

May 6, 1930.

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REFLECTOR FOR INCANDESCENT LAMPS

1,757,527

Filed Nov. 13, 1926

Fig. 1.

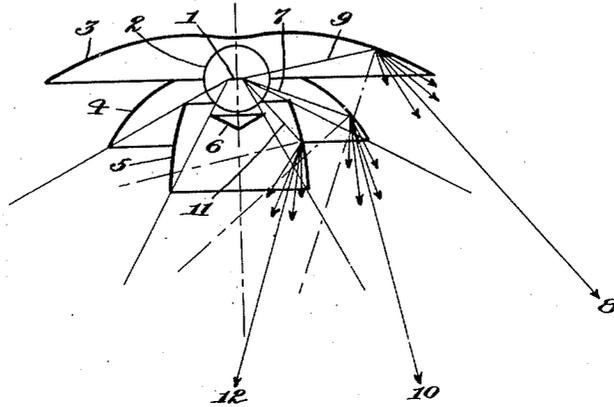
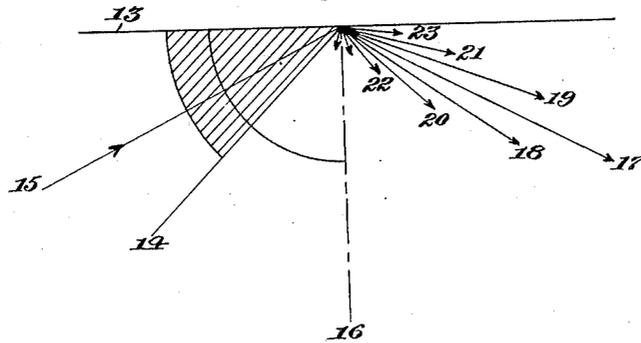


Fig. 2.



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REFLECTOR FOR INCANDESCENT LAMPS

Application filed November 13, 1926, Serial No. 148,164, and in Denmark December 4, 1925.

The present invention refers to a reflector arrangement for emitting diffused light and in particular to a special arrangement in such reflectors which consist of a system of lamp shades which completely surround the source of light so that no radiating rays can meet the eye directly.

The characteristic feature of the invention consists in the fact that shade surfaces are turned towards the source of light at an angle of less than 45 degrees with the rays of light. But the shape of the shades only forms in figurative manner a part of the present invention and in their distribution regard has only been taken to produce a suitable air cooling.

With the customary dullness of the spherical glass bulb of incandescent lamps or by surrounding the lamp with a clouded globe the filament will be completely surrounded by a white surface so that, if the eye be assumed to be in the place of the filament, it would only see a white or other diffuse surface in all directions.

By the present invention the same object is attained, as the eye, assumed to be in the place of the filament, will only be able to see diffuse surfaces, but the feature which is decisive for the light economy and which forms the basis for the present invention consists in the fact that all these surfaces, contrary to the inner surface of the clouded spherical surface around the filament, will form an angle of less than 45° with the rays of light. It is thereby obtained that the light which is necessarily reflected by the diffuse surfaces towards the filament (and heats the same, and the gas of the lamp), become essentially less than if the angle of the surface with the rays of light proceeding from the filament is more than 45 degrees.

In order to increase the utilization of the light the diffused light which is reflected from a diffuse surface to the back of the diffuse surface below it, must be utilized as greatly as possible and therefore the back of the shades are made bright or as mirrors.

The light arrangement which closest approaches that here described is the simple in-

direct or semi-direct light, if a bright non-transparent or dully transparent shade throws the light upwards against the white ceiling or a specially diffuse smaller surface. Contrary to this arrangement all surfaces, against which the light strikes directly are, according to the present invention turned downwards, this being an essential feature, as the surfaces turned upwards (the shade for the indirect and semi-direct light) will be covered with dust. Besides all surfaces are here placed at an acute angle to the rays of light.

The invention has, in a single modification, been shown in the drawing, in which

Fig. 1 is a vertical section through such a system of shades,

Fig. 2 is a sectional view showing the reflection from a small part of a diffuse reflector.

It should be here said that the drawing should only be considered as a diagram for explaining the invention, and all parts which are not necessary for understanding the invention have therefore been omitted.

In the drawing the numeral 1 indicates the filament of the lamp 2 and above the same is disposed a shade 3 the curvature of which is such that the light will never strike the shade at an angle of less than 45 degrees with the perpendicular. Beneath this shade but with its upper edge on a level with the lower edge of the shade 3 is disposed another shade 4 with the same curvature and position relatively to the rays of light.

Lastly a third shade 5 is disposed beneath this shade 4 with the same curvature and so arranged that no direct rays of light can pass between the shades 3, 4 and 5. Lastly an undershade 6 is provided which may be bright on its inner side and which reflects the light onto the dulled shades. This shade 6 does not form a part of the invention.

In the drawing it is shown that the rays of light 9, 7 and 11 emitted by the filament onto the shades 3, 4 and 5 will be spread as shown by arrows so that the strongest light effect will be in the directions 8, 10 and 12.

In Fig. 2 this circumstance is more closely

explained. 13 is the surface of one of the dull shades 3, 4 or 5. The light from the filament is indicated by the line 15 and strikes against the shade within the shaded angle 24
5 the bordering lines of which are 13 and 14. The ray mentioned 15 when reflected by the surface 13 will assume the form of a bundle of rays, here indicated by the numerals 17, 18, 19, 20, 21, 22, 23. The size of these rays
19 will differ and the ray 17 will always be greatest, but the difference in their size will depend on the dullness of the shade.

It is thus possible to regulate the light emission from a lamp by varying the degree of
15 dullness of the shades or of parts or individual portions of them whereby the rays 8, 10 and 12 in Fig. 1 will be increased relatively to the other emission.

It is hereby rendered possible, in an easy
20 manner, to let the light from the shade become essentially luminous towards outside, that is to say to spread the light more in a room with great dullness of the shades, whereby the rays 8, 10 and 12 will be weakened, or to gather
25 the light greatly towards the centre with slightly dull shades, chiefly the outer part of shade 3, the whole shade 4 and the upper part of the shade 5.

It is evident that the incident ray 15 forms
30 an angle with the perpendicular which is greater than 45 degrees (the angle between 14 and 16).

The intensity of ray 17 will be determined
35 both by the dullness of shade 13 and by the angle between 15 and 16 being as large as possible. It is therefore essential that the ray 15 falls within the shaded area 24 between the lines 13 and 14, as it then will always form
40 an angle with the perpendicular which is greater than 45°.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

45 A reflector for diffusing the light of incandescent lamps comprising a plurality of concentric downwardly concave shades disposed above and below the plane of the source of light, the inner surfaces of said shades being
59 directed toward the source of light, the surfaces of said shades making at all points angles of less than 45° with a line to the source of light, the inner surfaces of the shades being dulled.

55 In testimony whereof I affix my signature.
POUL HENNINGSEN.