Nov. 12, 1929. J. S. BARLOW 1,735,103

LIGHTING DEVICE

Filed Nov. 2, 1926 2 Sheets-Sheet 1

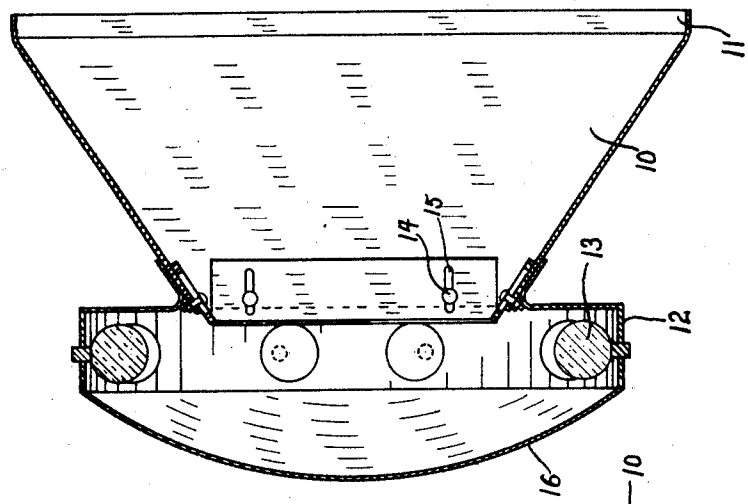



FIG 2

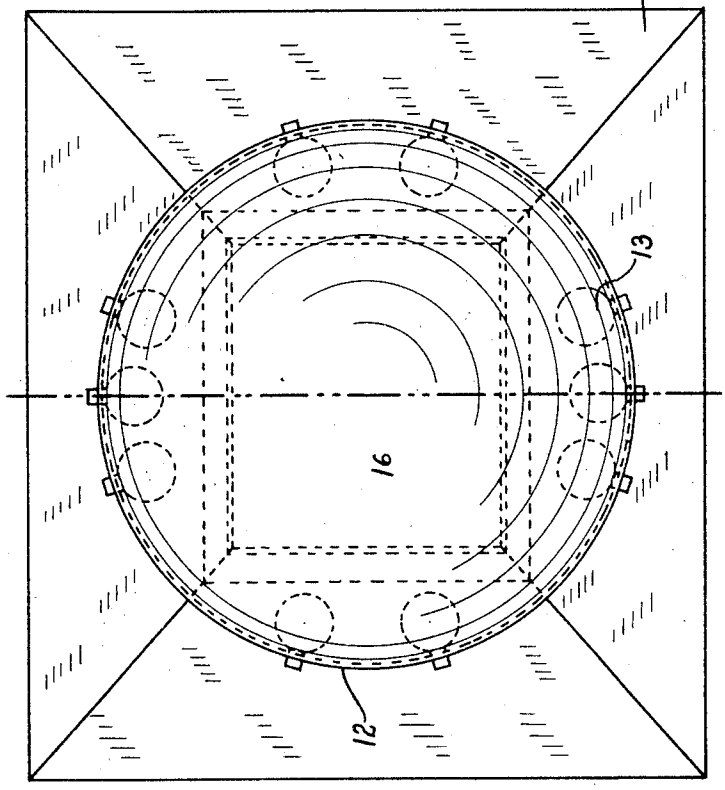



FIG 1

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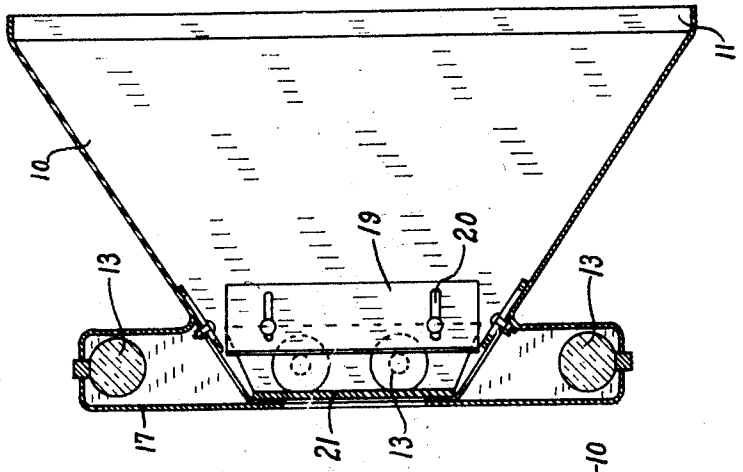



