

Jan. 18, 1938.

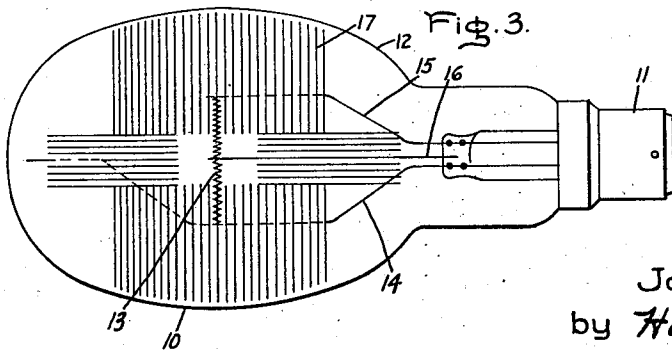
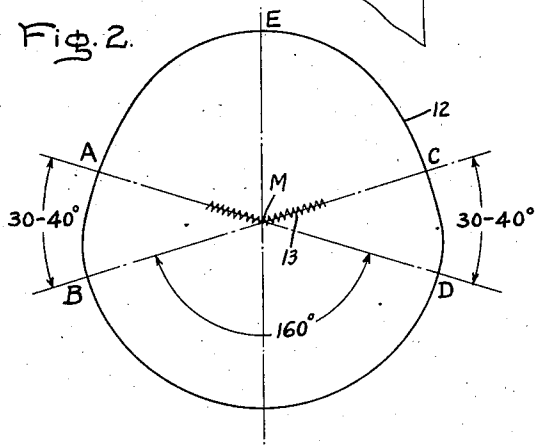
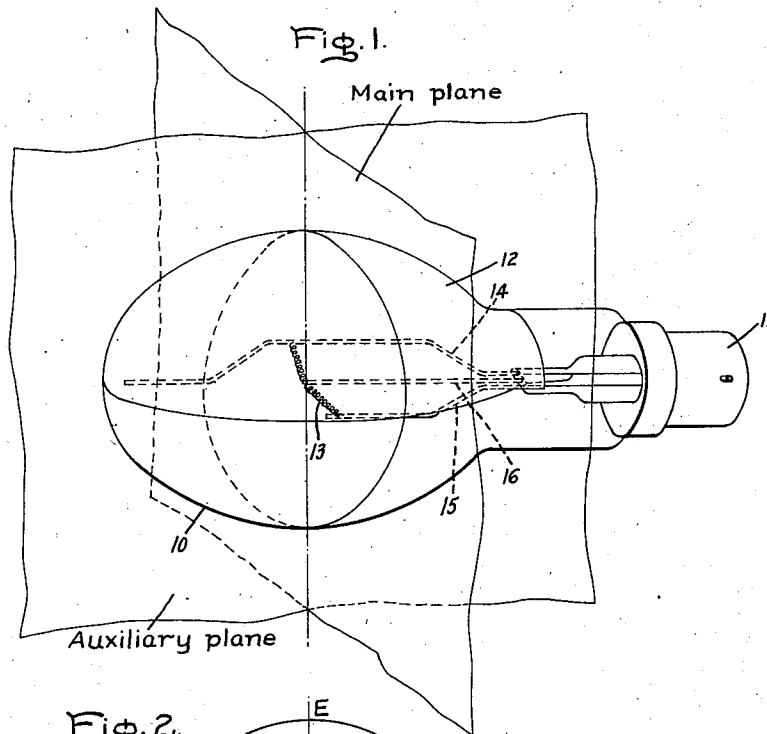
J. BERGMANS

2,106,079

ELECTRIC LAMP

Filed July 15, 1935

2 Sheets-Sheet 1



Inventor:
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2 Sheets-Sheet 2

Fig. 4.

