350-452 SR
E297A XR 1,393,573

J. A. RITTER.

HEADLAMP.

APPLICATION FILED OCT. 21, 1920.

1,393,573. Patented Oct. 11, 1921.

FIG. 1.

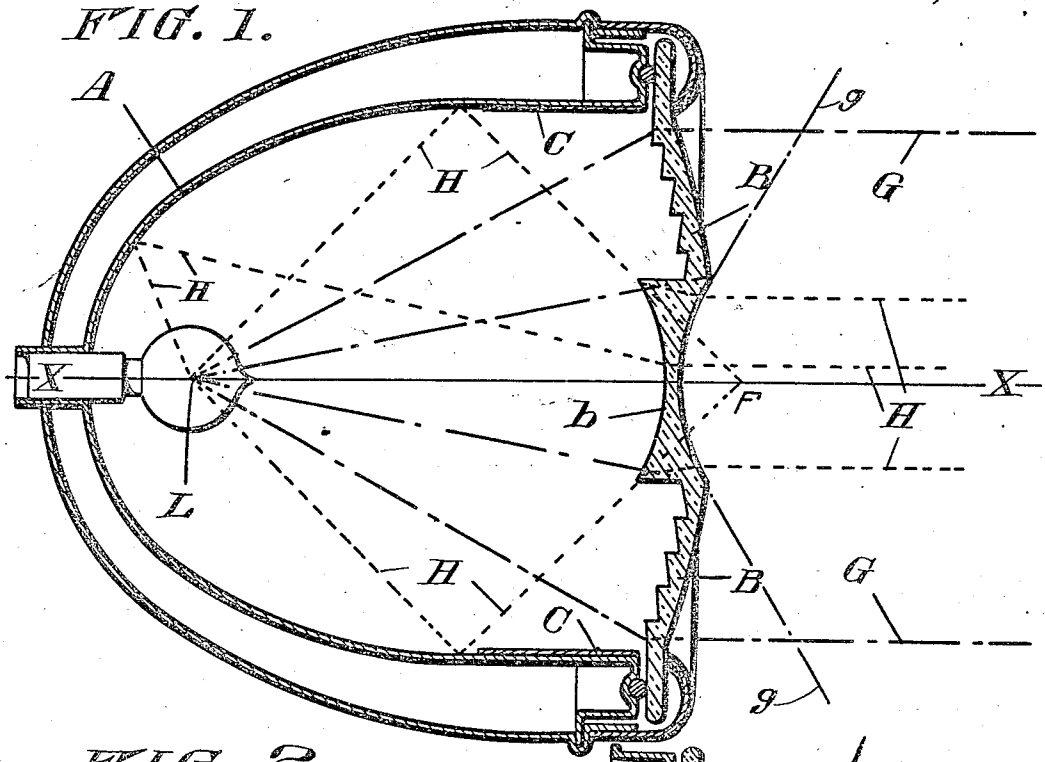
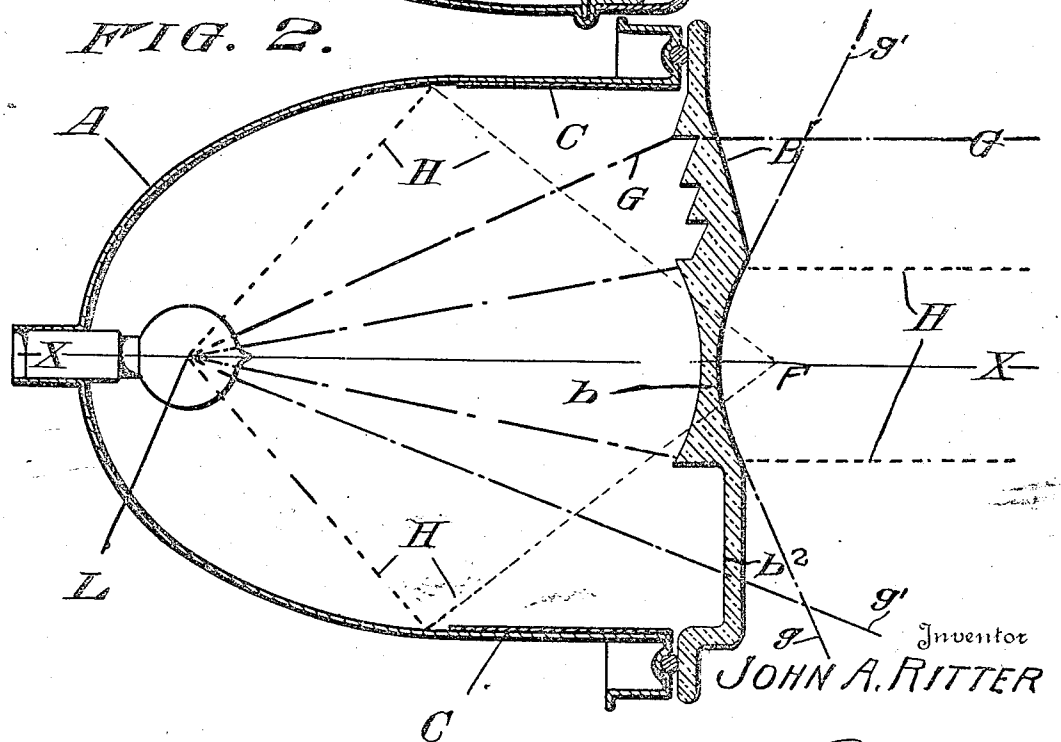


FIG. 2.



Inventor
JOHN A. RITTER

By Beale & Park

Attorney

UNITED STATES PATENT OFFICE.

