Feb. 2, 1932. F. C. McELROY 1,843,577

INCANDESCENT BULB

Filed Feb. 27, 1930 2 Sheets-Sheet 1

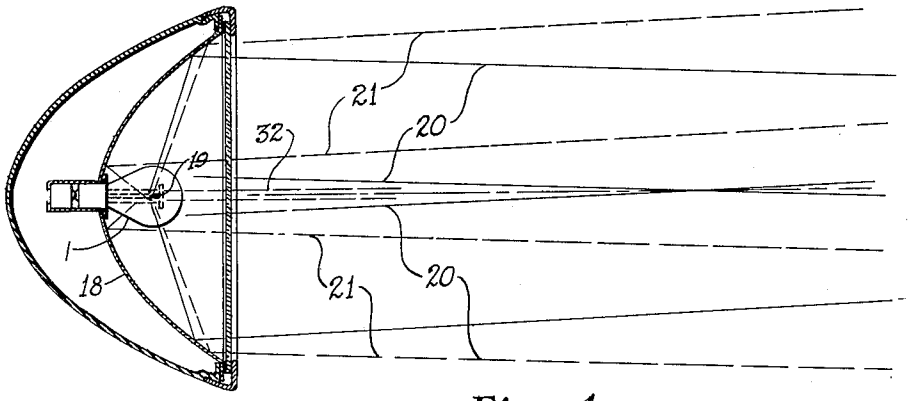

Fig. 1

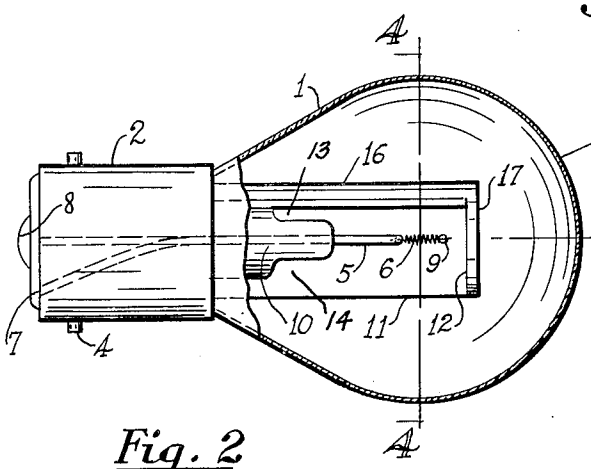

Fig. 2

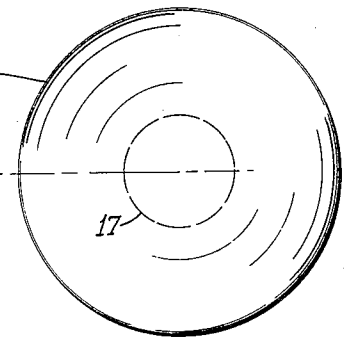

Fig. 3

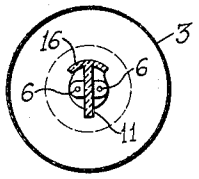

Fig. 4

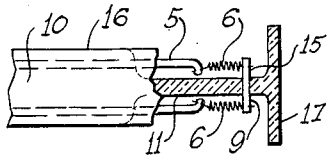

Fig. 5

Inventor

F. C. McElroy

By W. D. McElroy

Attorney

Feb. 2, 1932. F. C. McELROY 1,843,577

INCANDESCENT BULB

Filed Feb. 27, 1930 2 Sheets-Sheet 2

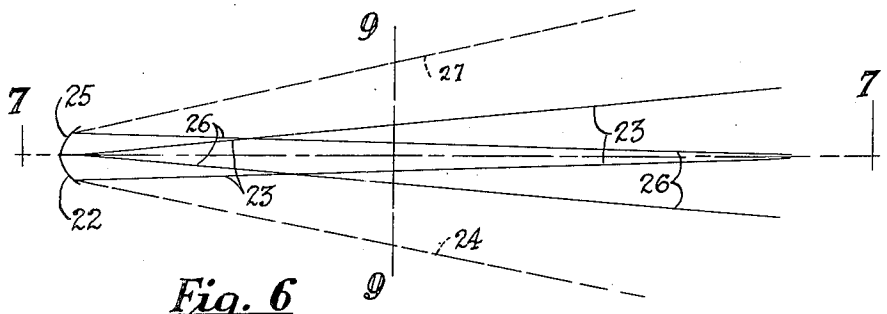

Fig. 6

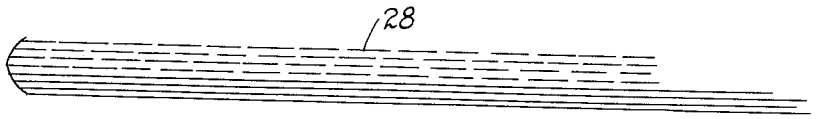

Fig. 7

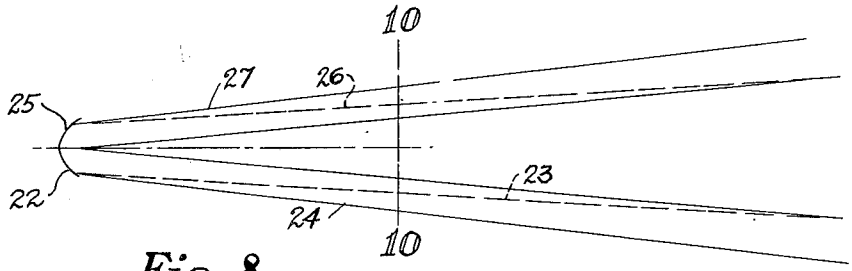

Fig. 8

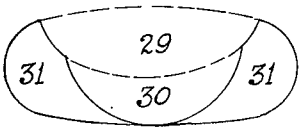

Fig. 10

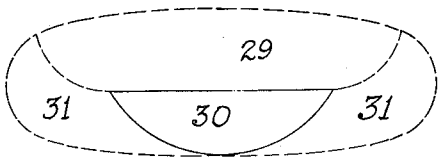

Fig. 9

Inventor

F. C. McElroy

By H. D. McElwell

Attorney

Patented Feb. 2, 1932 1,843,577

UNITED STATES PATENT OFFICE

FRANK C. McELROY, OF COLUMBUS, OHIO

INCANDESCENT BULB

Application filed February 27, 1930. Serial No. 431,914.

This invention relates to improvements in incandescent lamps or bulbs of the general type found in connection with electrically illuminated motor vehicle headlamps, and it is the primary object of the present invention to provide a bulb which when used in conjunction with a headlamp equipped with an ordinary parabolical reflector will produce improved zones of illumination in advance of the headlamp to provide for improved lighting of a highway and surrounding regions and wherein lamp glare or other interference with the vision of approaching observers is rendered substantially negligent.

A further object of the invention resides in the provision of an incandescent bulb which when used in conjunction with a headlamp equipped with an ordinary parabolical reflector provides efficient illumination for a highway during weather conditions of fog or rainfall and further provides for such illumination under such conditions without optical discomfort to the vehicle driver.

With these and other objects in view, which will appear as the description proceeds, the invention consists in the novel features of construction, combination of elements and arrangement of parts hereinafter to be more fully described and pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a horizontal sectional view of a headlamp equipped with my improved incandescent bulb,

Figure 2 is a side elevation of my improved incandescent bulb,

