June 4, 1929. A. GRAVES 1,716,048

VEHICLE LAMP

Filed Nov. 22, 1926

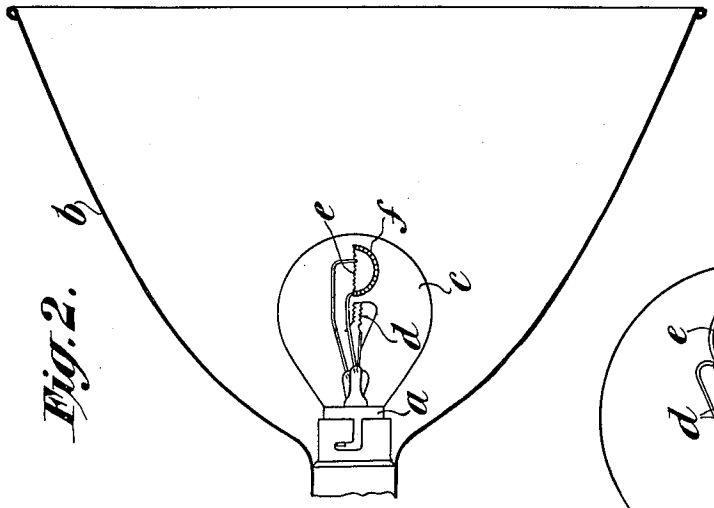


Fig. 2.

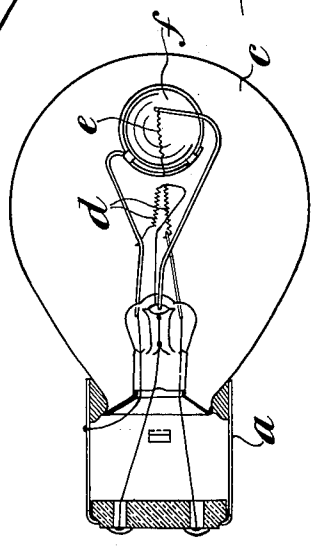


Fig. 3.

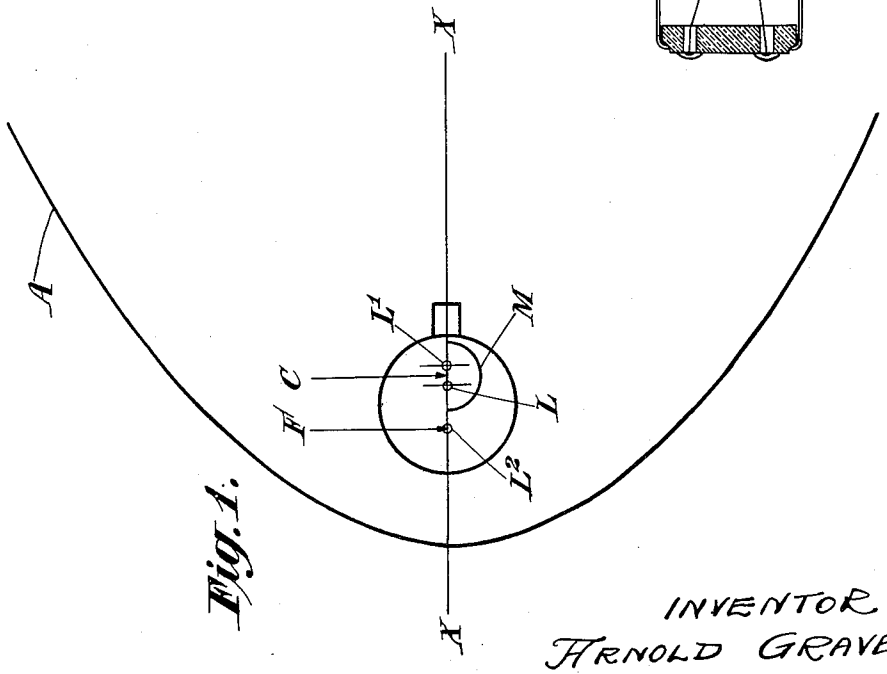


Fig. 1.

INVENTOR
ARNOLD GRAVES
By D. F. Woodward Atty.

Patented June 4, 1929. 1,716,048

UNITED STATES PATENT OFFICE.

ARNOLD GRAVES, OF WHEATHAMPSTEAD, ENGLAND, ASSIGNOR TO THE SAFETY ANTI-DAZZLE BULB SYNDICATE LIMITED, OF LONDON, ENGLAND, A COMPANY OF GREAT BRITAIN.

VEHICLE LAMP.

Application filed November 22, 1926, Serial No. 150,080, and in Great Britain July 29, 1921.

This invention, which is a continuation in part of my Patent No. 1,620,202 of March 8, 1927, relates to lamps fitted with reflectors and used for head and side lights of vehicles, of the type in which the light source in combination with a small hemispherical mirror is placed inside a parabolic or similar reflector, part of the light from the source falling directly on to the reflector and part on to the mirror whence it is reflected on to the reflector. In this type one half only of the hollow surface of the reflector is used and the other half is commonly suppressed.

