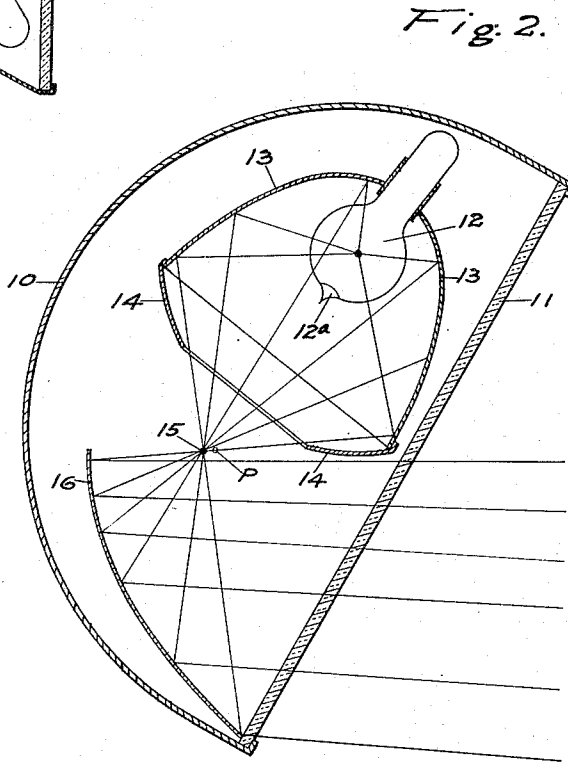
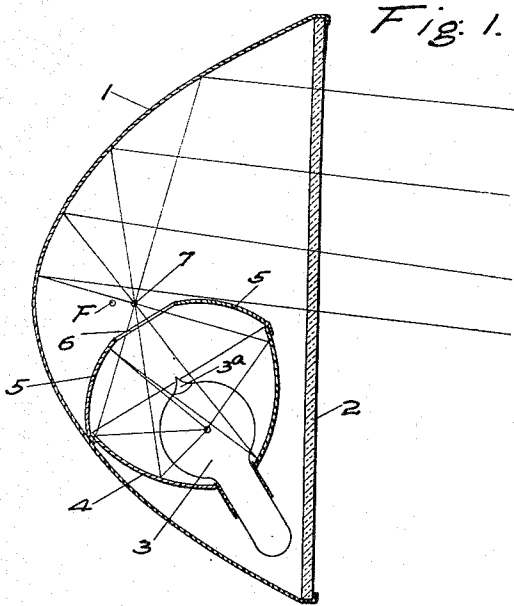


G. STUBBLEFIELD.
INDIRECT LIGHTING APPARATUS.
APPLICATION FILED FEB. 12, 1917.

1,300,202.

Patented Apr. 8, 1919.



Garfield Stubblefield
Inventor,
By *Witzberg*
Att'y.

UNITED STATES PATENT OFFICE.

GARFIELD STUBBLEFIELD, OF PORTLAND, OREGON.

INDIRECT-LIGHTING APPARATUS.

1,300,202.

Specification of Letters Patent.

Patented Apr. 8, 1919.

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To all whom it may concern:

Be it known that I, GARFIELD STUBBLEFIELD, a citizen of the United States, residing in the city of Portland, county of Multnomah, and State of Oregon, have invented certain new and useful Improvements in Indirect-Lighting Apparatus, of which the following is a specification.

My invention relates to lamps with reflectors for indirect lighting, whereby the glare, or objectionable light intensity is eliminated without too much waste of the light generated by the lamp.

Among the salient objects of my invention are,—to provide an improved arrangement for housing a source of light, with direct and indirect reflectors, whereby a maximum amount of efficiency can be secured from said source of light without the objection of the glare or intensity of light which is blinding; to provide in such a construction an arrangement, whereby, if applied to head-lights, a maximum amount of light will be directed in a horizontal direction, or downward toward the road surface over which that head-light is moved; to provide a construction of the character referred to which can be used not only for head-lights, but for lighting a room by effectively distributing the light upon the walls and ceilings.

I accomplish the objects above referred to by concealing the lamp, or source of light, in a reflector housing, whereby an optical image is created beyond, or outside of the reflector housing, which becomes, in effect, the sources of light to be reflected. This image of light is obtained by the use of a reflector housing of an ellipsoid of revolution. As applied to head-lights the rays are again reflected by a polished metallic surface, the axis of which is horizontal, similar to the parabolic reflectors now generally used for search lights and head lights, with this difference, however, that only a part of such reflector is required in my improvement to redirect the rays from the apparent source of light, or light image. It is possible, therefore, to position this part of the reflector so that it will all lie on one side of a horizontal plane through the axis of the reflector, and by positioning the apparent source of light, or light image, it is possible to prevent any of the redirected rays from passing above a horizontal plane through the highest point of the reflector.

In order to further explain my invention

I have illustrated one embodiment thereof in the accompanying sheet of drawings which I will now describe:

Figure 1 illustrates my improved lamp housing and reflector system as used for head lights, in which the focal point of the reflector housing is in the rear of the light image; and

Fig. 2 illustrates a modified form of my invention, in which the focal point of a reflector is in advance of the light image.