Figure 3 is an end view of the bulb comprising the present invention,

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 2,

Figure 5 is an enlarged view of the filament portion of the bulb,

Figure 6 is a top plan view of a headlamp and illustrating diagrammatically a dispersion of light that may be obtained by employing my improved bulb,

Figure 7 is a vertical sectional view taken on the line 7—7 of Figure 6,

Figure 8 is a top plan view of a headlamp equipped with my improved bulb and illustrating diagrammatically a dispersion of light that may be obtained by changing the position of the bulb in the headlamp,

Figure 9 is a vertical sectional view taken on the line 9—9 of Figure 6 showing diagrammatically a cross section of the zone illuminated by means of a headlamp equipped with my improved bulb, and

Figure 10 is a vertical sectional view taken on the line 10—10 of Figure 8.

Referring more particularly to the drawings, the numeral 1 refers to my improved incandescent bulb in its entirety which is of the type commonly employed in headlamps of motor vehicles and is formed to include a metallic base portion 2 and a glass bulb portion 3. The base portion 2 may be provided with the usual laterally extending studs 4 for maintaining the bulb in association with the socket of the lamp in which it is employed.

Supported within the bulb 2 by means of conductor wires 5 is a pair of spaced filaments 6. One of the conductor wires 5 is suitably secured to the base portion 2 as at 7 and the remaining wire 5 has one end suitably attached to the insulated contact point 8 locked in the usual manner on the rear face of the base portion. It will be understood that while I have illustrated what is commonly termed a single contact type of bulb it is within the province of my invention to employ what is commonly termed a double contact type of base portion when that type of contact base portion is rendered desirable or necessary. The free ends of the spaced filaments 6 are suitably connected by means of a connecting wire 9. Rising axially from the interior of the base of the bulb portion 3 is a substantially cylindrical glass portion 10 which surrounds and has embedded within it the conductor wires 5 throughout a portion of their length. The extension of the glass portion 10 in the direction of the filaments 6 serves to stiffen the wires 5 and prevent undue vibration from being communicated to the filaments 6.