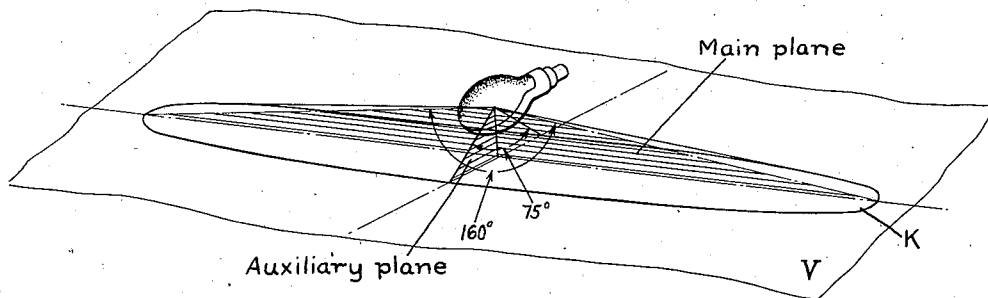


Fig. 5.

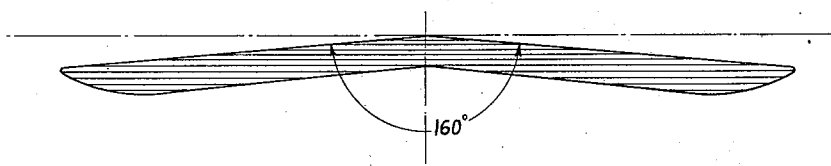
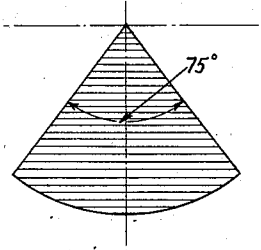


Fig. 6.



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UNITED STATES PATENT OFFICE

2,106,079

ELECTRIC LAMP

Jan Bergmans, Eindhoven, Netherlands, assignor
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New York

Application July 15, 1935, Serial No. 31,486
In the Netherlands July 26, 1934

7 Claims. (Cl. 176—34)

My invention relates to electric lamps and more particularly to an electric lamp adapted to be used for road illumination, flood-lighting and the like.

According to my invention, a portion of the bulb is provided with a reflecting surface and is so shaped as to project a sub-conical beam of light whose base has a comparatively narrow elongated shape with its center in the axis of the cone. The vertex angle of this cone measured in a vertical plane which passes through the longitudinal axis of the base, is at most 160 degrees. This plane will be referred to hereinafter as the main plane. The vertex angle of the cone measured in a second vertical plane at right angles to the main plane and passing through the transverse axis of the base and through the center of the bulb, has a maximum value of 75 degrees. This plane will be referred to hereinafter as the auxiliary plane.

For a further understanding of the invention, reference may be had to the drawings in which Fig. 1 is a perspective view of an incandescent lamp comprising my invention; Fig. 2 is a diagrammatic section through the bulb in the main plane and at right angles to the longitudinal axis of the lamp seen in Fig. 1; Fig. 3 is a bottom view of the lamp; Fig. 4 is a perspective representation of the sub-conical light beam emitted by the lamp; Fig. 5 is a representation of the light intensity of the reflected beam in the main plane; and Fig. 6 is a similar representation for the auxiliary plane at an enlarged scale.

Referring to Figs. 1 to 3, the lamp comprises a bulb 10 having a base 11 attached thereto. The neck of the bulb with the base attached thereto is shown in the drawings as being in the longitudinal axis of the bulb, but it may be located at some other part if desired. The upper part of the bulb is provided with a reflecting surface 12, such as a silver coating on the inner or outer surface thereof. The shape of the bulb is such that the curvature of cross-sections of the reflecting part of the bulb in planes which are perpendicular to the main plane and pass through the center of the filament, or through the longitudinal axis of the bulb, increases as the auxiliary plane is approached.

Referring to Fig. 2, the cross-section of the reflecting part of the bulb in the main plane comprises two parabolic side portions AB and CD which extend over a sector angle of 30 to 40 degrees. The lines AD and CB are the axes of these portions CD and AB respectively. The innermost portion AEC of the said section of

the reflecting surface increases in curvature as the auxiliary plane is approached, that is, the distance from the center M of the bulb to the bulb wall increases as the top E of the bulb is approached. (The distance ME is greater than the distance MA.)

The filament is preferably located at the center of the bulb. If the filament can be so concentrated that its length is approximately 0.15 times the length of the bulb axis, then it may be disposed in said axis. However, if this is not possible, the filament is preferably disposed in the main plane perpendicular to the line of intersection of the main and auxiliary planes, in which case the filament is made linear or V-shaped. In the latter case, the legs of the V-shaped filament are preferably located in the axes of the parabolic portions of the bulb to prevent the light emitted directly by the filament from having a blinding effect.

