

Oct. 20, 1925.

J. DAHLSTROM

1,557,563

LENS

Filed July 12, 1922

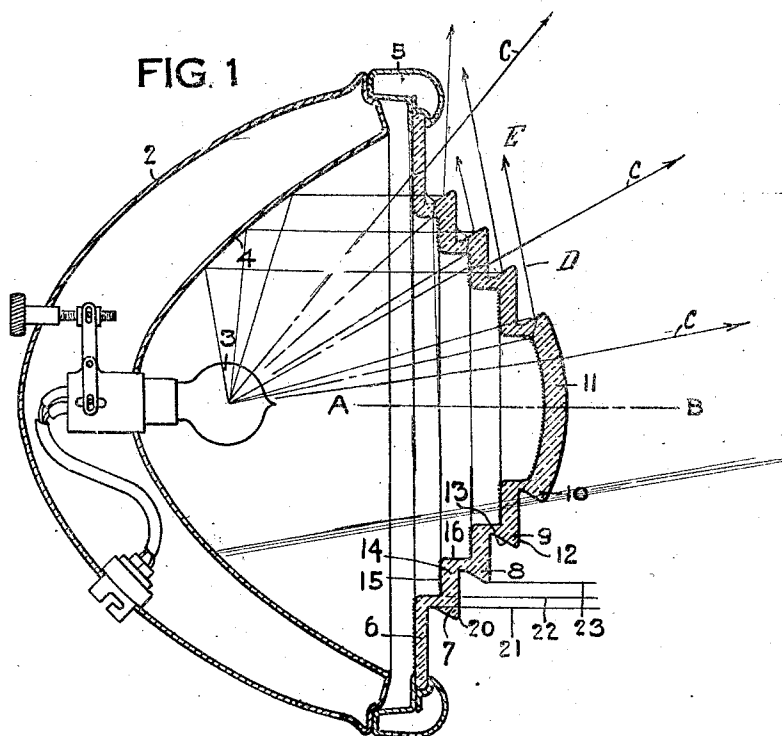
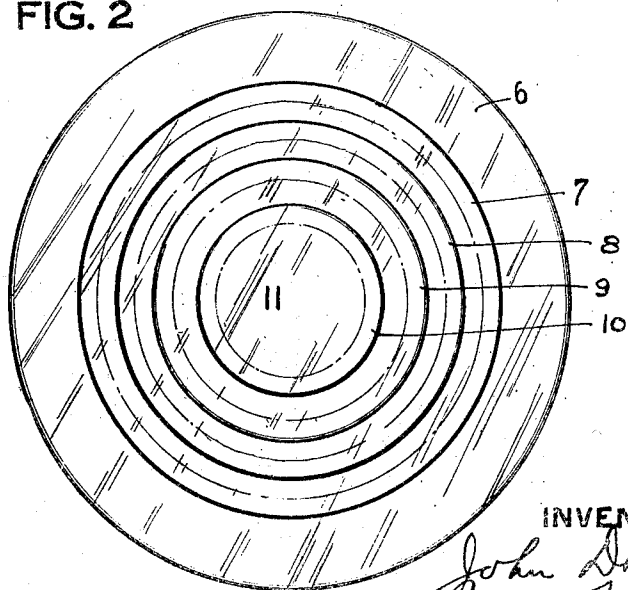


FIG. 2



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UNITED STATES PATENT OFFICE.

JOHN DAHLSTROM, OF PITTSBURGH, PENNSYLVANIA.

LENS.

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To all whom it may concern:

Be it known that I, JOHN DAHLSTROM, a citizen of the United States, and resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Lenses; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to lenses for use in vehicle headlights and for general indoor or outdoor illuminating purposes.

The object of my invention is to provide a lens which shall cast sufficient light in the direction of its central axis without producing a blinding glare and which, in addition, shall direct a portion of the light laterally and rearwardly.

As applied to vehicle headlights, my invention aims to produce a lens which shall cast in front of the vehicle a beam of light sufficiently strong to enable the driver to clearly distinguish objects ahead without, however, producing the blinding glare which is an annoying feature of the headlights now in common use, particularly if the headlight lamps are out of focus. In addition, my improved lens casts a substantial amount of light laterally and rearwardly so as to widen the driver's vision of the roadway.

In the accompanying drawing, which shows, by way of example, a lens constructed in accordance with my invention, Fig. 1 is a vertical sectional view taken centrally through a vehicle headlight having my improved lens applied thereto; and Fig. 2 is a front view of the lens shown in Fig. 1.

In the drawing, the numeral 2 designates an ordinary headlight casing provided with an incandescent lamp 3, a parabolic reflector 4 and a clamping ring or lens holder 5. These parts may be of any usual or desired construction.

My improved lens is shown within the clamping ring 5, and consists of a flat outer ring 6 and a series of concentric and successively projecting annular prisms 7, 8, 9 and 10, the prism 10 merging into a central bull's-eye 11, the interior and exterior surfaces of which are curved outwardly. Each of the annular prisms 7, 8 and 9 has an exterior surface 12 which is substantially perpendicular to the central axis A—B of the lens and has another exterior surface 13 which is inclined inwardly with respect to the axis A—B.