Between the filaments 6 and spaced approximately equi-distant therefrom is positioned a partition 11 having substantially flat parallel sides. The partition 11 is formed

of translucent material, preferably of amber colored glass, and extends vertically both above and below the plane of the filaments 6. The partition 11 is provided with a vertical forward edge 12 and extends rearwardly to meet the glass portion 10 with extending portions 13 and 14 positioned adjacent opposite sides of the glass portion 10, the rearward ends of the portions 13 and 14 being in substantially the same plane with the forward edge of the base portion 2. When the partition 11 is in position the wire 9 passes through its forward end as at 15. It will be understood of course that it is within the province of my invention to employ an additional conductor wire on either side of the partition 11 each of which is connected at one end of a filament 6 thereby eliminating the wire 9.

Adjacent the upper edge of the partition 11 is a translucent strip 16 which is formed preferably of the same material as the partition 11. The strip 16 extends longitudinally the full length of the partition 11 and is in a plane substantially at right angles to the plane of the partition 11 and is so positioned that its longitudinal edges are substantially equi-distant from the sides of the partition 11. The strip 16 is of such length that when positioned adjacent the edge of the partition 11 it will extend laterally above each of the filaments 6. The upper and lower surfaces of the strip 16 are substantially parallel and in the preferred form are curved although they may be made flat. A cross section of the strip 16 and partition 11 when properly positioner resembles the letter T as shown in Figure 4 of the drawings. While I prefer to form the members 11 and 16 separately it will be understood that they may be formed integrally without departing from the spirit of my invention.

Adjacent the vertical forward edge 12 and the forward edge of the strip 16 is arranged a circular disk 17 with flat parallel sides. The disk 17 is preferably made from the same material as the partition 11 and strip 16 and formed integral therewith. The disk 17 occupies a plane at right angles to the plane of the partition 11 and also at right angles to the plane of the strip 16 and is formed with a diameter substantially equivalent to the distance between the bottom edge of the partition 11 and the top side of the strip 16.

When the disk 17 is positioned with one side adjacent the vertical edge 12 and the forward edge of the strip 16 it will be in front and spaced from both of the filaments 6 and will extend both above and below the plane of the filaments and will extend laterally slightly beyond the plane of each filament.

In order to better illustrate the manner in which my improved incandescent bulb may be employed reference is made to Figure 1 of the drawings, wherein is illustrated the bulb 1 associated with a parabolic reflector 18. In Figure 1 the bulb 1 is so positioned that the partition 11 coincides with the vertical plane passing through the focal center of the lamp indicated at 19. The filaments 6 are spaced equi-distant from the focal center and are positioned in substantially the same horizontal plane of said center.

It will thus be seen that when my bulb is employed each filament 6 upon being energized produces light, part of which is reflected forward as clear light and part of which is reflected forward as colored or softened light. As indicated in Figure 1 that portion of the light emanating from each filament 6, which proceeds directly from the filament to the reflector, is projected forward as clear light and which is indicated in Figure 1 at 20. However, a certain amount of the light produced by each of the filaments 6 passes through the partition 11 and upon passing through the partition 11 becomes colored or softened. That portion of the light which passes through the partition 11 and is then reflected forward becomes colored or softened light indicated at 21.

Since both of the filaments 6 are simultaneously energized overlapping beams result and the projection of these beams is further illustrated by Figure 6 of the drawings which discloses a top plan view of the light beams produced when my improved bulb is employed as shown in Figure 1. It will be observed that each side of the reflector projects forward both clear and colored or softened beams. By reason of the location of the filaments 6 with reference to the focal center 19 the filament on the right of the focal center has its clear light reflected forward and to the left by the right side of the reflector while that portion of its light which passes through the partition 11 is reflected forward and to the left by the left side of the lens. In other words the right side of the lens indicated at 22 in Figure 6 reflects forward the clear light indicated at 23 which proceeds from the filament on the corresponding side of the lens and also reflects forward the colored light passing through the partition 11 from the filament on the opposite side of the lens and which is indicated at 24. Similarly the left side of the lens indicated at 25 reflects forward the clear light reflected from the filament on the left side of the lens and indicated at 26 as well as the colored light passing through the partition 11 from the filament on the right side of the lens and indicated at 27.

As illustrated in Figure 6 the light projected forward by the employment of my invention as shown in Figure 1 comprises a sheaf of light composed of angularly directed beams and in which those clear beams near the border or outer edge of the sheaf are colored or softened.

For a further understanding of the nature of the light obtained by the employment of my invention as shown in Figure 1 reference is made to Figure 7 of the drawings which illustrates a vertical sectional view of a sheaf of light shown in Figure 6. By reason of the translucent strip 16 positioned above the filament as shown in Figure 4 of the drawings that portion of the light from each of the filaments which is directed toward the top of the reflector passes through the strip 16 and becomes colored or softened so that the clear light reflected forward from the upper portion of the reflector is colored or softened as indicated at 28.