FIG 4

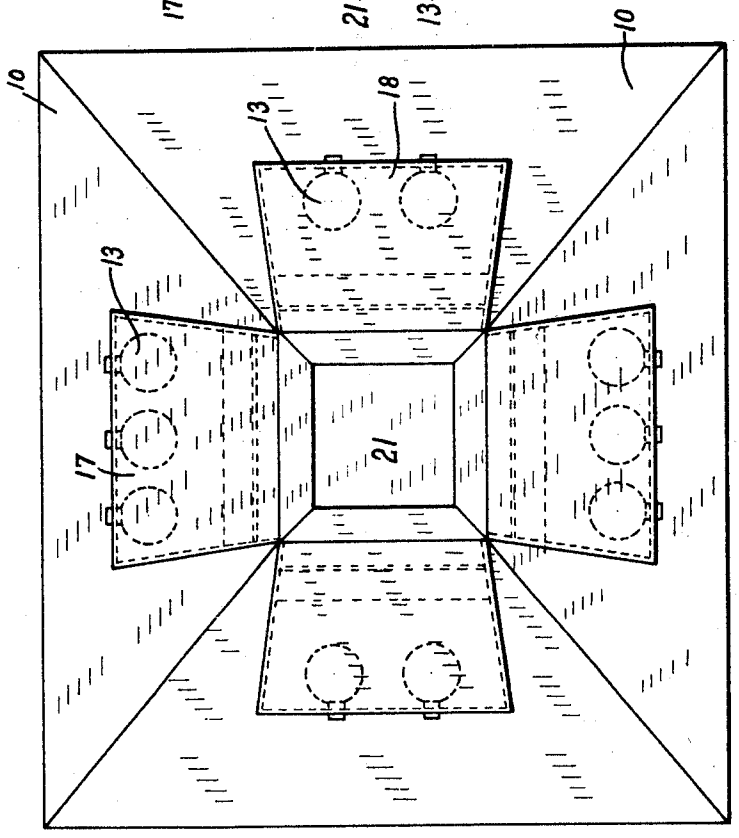



FIG 3

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Patented Nov. 12, 1929 1,735,103

# UNITED STATES PATENT OFFICE

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## LIGHTING DEVICE

Application filed November 2, 1926. Serial No. 145,857.

This invention relates to a light reflector so constructed that no direct light will be projected therefrom, and has for its objects:

First. To make a more effective lighting device than any now used.

Second. To construct a lighting device so that light producing units shall be concealed from view.

Third. To devise a lighting device which shall give a greater intensity of illumination for the power consumed than is now attained.

Fourth. To construct a lighting device which will give a uniform illumination over the entire cross section of the beam at any point in said beam.

Fifth. To provide a lighting device which will give a light suitable for flood lighting, exhibiting transparencies, making moving pictures, etc., with low wattage lamps.

Sixth. To devise a means to produce a strong beam of blended colored light.

The reflectors now in use where strong illumination is required are usually made up of one or more highly polished surfaces and lighting units of high intensity and great power consumption are used in conjunction therewith. The resultant light is harsh, of unequal intensity over a cross section of the beam, and much less than should be obtained for the power consumed.

I have found that by employing low voltage lamps in a reflector of the type hereby disclosed a more uniform and a softer light is produced, which is of high illuminating value, but which nevertheless consumes much less current than other kinds for equal lighting power. While electric lights are shown in this case it is understood that I may employ any suitable light units, such as incandescent gas mantles, etc.

In the drawings:

Figs. 1 and 2 are respectively a rear elevation and a longitudinal section of one embodiment of my invention wherein an annular light unit chamber is employed;

Figs. 3 and 4 are similar views of a form wherein rectangular light unit mountings are used.