An object of the invention is to suppress rays above the horizontal and to cast the light in a low flat topped beam and so abolish glare, and further to make the beam as uniform as possible.

A further object is to enable the user of the lamp to vary the nature of the beam at will.

According to the invention the lamp is made with two independent filaments, one in advance of the other on the axial line, and either of the filaments may at will be switched on. One of these filaments is placed at the focus or optimum position of the reflector, and the other is so situated in relation to the first that it is in advance or in rear of the optimum position according as the upper or lower half of the reflector is used. A shade is built in with the lamp and associated with the second filament.

In the accompanying drawings which illustrate the manner in which these objects are accomplished:—

Figure 1 is a diagrammatic illustration showing how the lamp is used in a parabolic reflector.

Figure 2 is a side elevation of the lamp according to the diagram of Fig. 1.

Figure 3 is a horizontal sectional view of the lamp shown in Figure 2 on a larger scale.

By reference to Fig. 1 it will be observed that the same is an explanatory diagram in which A is a parabolic reflector whose axis is represented by the line X—X and the focus is at F. The light source L^2 situated at F will reflect from the main reflector A in a series of parallel rays. M is a small semi-circular mirror whose centre of curvature is at C. L is a second light source which is situated in advance of the focus F of the reflector in the same plane as the centre of curvature C of the mirror M but slightly in rear of it. The mirror M will produce an image L′ of L on the other side of the centre of curvature. Ignoring for a moment the effect of the image at L′, the light from L as reflected by A will produce a converging beam which after coming to a focus will again diverge to give a beam in front of the lamp and below the horizontal axis X—X and this beam will have a semi-circular section with a flat top consisting of a concentric series of semi-annuli with dark interspaces. The position of L may be so adjusted relatively to M that the image L′ will cast a similar beam whose semi-annuli will be coincident with the dark interspaces of the beam cast by L. The result of this will be a nearly homogeneous beam of semi-circular section with a flat top below the horizontal and free from glare but well adapted to illuminate the road in front of the vehicle.

These remarks show the advantages to be obtained by positioning the shaded second light source L away from the centre of curvature of the hemispherical mirror M inasmuch as this arrangement renders the beam more uniform but if desired the light source L may be placed at the centre of curvature of the hemispherical mirror M and in such case the beam from this source will be free from the glare effect provided of course that the other important feature be presented, that is to say, that the light source L shall not be at the focus F of the reflector.

The filament L^2 is not shadowed by the mirror M but lies wholly outside it, and the entire surface of the reflector A may be employed for the rays emanating from the alternative source L^2 to produce an ordinary concentrated beam. The small mirror M is fixed inside the lamp bulb, and associated with the filament L.

Thus, according to the invention, an ordinary full beam may be produced by switching on the filament L^2, or alternatively, at will, this filament may be extinguished, and the anti-dazzle filament L rendered incandescent.

Referring to Figures 2 and 3, an electric incandescent lamp *c*, the socket *a* of which is fitted, in the usual manner, in a parabolic reflector *b*, is provided with two illuminating filaments *d* and *e* fitted one behind the other in the axis of the lamp, and of these illuminating filaments, in accordance with the example illustrated, the rearmost filament *d* is

placed in the focus, and the foremost filament *e* in front of the focus of the reflector *b*. The foremost illuminating filament *e* is closely surrounded by a semi-spherical screen *f* which acts as an auxiliary reflector which intercepts half of the rays emanating from this illuminating filament *e*, and throws the said rays upwards against the reflector, whence they are reflected towards the ground. The screen *f* fitted approximately in the axis of the lamp is secured to the base of the lamp, in the same manner as the illuminating filaments.

As mentioned, each filament *e* and *f* is an independently controlled element, the circuits and switching arrangements being such that they are never simultaneously rendered incandescent.

I claim:—

1. Electric incandescent lamp with two independent filaments capable of selective operation, for light projectors, both filaments being located on and extending lengthwise of the axis of the lamp, one unshaded to produce a full beam, whilst the other is formed with a shade fixed inside the lamp to divert substantially half its rays.

2. Electric incandescent lamp with two independent filaments capable of selective operation, for light projectors, both filaments being located on and extending lengthwise of the axis of the lamp, one unshaded to produce a full beam, whilst the other is formed with a substantially semi-spherical reflector fixed inside the lamp.

3. An electric incandescent lamp with two independent filaments capable of selective illumination both disposed longitudinally of the longitudinal axis of the lamp and one in advance of the other, supporting means for the filaments included in the lamp circuit, and a reflector carried by said supporting means for the filaments and located at one side of the filament farther from the base of the lamp.

4. An electric incandescent lamp comprising two independent filaments capable of selective illumination, means for supporting both filaments in a longitudinal position on the longitudinal axis of the lamp, whereby one will be in advance of the other, and a semispherical reflector supported by the filament supporting means and beneath the filament farther from the base of the lamp, and the other filament being unshaded, whereby light rays will emanate in all directions therefrom except as obstructed by the reflector.

In testimony whereof I have affixed my signature hereto this 9th day of November, 1926.

ARNOLD GRAVES.