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VEHICLE OR LIGHT LAMP
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Fig. 1

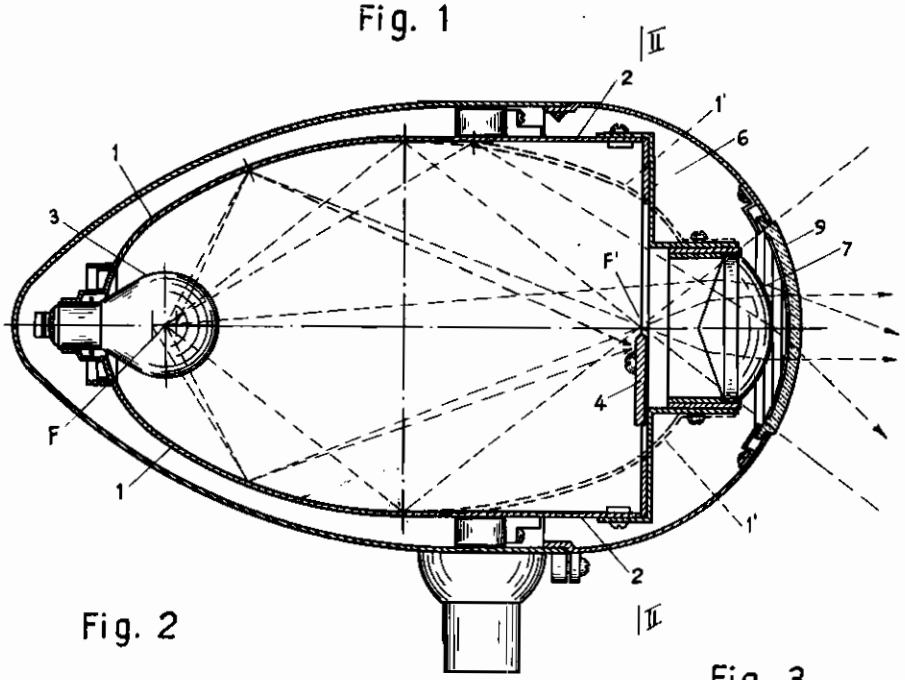


Fig. 2

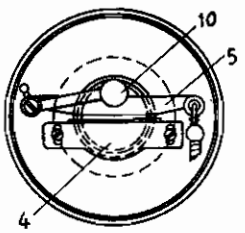


Fig. 3

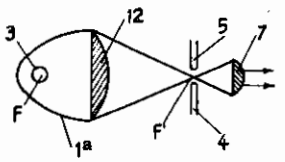
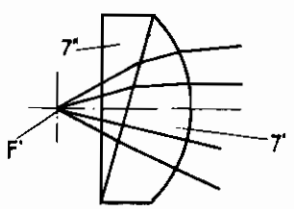


Fig. 4



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ALIEN PROPERTY CUSTODIAN

VEHICLE OR LIGHT LAMP

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This invention has for its object a vehicle lamp more particularly adapted for motor vehicles, mechanised troop transports and signalling apparatus. This new lamp is characterised in that it sends out a light beam from which the passive rays issuing from the lamp filament and the defectively reflected rays from the reflecting surface have been intercepted by means of screens thus fully eliminating the halo incident in an upward direction, which, as it is well known, is the chief cause of diffusion and luminous reverberation produced by the fog and interfering with visibility. The means for carrying out the invention and the optical features of the device permit moreover to so adjust the filtering capacity as to limit the issuing light beam to a horizontal plane thus obtaining a perfectly anti-dazzling light when observed from above the optical axis of the vehicle lamp, the latter being parallel to the road plane. The lighting efficiency of the lamp is not thereby reduced and the light is thrown to a greater distance. It is moreover possible to intercept and limit the rays also in the opposite direction, or downwards, thus excluding illumination of the ground. 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 mechanised 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.

A feature of the invention consists in that the light issuing from the source is concentrated in a focal caustic before emerging from the vehicle lamp, means being provided in said focal caustic for intercepting or anyhow deviating wholly or in part the rays which do not pass through the geometric focus of the reflecting device.

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

In the annexed drawings, Figures 1 and 2 are an axial section and a cross section in reduced scale on line II—II of Fig. 1 of an embodiment of the invention; the dotted lines in Fig. 1 show a modified construction of the reflector;

Fig. 3 shows a modified construction of the vehicle lamp and Fig. 4 shows a two-focal lense 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 adjustable (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 (shown only in Fig. 3) is located above the caustic, said blade being movable through the remote control of the arrangement. 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 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 a cover 6 carrying the screening blades 4 and 5 and the correcting lense 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 lense 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 ele-

ments for enlarging the beam of light in the horizontal direction.

According to a modified construction, the reflector is constituted by a complete ellipsoid 1, 1' (shown partly in dotted lines in Fig. 1), having a front opening housing a lens 7; the screening blade 4 is located in the interior of the ellipsoid in proximity to the second focus F' of the ellipsoid. The light emited by the lamp is thus utilised to a great extent, so that a high efficiency is ensured. A further advantage of this arrangement is obtained through the aperture of emergency 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, to which an upper screening blade provided with a remote control to permit an instantaneous insertion thereof is added. The lamp casing carries at its front part a screen which is preferable bent downwards and merges into the shield cap in order to conceal the direct vision of the lens. Moreover 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 series of coloured prismatic or lenticular filters (one of these filter is designated with number 10 in Fig. 2) which can be operated at will during driving, 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—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—a lens constituted by linear meniscus to enlarge the issuing beam in order to increase visibility on the sides in proximity to the vehicle, more particularly in foggy weather (this arrangement has the advantage of not reducing the head light radiation in normal conditions); a prismatic remote controlled glass plate located in proximity to the reflection caustic in order to deviate the rays in the vertical direction, thus directing the whole beam of light towards the ground.

It will be seen that in addition to the described filters other lenticular filters may be included for particular ray deviations and other coloured filters for signalling purposes, for instance a light may be devised for transmissions on the base of a predetermined multi-coloured code by means of a selecting keyboard arranged on the lamp or operated through a remote control.

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.

Finally, when it is desired to adjust the dioptric focussing of the two halves of the lens with respect to the horizontal axial plane independently of each other, the lens is made in two parts separated along said plane. When it is not necessary to direct the beam of light to a great distance or a scattering of the rays is desired, a half-lens can be used in the upper part of the lamp from which the rays are issued or the lens 7 may be eliminated.

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