By adjusting the bulb 1 with reference to the focal center 19 different combinations of the reflected light beams may be produced. Figure 8 of the drawings illustrates a dispersion of light of the beams that are produced when the filaments 6 are placed slightly in the rear of the focal center 19. By reason of the location of the filaments with respect to the focal center when so positioned, the right side of the lens 22 reflects forward the clear light from the filament on the right side as at 23 while at the same time it reflects forward the colored or softened light proceeding through the partition 11 from the filament on the left side as at 24 while the left side 25 of the lens reflects forward the clear light from the filament on the left side as at 26 and at the same time the colored light passing through the partition 11 from the filament on the right side as at 27.

Figure 9 illustrates a vertical cross section of a sheaf or zone of light shown in Figure 6. It will be observed that this sheaf or zone of light has three distinct areas. The area at the top of the sheaf or zone indicated at 29 represents the colored or softened light reflected from the top of the reflector and which represents that light which has passed through the translucent strip 16 before being reflected forward. There is a central area indicated at 30 which represents the modified light reflected from the sides of the reflector and which comprises angularly directed beams and which is composed mainly of the light indicated at 23 and 26 in Figure 6. An outer area 31 comprises the colored or softened light indicated at 24 and 27 of Figure 6.

Figure 10 illustrates a vertical cross section of a zone or sheaf of light shown in Figure 8. It will be observed that in Figure 10 while the top area 29 remains substantially the same as in Figure 9 the area 30 comprising the central portion of the beam or sheaf of light is colored or softened light while the outer portion 31 comprises clear angled beams of light.

As will be observed in Figure 1 nearly all of the light projected forward is reflected light. However, as will be readily seen certain rays of light produced by the filaments 6 would normally be projected forward without reflection. Those rays of light which normally proceed directly forward from the filament produce a glare or blinding effect on persons approaching the lamp directly from the front as is the usual situation when vehicles equipped with such headlights meet upon a highway. The translucent disk 17 positioned in front of the filaments 6 soften these direct rays passing therethrough so that the glare or blinding effect above described is entirely eliminated with the use of my improved bulb. The diffused light produced by the disk 17 is indicated at 32 in Figure 1.

When my improved incandescent bulb is employed in any headlamp equipped with a parabolic reflector there is produced a sheaf of light containing efficient laterally angled clear light beams which provide the desired illumination and which at the same time because of their being angularly directed eliminate the blinding and dazzling effect produced by forwardly directed rays upon the eyes of persons directly approaching the front of the headlamp. The use of my improved incandescent bulb further provides areas of color or softened light which further prevent the blinding or dazzling effect on the vision of persons looking toward the front of the headlamp. My improved bulb provides for the modification of substantially all of the light reflected from the upper portion of the reflector and permits the bright uncolored and undiffused light to be directed downwardly as is desirable in headlamps designed for use on motor vehicles.

Not only does my improved bulb provide for diffused or softened areas of light but it permits of a variation in the location of those areas with respect to the clear light beams.

Since my improved bulb provides for illumination in which what is commonly referred to as "glare" is eliminated, its use in the headlamps of motor vehicles will eliminate the necessity of a frequent dimming of lights now necessitated under modern traffic conditions. My improved bulb is simple to install, may be employed in connection with new or old headlamps and in headlamps equipped with either plain or prismatic lens.

What is claimed is:

1. In an incandescent bulb, a pair of spaced filaments, a translucent partition between said filaments and a translucent supplemental strip extending longitudinally of and spaced from said filaments.

2. An incandescent bulb, a pair of spaced filaments, a partition of colored glass between said filaments, and a strip of colored glass adjacent one longitudinal edge of said partition and positioned at right angles thereto.

3. In an incandescent bulb, a pair of spaced filaments, a partition of colored glass between the said filaments, a strip of colored glass ex-

tending longitudinally of said partition and occupying a plane substantially at right angles to the plane of said partition and extending above each of said filaments, and a disk of colored glass in front of said filaments, said disk occupying a plane at right angles to the planes of said partition and said strip.

4. In an incandescent bulb, a pair of filaments, a longitudinally extending member of colored glass having a T-shaped cross section positioned between said filaments, and extensions of colored glass on one end of said member, said extensions being positioned at right angles to said member and in front of said filaments.

5. In an incandescent bulb, a translucent member positioned centrally and longitudinally of said bulb, said member being formed with a cavity at each side thereof opening outwardly from said member, and a filament in each of said cavities and spaced from the walls thereof.

6. In an incandescent bulb, a translucent electrode carrying member positioned centrally and longitudinally of said bulb, said member being formed with a chamber located at each side thereof which opens outwardly and downwardly from said member, and a filament arranged in each of said chambers and spaced from the side walls thereof.

In testimony whereof I affix my signature.

FRANK C. McELROY.