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A. Y. DODGE

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LIGHT PROJECTING APPARATUS

Filed March 23, 1931

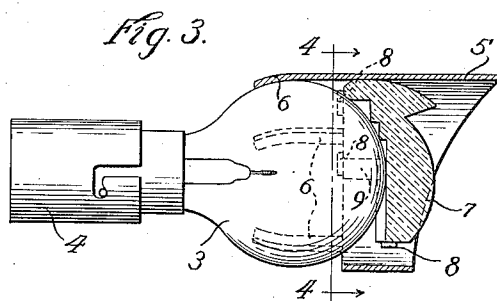
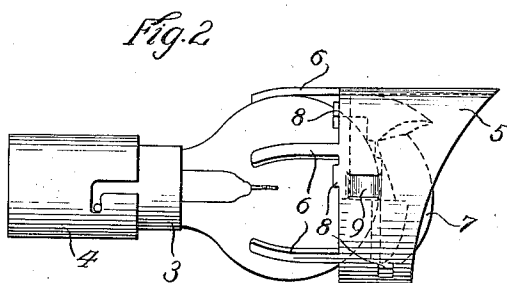
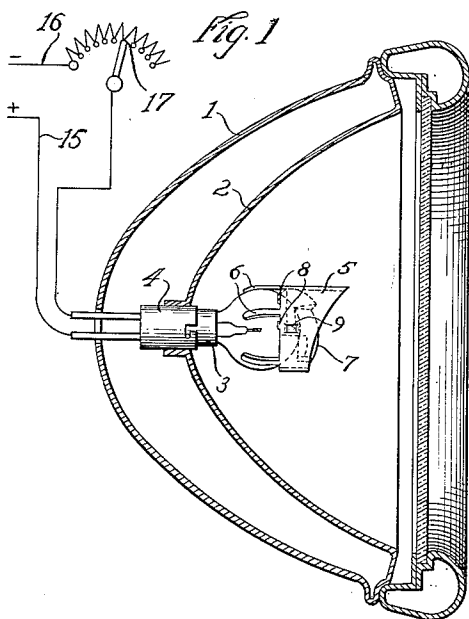


Fig. 4

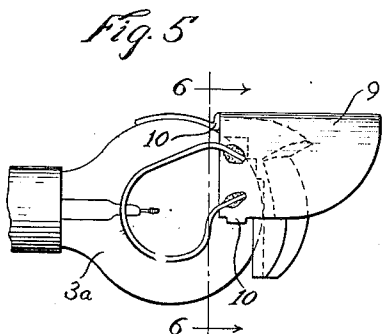
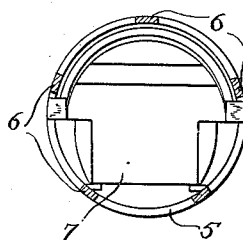
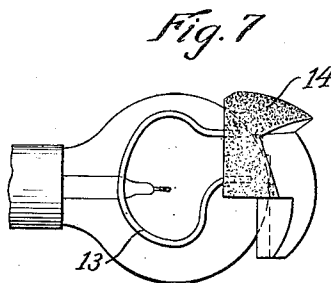
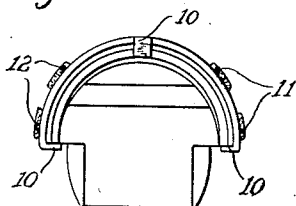


Fig. 7



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UNITED STATES PATENT OFFICE

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LIGHT PROJECTING APPARATUS

Application filed March 23, 1931. Serial No. 524,525.

My invention relates to a light-projecting apparatus and more particularly to means which will provide greater efficiency in the projection of light used in combination with a parabolic reflector.

In my construction, I have provided a means for supporting in combination or separately a refracting lens and shield in a predetermined relationship with an electric light bulb. The shield may be so treated as to reflect and redirect certain rays of light into desired channels.

While this invention is especially applicable for use in combination with a lens such as is described and shown in my co-pending application, Serial No. 449,108, filed May 2, 1930, or in my other co-pending application, Serial No. 469,022, filed July 19, 1930, it may be used with any lens having related characteristics. It will also be noted that while my invention may be used with many types of projected illumination, it is particularly well adapted for use with a typical automobile head lamp.

It is well known in the art, that of the light radiating from an electric bulb, a very considerable portion does not reach the reflector but is emitted in a cone-shaped beam through the glass door of the head lamp.

It is self-evident that the rays of this beam which are projecting in an upward direction serve no useful purpose and may in certain atmospheric conditions reduce the road-visibility to an important degree.

Now, a lens such as is shown and described in my previously-mentioned co-pending applications will admirably serve to redirect the upwardly-inclined rays of light emitted from the bulb in a forward direction. It is also true, however, that in manufacturing lenses of this type, on an economical basis and in great quantities, aberrations are apt to occur in the glass which will affect its refracting characteristics at certain points.

An object of my invention is to provide a construction which will redirect the rays which may have miscarried, due to aberrations in the lens.

A further object is to provide a construction which will render it possible to remove or

replace the lens and its shield, from or to, the electric light bulb with a great amount of ease.