Referring now to Fig. 1, 1 designates a head light body, having a front lens 2. Mounted within said head light body is the lamp, or source of light, 3, the end of which is made translucent, as at 3^a, which lamp is surrounded by a housing 4, the inner surface of which is of reflector construction. The front of said housing is partially inclosed by an annular flange-like portion 5, leaving a restricted opening 6. By the reflector surface of the housing 4, and the inner reflector surface of the annular flange-like member 5, the rays of light from the lamp, or source of light, 3, are focused, as at 7, outside of the housing 4, which point becomes the apparent source of light, or light image, from which the rays of light are directed on to the reflector surface on the inner wall of the head light body 1, and from which they are directed outwardly through the lens 2, in a horizontal or downwardly inclined direction, as indicated in Fig. 1. In this embodiment of the invention the light image 7, is in advance of the focal point of the reflector surface formed on the inner face of the body of the head light, said focal point being designated F. When this relationship exists the rays of light directed through the light image and striking the reflector surface of the head light body are directed downwardly, as indicated in Fig. 1.

It is understood, of course, that a source of light placed on one focus of an ellipse, or ellipsoid of revolution, reproduces the light image in the other focus, which in this case is at 7.

Referring now to Fig. 2, the head light body 10, is of different form, but is provided with a front lens 11. The lamp or source of light 12, has a translucent end 12^a and is mounted in the upper side of said head light body 10, and is inclosed in a reflector housing 13, of ellipsoidal form, provided around its opening, or largest diameter with the inturned annular flange-like member 14.

The inner reflector surface of the housing 13, and of the annular flange members 14, direct the rays of light from the lamp, or source of light, 12, directly and indirectly to a focal point, at 15, through which they are directed on to a reflector member 16, set within the head light body, as shown, and the upper edge of which, in the present embodiment, terminates at a point in substantial horizontal alinement with the focal point 15, whereby the rays of light from said focal point, or light of image, 15, are directed forwardly horizontally or downwardly, as indicated. In this embodiment of the invention the light image, which is at 15, is in the rear of the focal point of the reflector surface 16, which focal point, is designated P. This arrangement results in directing the rays of light passing through the focus point, or light image, 15, on to the reflector surface 16, and thence horizontally and downwardly.

The end of this lamp 12, is also made translucent so as to avoid the possibility of any brilliant light rays reaching the reflector surface 16, at an angle which would cause them to be directed upwardly.

By this new arrangement I am able to get a maximum amount of efficiency from a source of light directed in such a way as to avoid the glare of blinding brilliancy and when used as a head light the rays of light are directed downwardly in an inclined manner so as to effectively light the road surface without throwing any of the rays above the horizontal.

I do not limit my invention, however, to the exact embodiments thereof here shown for purposes of illustration and explanation, except as I may be limited by the hereto appended claims.

I claim:

1. In an indirect lighting apparatus, in combination with a source of light, a reflector adapted to concentrate the rays of light therefrom through a focal point at a distance from said source of light, said reflector inclosing said source of light and having a restricted opening through which the major portion of the rays of light are directed to said focal point, an inwardly facing annular reflector around said restricted opening adapted to intercept the remaining portion of such rays and to redirect them back into said reflector, and means beyond said focal point for redirecting the rays of light passing therethrough.

2. An indirect lighting apparatus comprising in combination a lamp having its

end made translucent, a reflector housing inclosing said lamp and having a restricted opening therefrom formed by an annular inner reflecting surface adapted to direct certain light rays back into said reflector housing to be redirected through said restricted opening, said reflector surfaces being adapted to cooperate to direct the light rays through a common focal point beyond or outside of said restricted opening.

3. An indirect lighting apparatus comprising in combination a lamp having its end made translucent, a reflector housing inclosing said lamp and having a restricted opening therefrom formed by an annular inner reflecting surface adapted to direct certain light rays back into said reflector housing in a position to be redirected through said restricted opening, said reflector surfaces being adapted to cooperate to direct the light rays through a common focal point beyond or outside of said restricted opening, and means for redirecting the rays of light directed through said focal point, substantially as described.

4. A lighting system of the character referred to, comprising in combination with a source of light, a reflector housing for said source of light of the form of a semi-ellipsoid of revolution, and having an intumed flange-like portion forming a restricted opening, or outlet, from said housing, whereby said reflectors cooperate to produce an optical image of light beyond said restricted opening, and a reflector surface on to which said rays of light are directed and from which they are redirected in a horizontal or downward direction.

5. An indirect lighting apparatus comprising a head light body, or general housing, with front lens, a lamp, or source of light, mounted toward the front within said body, a reflector housing around said lamp, or source of light, adapted to direct the light rays therefrom rearwardly in said head light body, said reflector housing being provided around its opening with an annular reflector providing a restricted opening from said reflector housing, and a reflector surface in said head light body adapted to redirect said rays outwardly and downwardly through the front lens.

Signed at Portland, Multnomah county, Oregon, this 3rd day of February, 1917.

GARFIELD STUBBLEFIELD.

In presence of:

I. M. GRIFFIN,
J. C. STRENG.