I have found that the methods now in use for producing concentrated beams of light are very inefficient and wasteful of power. The light so produced is furthermore harsh and unequally distributed. It is for the purpose of correcting these undesirable features that I have made this invention, which not only produces a uniformly intense beam but by actual wattometer test shows a much smaller power consumption for a given effective illumination than any now on the market. It is further preeminently adapted for the exhibition of transparencies.

The secondary reflector 10 is of frusto-pyramidal shape and has an interior rim 11. The term secondary is here employed to denote that the light has been reflected before impinging upon the reflector so described. Secured to the smaller posterior end of 10, as shown in Figs. 1 and 2, is an annular light chamber 12 wherein the light units 13 are mounted. Bolts 14 which secure chamber 12 to reflector 10 are slidable in slots 15 to permit adjustment of the light units with respect to member 10 to procure maximum results without making units 13 visible from the front of the device. The rear wall 16 of chamber 12 is a reflector to throw the light out into secondary reflector 10.

All the reflecting surfaces are preferably finished with a flat white which will diffusely reflect the light which falls thereon. The absorption under these conditions is negligible, and the diffuse reflection results in a mellow light which is a near approach to daylight, as the rays are thus thrown in all directions just as the particles of dust and moisture in the air scatter the sun's rays, and there is no variation in intensity across the beam due to some of the light being sent out from near a source in an unscattered condition due to reflection from a polished surface.

In Figs. 3 and 4 a modified form is shown in which instead of one annular light chamber I use a plurality of rectangular chambers 17 and 18, each of the former bearing three lights and each of the latter two lights. Concealment of the light units from the front of the device is effected by screens 19 in which are formed slots 20 to permit of the adjustment of said screens. A reflecting member 21 is placed on the common rear wall of

the chambers to insure the passage of any light which may impinge thereon into secondary reflector 10.

It is my purpose to have lights of different colors in my device for certain uses, as for example, showing transparencies. It may also be desirable to use them for flood lighting and have the different colors controlled by flasher mechanisms; however, each of the multitude of applications possible with this invention would have to be considered and the requirements of each would determine the color combination. I have found red, blue, yellow, green, and white to give a wide range of color effects.

The diffuse reflection produced by the kind of reflecting surface I employ makes possible a blending of colors that is not attained by any other means of which I know. In the embodiment illustrated I may use two units of each of the colors above named, and by use of a selective mechanism may, for example, light both of the reds and both blues, giving a blended beam of purple; or I may use one red and two blue, or two red and one blue, and thus various shades of purple obtained. Other combinations of the units mentioned give an extremely large number of colors, so that I am able to produce lighting effects suitable for any display.

As is readily perceived from an examination of the drawings, the light from the units 13 is reflected from the inner surfaces of the light chambers 12, 17, or 18, as the case may be, and thrown upon the inner surfaces of secondary reflector 10, where the rays from the units 13 are further intermixed and blended and thence projected from the device in a strong beam of light that brings out all the details of form and color in the object illuminated thereby.

I claim:

1. In combination, an interiorly reflecting frusto-pyramidal portion, a light source receiving member disposed adjacent the smaller end of said frusto-pyramidal portion, the said receiving portion being internally reflecting and so constructed that the light source carried thereby is concealed from direct vision from the large end of said frusto-pyramidal portion, and means to vary the degree of concealment of said source.

2. In combination, a frusto-pyramidal portion whereof the interior diffusely reflects light, a second portion adjustably connected to said frusto-pyramidal portion, the said second portion being internally reflecting and adapted to receive a plurality of light units and reflect the light therefrom upon the interior of said frusto-pyramidal portion while concealing said units from direct vision from the large end of said frusto-pyramidal portion.

3. In combination, a frusto-pyramidal portion whereof the interior is prepared to reflect light diffusely, a substantially cylindrical portion fixed to the smaller end of said frusto-pyramidal portion, electric light sockets in said cylindrical portion, a concave reflector fixed to that edge of said cylindrical portion that is remote from the said frusto-pyramidal portion, and a shield member slidably attached to each side of said frusto-pyramidal member adjacent the smaller end thereof.

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