The filament 13 shown in the drawings is V-shaped and is located in the main plane so that the apex of the filament faces the transparent lower portion of the bulb. The center of the filament is located at the center of the bulb, the point of intersection of the longitudinal axis of the bulb and the main and auxiliary planes. The legs of the V-shaped filament are located in the axes of the parabolic parts AB and CD. The said filament is mounted on lead wires 14 and 15 and may be held in the V-shape by a support wire 16.

The bottom of the bulb may be provided with ribs or flutes 17 or with other diffusing means in order to obtain a more uniform light.

Fig. 4 shows the reflected sub-conical beam which is emitted by the lamp, the base K on the plane V being elongated. The vertex angle of the cross-section of the beam in the main plane has a maximum value of 160 degrees. The vertex angle of the cross-section of the beam in the auxiliary plane has a maximum value of 75 degrees.

Figs. 5 and 6 illustrate the light intensities of the beam in the main and auxiliary planes respectively. In the main plane, as shown in Fig. 5, the intensity of the light increases toward the outer edge of the beam, while in the auxiliary plane, as shown in Fig. 6, the intensity is substantially uniform.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An electric lamp comprising a bulb having an elongated concave light-reflecting portion so shaped that cross-sections thereof in planes passing through the longitudinal axis thereof are of

increasing curvature as the sections are taken in planes approaching the middle of said reflecting portion from its sides, and a light source located within said reflecting bulb portion.

5 2. An electric lamp comprising a bulb having an elongated concave light-deflecting portion so shaped that cross-sections thereof in planes passing through the longitudinal axis thereof are of increasing curvature as the sections are taken in
10 planes approaching the middle of said reflecting portion from its sides, the cross-section of said reflecting bulb portion at the middle thereof in a plane transverse to said longitudinal axis comprising parabolic side portions and an intermediate
15 portion of increasing curvature from the sides to the middle, and a light source located within said reflecting bulb portion.

3. An electric lamp comprising a bulb having an elongated concave light-reflecting portion, the
20 cross-section at the middle thereof in a plane transverse to the longitudinal axis comprising parabolic side portions and an intermediate portion of increasing curvature from the sides to its middle, and a light source located within said
25 reflecting bulb portion.

4. An electric lamp comprising a bulb having an elongated concave light-reflecting portion, the
cross-section at the middle thereof in a plane
30 transverse to the longitudinal axis comprising parabolic side portions and an intermediate portion of increasing curvature from the sides to its middle, and a light source located within said reflecting bulb portion and extending transversely
of the longitudinal axis.

35 5. An electric lamp comprising a bulb having an elongated concave light-reflecting portion so shaped that cross-sections thereof in planes passing through the longitudinal axis thereof are of increasing curvature as the sections are taken in

planes approaching the middle of said reflecting portion from its sides, the cross-section of said reflecting bulb portion at the middle thereof in a plane transverse to said longitudinal axis comprising parabolic side portions and an intermediate portion of increasing curvature from the
5 sides to the middle, and a light source located within said reflecting bulb portion and extending transversely of the longitudinal axis.

6. An electric lamp comprising a bulb having
10 an elongated concave light-reflecting portion, the cross-section at the middle thereof in a plane transverse to the longitudinal axis comprising parabolic side portions and an intermediate portion of increasing curvature from the sides to its
15 middle, and a V-shaped filament located at the middle of said reflecting bulb portion in a plane transverse to the longitudinal axis and with its leg portions extending toward the said concave reflecting bulb portion along the axes of the said
20 parabolic side portions.

7. An electric lamp comprising a bulb having an elongated concave light-reflecting portion so shaped that cross-sections thereof in planes passing through the longitudinal axis thereof are of
25 increasing curvature as the sections are taken in planes approaching the middle of said reflecting portion from its sides, the cross-section of said reflecting bulb portion at the middle thereof in a
30 plane transverse to said longitudinal axis comprising parabolic side portions and an intermediate portion of increasing curvature from the sides to the middle, and a V-shaped filament located at the middle of said reflecting bulb portion in a
35 plane transverse to the longitudinal axis and with its leg portions extending toward the said concave reflecting bulb portion along the axes of the said parabolic side portions.

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