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REFLECTOR LAMP

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The invention relates to a reflector lamp or lighting unit in which electric light sources of different types, as for example, incandescent lamps and discharge lamps, are used, and an important feature of which is the proper combination of the different types of light produced.

The object of the invention, generally stated, is to provide a lighting unit utilizing light sources of different types or kinds which is of simple construction and which may be economically manufactured and used.

A more specific object of the invention is to provide a lighting unit wherein light sources of different types may be used and which shall function to properly mix the light from the sources without the use of special lenses.

A further object of the invention is to provide a lighting unit wherein an incandescent lamp and a discharge lamp, or a plurality of each, may be utilized, and a proper and desirable mixture of the light from the two different sources produced by means of a single reflector.

Another object of the invention is to provide a lighting unit of the character described wherein provision is made for adjusting the position of the light sources of one type, or both, in a direction perpendicular to the symmetric plane of the reflector, or in a direction radial to the focal line thereof, to change the direction of the light radiation and improve the mixture of the light output of the unit.

These and other objects and advantages of the invention will become more apparent from the following detailed description when read in conjunction with the drawing, in which:

Figure 1 is a diagrammatic view in side elevation of a lighting unit embodying the principal features of the invention;

Fig. 2 is a front or bottom view of the reflector of the unit of Fig. 1 showing one arrangement of the light sources;

Fig. 3 is a section view along line III—III of Fig. 2; and

Fig. 4 is a view similar to Fig. 2 showing another arrangement of the lamp sources.

In accordance with the invention, a light source with a parabolic trough-shaped reflector for the use of two or more light sources of different types is provided in which two of the light sources of different types are arranged in the symmetric plane of the reflector on both sides of the focal line at equal or approximately equal distances from the latter. By "light sources of different types" is meant light sources which produce light having different spectral distribution, as for ex-

ample, incandescent lamps and discharge lamps.

In the apparatus shown in Fig. 1, the parabolic trough-shaped reflector 1 is mounted in any suitable manner, in a housing 2 having a transparent or glass cover 3. The reflector 1 has a focal line F and a symmetric plane identified by the line A—F—B. In accordance with the invention, each of two light sources of different types are disposed at equal distances from the focal line F in the plane A—F—B.

In the illustrated example a filament source or incandescent lamp G1 is, for example, disposed on one side of the focal line F in the direction of the light emission opening of the reflector and on the other side thereof a discharge lamp HgH is disposed. The light rays of the discharge lamp HgH, which is disposed inside or back of the focal line F, diverge so that a bundle of radiation results, having the two diverging rays D—C and E—J. The radiation emitted from the incandescent lamp G1 which may be, for example, reflected at D and E converge and intersect at K and then extend to L and M, respectively. The ray D—C of the discharge lamp HgH and a ray E—K—M of the incandescent lamp G1 extend approximately parallel. The same applies for the ray E—J of the discharge lamp and the ray D—K—L of the incandescent lamp. The arrangement of the two light sources in the symmetric plane of the reflector accordingly makes possible the achievement of a mixture of both types of light without using special discharging lenses.

For longer reflectors it is preferable to so arrange the light sources as is illustrated in Figs. 2, 3 and 4. In the example according to Fig. 2, incandescent lamps G1 and discharge lamps HgH are arranged alternately in the direction of the focal line F and the discharge lamps HgH are disposed in the spaces between the incandescent lamps G1. The arrangement illustrated in Fig. 4 is to be preferred. In this arrangement, each two light sources of different types are disposed opposite to each other and alternatively one lies on the inside and the other on the outside of the focal line. Within the individual rows of lamps, the lamps of the two different types alternate, i. e., group G—H follows group H—G, then follows G—H, etc.

To change the direction of radiation and to improve the mixture of the light, it may be desirable that the light sources of one of the lamp rows accordingly, for example, the one on the inside of the focal line, or even the lamp sources of both rows of lamps, may be made adjustable

in any desired manner in a direction perpendicular to the symmetric plane or in a direction radial to the focal line.

In view of the foregoing, it will be apparent that the invention disclosed provides a lighting unit of simple and economical construction which functions to produce an output of properly mixed light from light sources of different types without the use of special disbursing lenses, this result being accomplished by the use of a parabolic trough-shaped reflector and the proper arrangement or mounting of the light sources therein.

While I have shown and described particular embodiments of my invention, it will be apparent to those skilled in the art that various changes and modifications may be made within the scope of my invention without departing from the spirit of the invention as defined in the appended claims.

I claim as my invention:

1. A lighting unit for producing mixed light comprising, a parabolical trough-shaped reflector, a plurality of light sources all having a predetermined spectral distribution mounted therein a predetermined distance back of the focal line of the reflector with respect to the light emission opening thereof, and a plurality of light sources all having a different predetermined spectral distribution mounted therein on the opposite side of the focal line in spaced relation to the first-mentioned light sources and at substantially the same distance from the focal

line, all of said light sources being located in the symmetric plane of the reflector, thereby to provide for combining the light from the dissimilar sources.

2. A lighting unit for producing mixed light comprising, a parabolical trough-shaped reflector, a plurality of incandescent lamps mounted therein on one side of the focal line with their light source regions a predetermined distance therefrom, and a plurality of discharge lamps mounted therein on the opposite side of the focal line in spaced relation to the incandescent lamps, said discharge lamps having the centers of their light source regions located at substantially the same distance from the focal line as the light source regions of the incandescent lamps, all of said incandescent and discharge lamps being located in the symmetric plane of the reflector, thereby to provide for properly combining the light from the lamps.

3. A lighting unit for producing mixed light comprising, a parabolical trough-shaped reflector, and a plurality of light sources of different kinds having different spectral distributions mounted within the reflector in spaced relation on opposite sides of the focal line thereof in the symmetric plane of the reflector, the light sources of one kind being positioned alternatively with the light sources of the other kind, thereby to provide for properly combining the light from the sources of different kinds by the use of a single reflector.

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