JOHN A. RITTER, OF LANSDOWNE, PENNSYLVANIA.

HEADLAMP.

1,393,573. Specification of Letters Patent. Patented Oct. 11, 1921.

Application filed October 21, 1920. Serial No. 418,396.

To all whom it may concern:

Be it known that I, JOHN A. RITTER, a citizen of the United States, residing at Lansdowne, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Headlamps; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates particularly to head lamps on moving vehicles, such as automobiles, railway locomotives, interurban electric cars and the like, and it improves the art by providing means for reducing the "glare" from such head lamps without reducing the intensity of the illuminating beam of light.

By "glare" I mean the side light which issues from the front glass of an ordinary head lamp in a widely divergent cone and which is so annoying and even dangerous to persons who are compelled to approach and pass within a few feet of such a head lamp, as in automobile driving. Most of this glare is direct (not reflected) light from the lamp filament, which, of course, is heated to dazzling incandescence, and I do not refer to the glare that would be produced by the reflected beam cone of light from a head lamp or spot-light that happens to be improperly pointed to the right or left of its proper path. A beam of light powerful enough to illuminate a highway at a considerable distance must of necessity be blinding to the unshaded eye, and the laws of many States take this into account and prohibit the reflected beam cone from an automobile head lamp to rise more than a few feet above the road.

Even though this adjustment is made, however, the scattered light cone from the present type of head lamp is powerful enough to produce dangerous glare, and my invention permits the complete control of this light so that it may be directed in any desired manner.

Referring to the drawings:

Figure 1 is a vertical cross section of a head light embodying my invention.

Fig. 2 is a modification in which three different treatments of the rays are provided for.

Referring more particularly to the drawings; A, denotes an elliptical reflector, the elliptical surface of which is formed to reflect the light rays to given central points in front of the reflector; F, denotes a point at which the reflected rays would meet if no lens were interimposed. X—X represents the center axis of the light rays and passes through the foci L and F. B, represents a convex lens formed as shown in the drawings of prisms arranged in circles of varying diameter for transmitting direct radiating rays in horizontal lines; b, is a double concave lens; C, represents a non-reflecting surface or outer ring adapted to absorb light rays not otherwise provided for in my invention.

The lines G and g denote the path of direct rays. The lines H, show the path of the reflected rays.

In the modification shown in Fig. 2, b^2 denotes a plain glass through which pass direct rays, without refraction. The path of these rays is denoted by the lines g'.

A given lens can of course, only give definite direction to a group of rays that fall upon it at predetermined angles; it is therefore apparent that the direct rays and the reflected rays cannot be handled by one lens; one set of rays failing to receive definite direction.

The light which finally emerges from the front glass of my headlamp is divided into three distinctly different series of rays. The first marked G, comprises direct rays proceeding directly from the light source L, being transmitted by the convex lens B, being refracted thereby so that they emerge in a beam parallel to the axis X—X of the reflector.

The second series of rays marked H, are reflecteed from the reflector A. This series is by far the largest. These rays would converge on the focus F; but the double concave lens b transmits these rays and refracts them so that they emerge in rays parallel to the axis X—X of the reflector A.

The third series of rays is marked g. This series of rays comprises only a very small proportion of the total light treated. These rays are direct rays and pass through the double concave lens b, being refracted thereby into a widely divergent cone g—g. This light is small in amount to begin with and as it is spread over such a wide angle it is rendered so feeble that it is not productive of glare.

Fig. 2, shows still another series of rays

which I have marked g'; these are direct rays and pass through a plain glass b^2, without changing their direction to provide illumination of the road immediately in front of the head light.

I prefer to mold my double lens of one piece of glass, though this is not absolutely necessary.

Having provided means to effect the practical individual treatment of the direct and reflected beams, what I wish to claim and secure by Letters Patent are:

1. In a headlight, the combination of an elliptical reflector, a source of light located substantially at the inner focus of the reflector, a lens covering the mouth of the reflector and located near the outer focus of the reflector, said lens having a central concave portion which receives all the reflected rays and issues them in a parallel beam of light and a plurality of arcuate concentric prisms which receive the greater portion of direct rays and transmit them in a parallel cylindrical beam of light.

2. In a headlight, the combination of an elliptical reflector in which the outer portion of said reflector is covered with a non-reflecting coating, a source of light located substantially at the inner focus of the reflector, a lens covering the mouth of the reflector and located near the outer focus of the reflector, said lens having a central concave portion which receives all the reflected rays and issues them in a parallel beam of light and a plurality of arcuate concentric prisms which receive the greater portion of direct rays and transmit them in a parallel cylindrical beam of light.

3. In a headlight, the combination of an elliptical reflector, a source of light located substantially at the inner focus of the reflector, a lens covering the mouth of the reflector and located near the outer focus of the reflector, said lens having a central double concave portion which receives all the reflected rays and issues them in a parallel beam of light and also receives the central direct rays and spreads them laterally, and a plurality of arcuate concentric prisms which receive the greater portion of direct rays and transmit them in a parallel cylindrical beam of light.

4. In a headlight, the combination of an elliptical reflector, a source of light located substantially at the inner focus of the reflector, a lens covering the mouth of the reflector and located near the outer focus, said lens comprising a central double concave portion, a plurality of arcuate prisms surrounding the concave portion and covering the upper half of the lens, the lower portion of the lens surrounding the concave portion being free from prisms and allowing a portion of the downward direct rays to pass unmodified.

In testimony that I claim the foregoing as my own, I affix my signature.

JOHN A. RITTER.