Another object is to provide a construction which will in no way interfere with the focusing of the light bulb relative to its reflector.

Further objects will appear from the description and claims.

In the drawing,

Figure 1 is a vertical axial section through a lamp construction embodying my invention;

Fig. 2 is an elevational view of my invention on an enlarged scale, showing its relationship with a light bulb but removed from the lamp casing and reflector;

Fig. 3 is a vertical axial section of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 3, with the light bulb removed;

Fig. 5 is an elevational view of a modified form of my invention;

Fig. 6 is a section on the line 6—6 of Fig. 5 with the light bulb removed; and

Fig. 7 is a further modification of my device shown in side elevation.

Referring to the drawing in detail, the construction shown comprises a head-light casing 1 having mounted within it a reflector 2 which is constructed to retain in position the light bulb 3 when contained in its socket 4. A shield 5 is removably retained by frictional engagement in position on the bulb 3 by the tension fingers 6. Within the shield 5 is contained the refracting lens 7 which is retained in position by the lugs 8 and the depressed portion 9.

In the modification as shown in Figs. 5 and 6, the lens is contained within a substantially hemi-cylindrical shield 9 by means of lugs 10. The spring clips 11 and 12 are welded or soldered to the said shield 9 in opposing relationship to each other and are retained on the light bulb 3a by frictional engagement.

In Fig. 7 is shown a further modification in which no shield is employed and in which the lens is held in position on the light bulb by means of opposed spring clips 13 (only one of which is visible in this view) molded into the glass of the lens.

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It will also be noted that a portion of the lens 14 is covered with an opaque substance, such as aluminum paint. This covering serves to absorb and reflect rays of light which otherwise might be projected in undesirable directions.

Referring again to Fig. 1, the circuit for the bulb 3, which includes the conductors 15 and 16, has connected in series the rheostat 17 for controlling the intensity of the illumination. While it is common practice to incorporate resistance into the line for the electric bulb, this resistance has been fixed and used for the benefit of the driver of a vehicle approaching from the opposite direction. Exhaustive tests have shown that a projector type lamp functioning at its maximum intensity does not produce the greatest visibility in various atmospheric conditions, such as fog or rain, and that by making provisions in the circuit for varying the intensity of the illumination it is possible to enjoy the greatest road visibility.

In the embodiment shown, I have provided a construction which will enable the lens and shield to be removed or replaced from or to the bulb with great ease. This obviously is desirable when the bulb must be replaced or on other occasions when it may be necessary to remove the shield and lens.

While I have shown and described various embodiments of the present invention, it will be apparent to those skilled in the art that many modifications thereof may be made without departing from the spirit and scope of this invention, and, therefore, the same is to be limited only by the prior art and the scope of the appended claims.

I claim:

1. A shield and lens in combination, said shield being provided with a plurality of opposing tension fingers for detachably affixing the same to an electric bulb and to retain said lens, said fingers having sufficient tension to retain the shield and lens in their affixed position with the lens in contact with the bulb, said shield extending forwardly beyond the top of said lens.

2. A shield and lens for an electric bulb used in combination, the shield comprising a hollow cylinder, the internal surface of which is tangent to said electric light bulb in a forward direction and having a plurality of tension fingers extending from one end to embrace and frictionally engage the surface of the electric bulb, the other end being cut arcuately in a manner to provide a hood over the upper portion of said lens which is retained within it by suitable lugs.

3. A shield and lens, in combination, to be used in cooperative relationship with the electric light bulb of an automobile head lamp construction, said shield comprising a hollow cylinder of metal, the internal surface of which is tangent to the electric light

bulb in a forward direction and to which it is removably affixed by means of a plurality of opposing tension fingers extending from its rearward end and which embrace and are in frictional engagement with the surface of the bulb, the opposite end of said shield being cut away in its lower portions but permitted to extend forward in its upper portion to provide a hood for said lens contained within it and retained in position by lugs struck to suitable angles from the shield, said internal surface of the shield providing a reflecting surface which will redirect stray rays from the lens.

4. In a headlight the combination with a concave reflector having an axially aligned light bulb therein adjacent the focus of said reflector, of a lens adjacent said bulb and circumferentially adjustable relative thereto, said lens being arranged to redirect to a forward direction inclined rays emitted from the bulb over a limited area, and a shield adjacent and movable with said lens in the normal path of said inclined rays and arranged to redirect any of said inclined rays misdirected by the aberrations of said lens.

5. In a headlight the combination with a concave reflector having a light bulb therein adjacent the focus of said reflector, of a lens adjacent said bulb and circumferentially adjustable in any direction thereon, said lens being arranged to redirect to a forward direction the inclined rays emitted from the bulb over a limited area, and an arcuate shield arranged to support said lens on said light bulb and movable therewith, said arcuate shield extending forwardly of said lens and in the normal path of said inclined rays and arranged to interrupt any of said inclined rays misdirected by the aberrations of said lens.

In witness whereof, I have hereunto subscribed my name.

ADIEL Y. DODGE.