The prisms 7, 8 and 9 may be considered

as being triangular in cross-section and joined to each other by means of plane rings 14, or these prisms may be considered as the outer portions of integral rings, including both the prisms and the plane portions 14.

The interior surface of the lens is formed by the surfaces 15 which are perpendicular, or substantially perpendicular, to the axis A—B, and cylindrical surfaces 16 which are substantially parallel to the axis A—B. The inside of the lens thus presents a series of concentric right-angled steps terminating in the central bull's-eye 11.

All of the inner surfaces of the lens which are transverse to the central axis A—B are made translucent. These surfaces include the inner surface of the ring 6, the surfaces 15 of the annular prisms, and the inner surface of the bull's-eye 11. All of the exterior surfaces of the lens are preferably transparent, as are also the cylindrical inner surfaces 16.

One desirable way in which the inner surfaces mentioned may be made translucent consists in spraying upon or otherwise applying to these surfaces, a coating material such as zinc oxid, or a powdered enamel, either white or of any other desired color, and baking the lens to transform the coating into a hard and integral portion of the lens which will not scale off. Other means may be employed for making these surfaces translucent, such as sand-blasting, grinding or painting. I have found that zinc oxid, when applied to the inner lens surfaces in the manner described, produces a milky white appearance which is both attractive and efficient.

The arrangement of prisms described above directs the light in a variety of directions, a few of which are indicated in broken lines on the drawing. Some of the light penetrates the translucent surfaces and is directed forwardly, as shown, for example, by the lines C. Other rays are refracted by the prisms in a lateral and rearward direction, as shown, for example, by the lines D and E, and serve to illuminate a considerable area at the side and rear of the lens.

No attempt has been made to show on the drawing the numerous other and more complicated paths in which the light is reflected and refracted. The general result is that when the lamp 3 is illuminated the lens presents the appearance, from the front of a background of low brilliancy on which ap-

pears a series of concentric silvery rings which are the outer edges of the projecting prisms 7, 8 and 9. The portion of each prism which presents this bright appearance is that portion between the outer edge of the prism and the projection of the adjacent angle of the prism. This bright portion of the prism 7 is indicated by the numeral 20 on Fig. 1, and consists of that portion of the prism between its outer edge and the line 21. Between the line 21 and the line 22 is a band of somewhat less brilliancy, adjacent to which is a dull translucent band between the lines 22 and 23. In a similar way the inner prisms present successively bright and dull surfaces, the dispersion of the light being such that there is no dazzling brilliancy at any point of the lens. When the lens is viewed from the side the brightest rays appear to emerge from the reentrant angles between the prisms, and the amount of light thus cast to the side is sufficient for illumination without being dazzling.

25 The central bull's-eye may be attractively ornamented by applying a monogram or the like in gold or colors before the translucent coating is applied.

When my invention is applied to lenses for use in illuminating fixtures other than vehicle headlights, the same construction may be employed as that described above, with only such changes as are required to adapt the lens for use with the desired lighting fixtures. It will be understood that the number and size of the prisms composing the lens may be varied as desired and that, although the accompanying drawing shows one form in which I have constructed my invention with excellent results, the proportions and arrangement of parts may be variously modified within the scope of the appended claims.

I claim as my invention:

45 1. A lens comprising a series of concentric annular prisms decreasing successively in diameter and each having two exterior surfaces intersecting at an acute angle, one

of said exterior surfaces being inclined with respect to the central axis of the lens, and the other exterior surface being substantially perpendicular to the central axis of the lens, translucent rings separating said annular prisms, and a translucent ring surrounding the outer annular prism, said translucent rings having plane parallel inner and outer surfaces substantially perpendicular to the central axis of the lens.

2. A lens comprising a plane outer ring and a series of concentric inner rings decreasing successively in diameter, each of said inner rings having an acute prismatic outer edge, an outer surface substantially perpendicular to the central axis of the lens, and two inner annular surfaces one of which is substantially perpendicular and the other substantially parallel to the central axis of the lens, all of the inner surfaces of the lens that are perpendicular to the central axis of the lens being translucent.

3. A lens comprising a series of concentric annular prisms decreasing successively in diameter and separated by translucent plane rings extending perpendicular to the central axis of the lens, a translucent outer ring also extending perpendicular to the said axis, and a translucent bull's-eye forming a continuation of the central prism, each of said prisms having exterior surfaces intersecting at an acute angle, one of said exterior surfaces being inclined with respect to the central axis of the lens, and the other exterior surface being substantially perpendicular to the central axis of the lens.

4. A lens comprising a series of concentric annular prisms decreasing successively in diameter and each having two exterior surfaces intersecting at an acute angle, one of said exterior surfaces being substantially perpendicular to the central axis of the lens, and translucent rings separating said annular prisms.

In testimony whereof I the said JOHN DAHLSTROM have hereunto set my hand.

JOHN DAHLSTROM.