C. G. PETERS.

HEADLIGHT DIFFRACTION LENS.

APPLICATION FILED OCT. 14, 1920.

1,397,822. Patented Nov. 22, 1921.

Fig 1

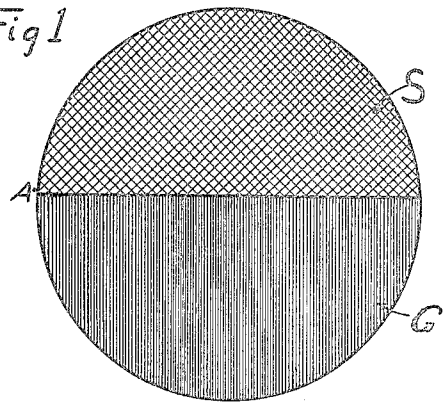
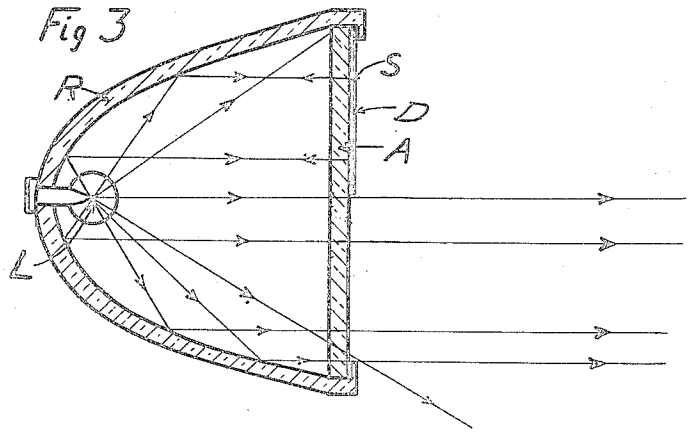


Fig 2



Fig 3



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UNITED STATES PATENT OFFICE.

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HEADLIGHT DIFFRACTION-LENS.

1,397,822. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed October 14, 1920. Serial No. 416,859.

To all whom it may concern:

Be it known that I, CHAUNCEY G. PETERS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Headlight Diffraction-Lenses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to lamps for vehicles and more particularly to head lights for motor vehicles.

It is well known that glaring lights carried by automobiles is a serious menace to the occupants of vehicles moving in an opposite direction and also to pedestrians on the road over which the vehicle with a glaring light is moving, and the object of my invention is to provide a head light that will not subject the driver of an approaching vehicle to a glaring light, which tends to momentarily blind him, with consequent danger of a collision, and which at the same time will throw a bright light downwardly upon the roadway in front of the vehicle and straight ahead but low down so that the driver may see clearly a sufficient distance ahead to enable him to steer clear of an approaching vehicle and to avoid obstructions in the road or a ditch in which his machine is liable to be overturned with consequent danger to life and limb of the occupants of the vehicle.

A further object is to provide a simple and inexpensive device of the character referred to, whereby the objectionable features of a glaring light are eliminated without decrease in light value, or with as little loss of light as possible, and which is adapted to perform the desired functions in consonance with the regulations of different States or municipalities regarding protective head light lenses.

The invention will first be hereinafter more particularly described, with reference to the accompanying drawings, which form a part of this specification, and then pointed out in the claims at the end of the description.

In said drawings,

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

Fig. 2 is a vertical sectional elevation of the same; and

Fig. 3 is a sectional side elevation illustrating the application of my invention to a head light for automobiles.

Referring to said drawings, in which the same reference letters are used to denote corresponding parts in different views, the letter A denotes a glass plate or body preferably in the form of a disk of the desired size and thickness to fit the opening in, or open front of an ordinary parabolic reflector or lamp casing of the construction ordinarily employed in automobile head lights; said plate having spread over one-half, more or less, of its surface a coat or layer S, of silver or other highly reflecting material, and said coating being overlaid with a protective coating D of lacquer, paint or other material, while the other half or remaining portion of the glass is ruled closely or otherwise formed with fine parallel lines which extend substantially perpendicular to the horizon or the line dividing the silvered and unsilvered portions of the surface, so as to present a series of minute alternating grooves and ridges, that will cause the light to be diffracted and spread the light rays outwardly or laterally over the roadway at either side and in advance of the vehicle. This lens is placed in a suitable reflector R, or head light casing having a reflecting surface and an open front in which the lens is secured so as to close said opening with the silvered portion of the glass uppermost and on the outer side thereof and the ground or ruled portion below, so that direct and reflected rays of light emanating from an electric lamp or bulb L, will pass out through the lower half or ground portion only of the lens, some rays being projected straight ahead and others downwardly, in the manner indicated by the arrows in Fig. 3 of the drawings, while the rays of light which are directed upwardly will strike, either directly or by reflection from the upper side of the reflector, that portion of the lens which has a silvered surface and will be reflected backwardly against the upper side of the parabolic reflector, by which they will be reflected downwardly against the lower part of the reflector and thence out through the ground portion of the glass lens, thus cutting off the objectionable rays of light and by reflection directing them downwardly and out through the ruled portion of the lens, which spreads or diffracts the light horizontally, while a beam of light is thrown

straight ahead, but low down, below the plane determined by the location of the lamp and the line which divides the coated and ground portions of the lens, thereby effectually illuminating the roadway in front of the vehicle and on both sides without throwing a glaring light into the face of the driver of an approaching vehicle.

The lens thus formed may be placed in the open front of a reflector or head light casing in the manner indicated with reference to Fig. 3, and is adapted to reflect the rays of light in the manner hereinbefore described.

I thus provide an efficient and inexpensive device adapted to throw a clear light over the roadway in advance of the moving vehicle on which it is carried with as little loss of light as possible and in a way that is most helpful to the driver of the vehicle without being objectionable or detrimental to the driver of an approaching vehicle, and these functions are performed in accordance with the regulations of different States or municipalities regarding protective head light lenses.

The lens is preferably circular or disk-like in form, and the coating of silver or equivalent reflecting material preferably covers one half of the disk on one side, while the other half on the same side has a series of lines formed therein, as described, and that portion of the disk on the other side opposite the ruled portion may be ruled to form the desired lines on both sides, if desired. It is also desirable to have the lines which are cut or otherwise formed in the glass plate or disk extend vertically in parallel planes, or substantially perpendicular to the line which divides the silvered and ruled portions of the surface, but it may be desirable in some cases to have the ruled lines extend at a slight angle to said dividing line and other changes may be made in the details and arrangement of parts.

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

1. A lens for a vehicle light comprising a glass body having on one side thereof a coating of silver or other reflecting material covering substantially one half of said side and the remaining portion of said side having formed therein minute alternating grooves and ridges in substantially parallel lines.

2. A lens for a vehicle head light comprising a glass plate or disk having substantially one half of the surface thereof on one side coated with silver or other reflecting material and the remaining portion of said surface ruled to form minute alternating grooves and ridges extending in substantially parallel lines substantially perpendicular to a line dividing said silvered surface from said ruled surface.

3. In combination with a reflector for a vehicle headlight, a lens consisting of a plate or disk of glass having approximately one half of the uppermost portion thereof on one side provided with a coating of silver or equivalent material and the remaining lower portion of said side ruled to form minute alternating grooves and ridges in substantially parallel lines extending substantially perpendicular to the line which divides said coating from said ruled lines.

4. A diffraction lens for a vehicle head light comprising a glass plate having approximately one half of its surface on both sides ruled to form minute alternating grooves and ridges in substantially parallel lines and the other half of one surface coated with silver or other reflecting material.

In testimony whereof I affix my signature.

CHAUNCEY G. PETERS.