order to avoid formation of a halo around the light beam issuing from the lamp, which, as is well known, is the main cause of glaring and reverberation produced by fog and impairing vision.

A further object of this invention is to provide a lamp of above type with a reflector of an ellipsoidal form and a source of light substantially in a focus of said reflector so as to concentrate the light beam in a caustic in the other focus, a pair of opaque blades, one of which is arranged directly above the zone of said caustic while the other is arranged directly underneath said region for intercepting the rays which do not pass through the geometrical focus of the reflector. The light is sent out in the form of a luminous fan-like blade limited to its incidence path. This feature is of high importance in mechanized troop transports as it permits concealment thereof. In fact if the vehicles are looked at from a point above the lamp, no direct ray, or rays reflected by the ground, attains the observer's eye. The section of the beam sent out through a double screen appears sharply and in a rectangular form, which may be reduced to the form of a luminous blade; it is however also possible to obtain a beam of circular, triangular or other section to suit particular requirements.

Other details concerning the invention will appear from the following specification and reference to the annexed drawing which shows diagrammatically and by way of example some embodiments of the invention.

Fig. 1 is a vertical axial cross-sectional view, partly in elevation, of a device embodying one form of my invention and showing a single light intercepting blade.

Fig. 2 is a diagrammatic cross-sectional view taken on the line II—II of Fig. 1 but showing a second light intercepting blade and a light filter together with means for supporting and adjusting the positions of the second blade and filter.

Fig. 3 shows a modified construction of the vehicle lamp.

Fig. 4 shows a two-focal lens adapted for the arrangement according to the invention.

1 denotes a reflecting device of half ellipsoid form having at its front part a cylindrical reflecting surface 2. The centre of the filament of the lamp 3 is located in the focus F of the ellipsoidal device 1. In the second focus F' of the ellipsoid comprising the reflecting surface 1 converge all rays issuing from the central luminous point F of the filament of the lamp 3. The rays issuing from the remaining parts of the lamp filament intersect at other points of the reflector axis in front of or behind the focus F' thus creating a focal caustic.

According to the invention a screening blade 4 is placed underneath the focal caustic and perpendicular thereto at an intermediate point of the caustic, said blade intercepting all diverging and converging rays issuing from the filament in zones in front of or behind the main focal point F, intercepting also the passive rays due to defects of construction of the reflecting unit, the blade letting on the contrary free passage to all rays issuing from the geometric focus of the ellipsoid. The blade 4 is adjustably mounted on a cover 6 by means of screws 4' engaged in slots in the blade (Fig. 2), so that screening may be increased in order to limit the angle of aperture of the anti-dazzling beam of light thus sharply adjusting the angle of occultation until all upwardly directed rays are eliminated.

In order to obtain a double screening according to the invention, another screening blade 5 (Fig. 3) is located above the caustic, said blade being movable through a remote control 5' (Fig. 2). The blades 4 and 5 have a straight profile it being important generally to obtain a large horizontal lighting field; it is however obvious that that the profile of the blades may be so shaped as to obtain many different forms of the issuing beam of light. The cylindrical reflecting body 2 carries secured at its front part the cover 6 carrying the screening blades 4 and 5 and the correcting lens 7. By this simple arrangement a high lighting efficiency is obtained owing to the wide angular aperture of the lamp rays captured by the reflector and the enlarged angular lighted field in the horizontal and downward direction produced by the reflection of the cylindrical mirror and by the lamp rays falling directly on the lens 7. The unit is enclosed in a casing 8, as in ordinary vehicle lights, said casing being provided with a protecting glass 9 having linear vertical lenticular elements for enlarging the beam of light in the horizontal direction.

A further advantage of this arrangement is obtained through the aperture of emergence of

the beam of light, which may be of very reduced diameter, this advantage is of great importance when the light is used for mechanised troop transports, more particularly for tanks. For these vehicles the double screening lamp type (blades 4 and 5) will be more conveniently used for preventing visibility from aircraft. A vehicle lamp adapted for this use is constituted by an optical unit such as described, constituted by an ellipsoid and a two-focal very small lens 7. The inner surface of the lens support should be darkened in order to avoid any visible reflection or diffusion. The optical features of this lamp permit of including in the lamp itself and in a small space a coloured prismatic or lenticular filter 10 carried by an oscillating arm 10' having a lever 10'' by means of which it can be remotely controlled during drive, for instance a yellow cadmium sulphide glass filter to prevent eye fatigue in the fog owing to the low coefficient of diffusion of the light radiation through the fog, smoke and the like and/or a blue filter to obtain concealment of mechanised troop transports and prevent diffusion of light through particular atmospheric fog accumulations, fumous walls or gas fogs. The latter filter may also be combined with the yellow filter and in certain conditions it may improve visibility.

According to the construction shown in Fig. 3 a parabolic reflector 1a is used in combination with a lens 12 to concentrate the rays issuing from the focus F' onto the focus F'.

The invention comprises further a particular form of the lens 7, which may be, as shown in Fig. 1, constituted by a front convex portion and a rear conical portion in order to reduce the focal distance. In lieu of the lens shown in Fig. 1 a two-focal lens may be advantageously used in order to correct aberrations. For this purpose a lens constituted by two parts 7' and 7'' may be used, as shown in Fig. 4.

10 What I claim is:

Lamp for vehicle comprising in combination a reflector constituted by an ellipsoidal rear portion and a cylindrical front portion, a source of light substantially in a focus of said ellipsoidal portion so as to concentrate the light beam in a caustic in the other focus, a cover in a vertical plane extending through the last-mentioned focus and having a central opening, a blade adjacent said caustic adjustably mounted on said cover, a second blade located above said caustic pivoted at one end to the cover and provided at its other end with a remote control, an arm carrying a colored filter rotatably mounted on said cover adjacent said second-mentioned upper blade, means for bringing at will said colored filter into said caustic, a tubular body applied to the cover about said opening and having its inner surface blackened, and a conical-convex emergence lens at the end of said tubular body.

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