May 19, 1936. J. H. HOMRIGHOUS 2,041,412

LIGHTING SYSTEM

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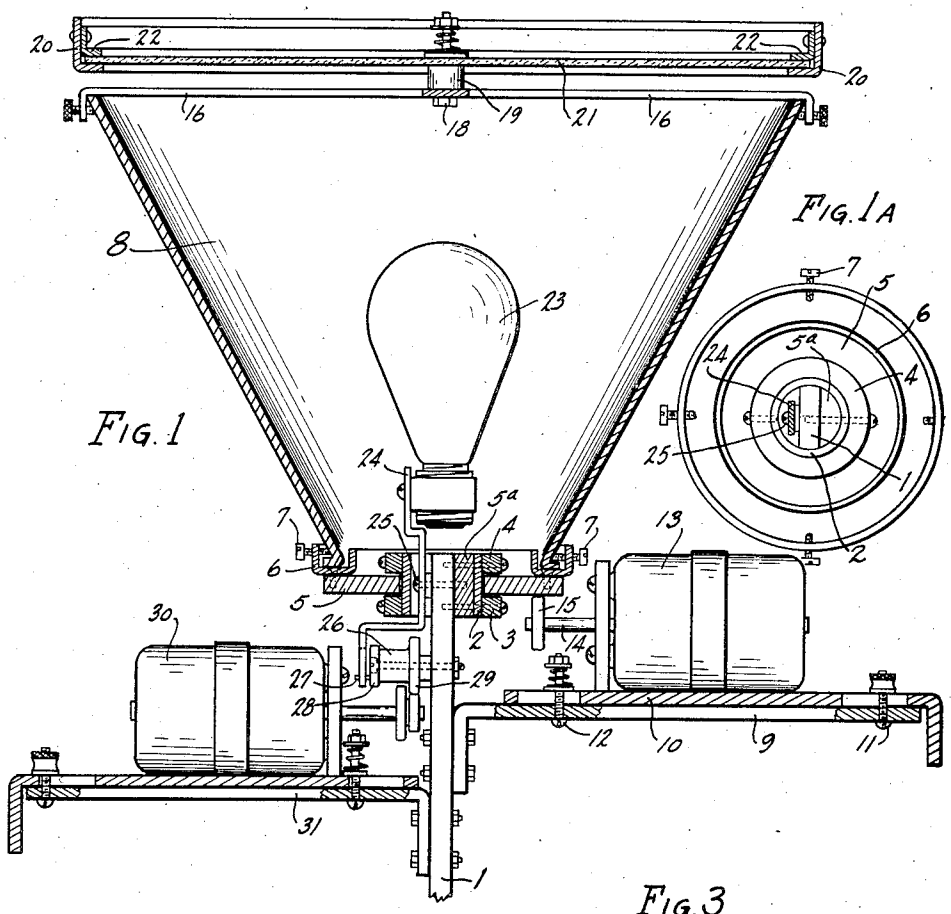



FIG. 1




FIG. 1A

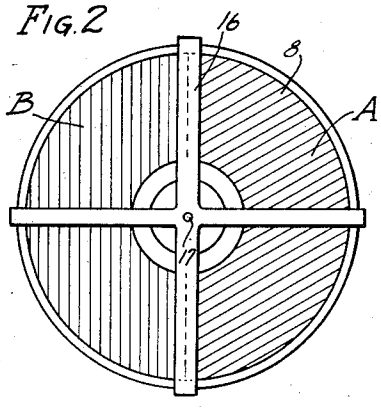



FIG. 2

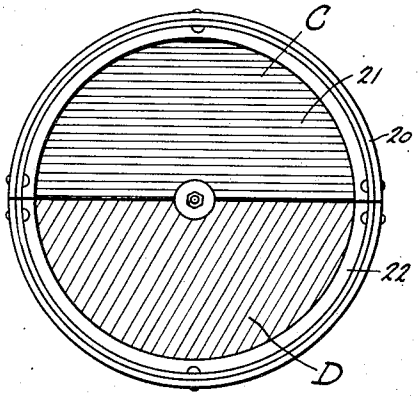



FIG. 3

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FIG. 5

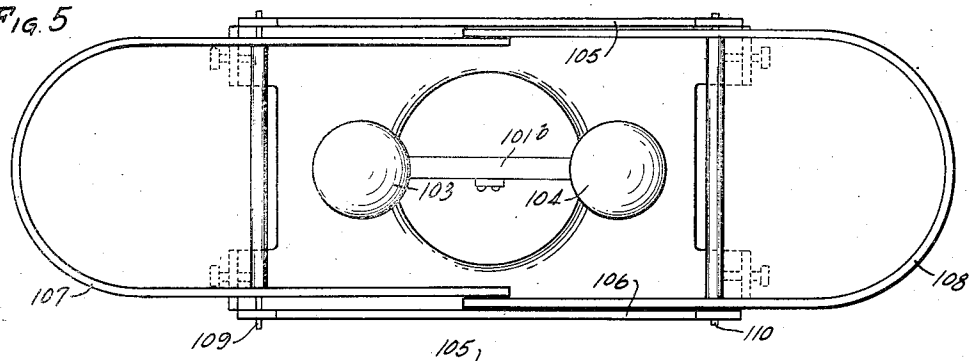



FIG. 4

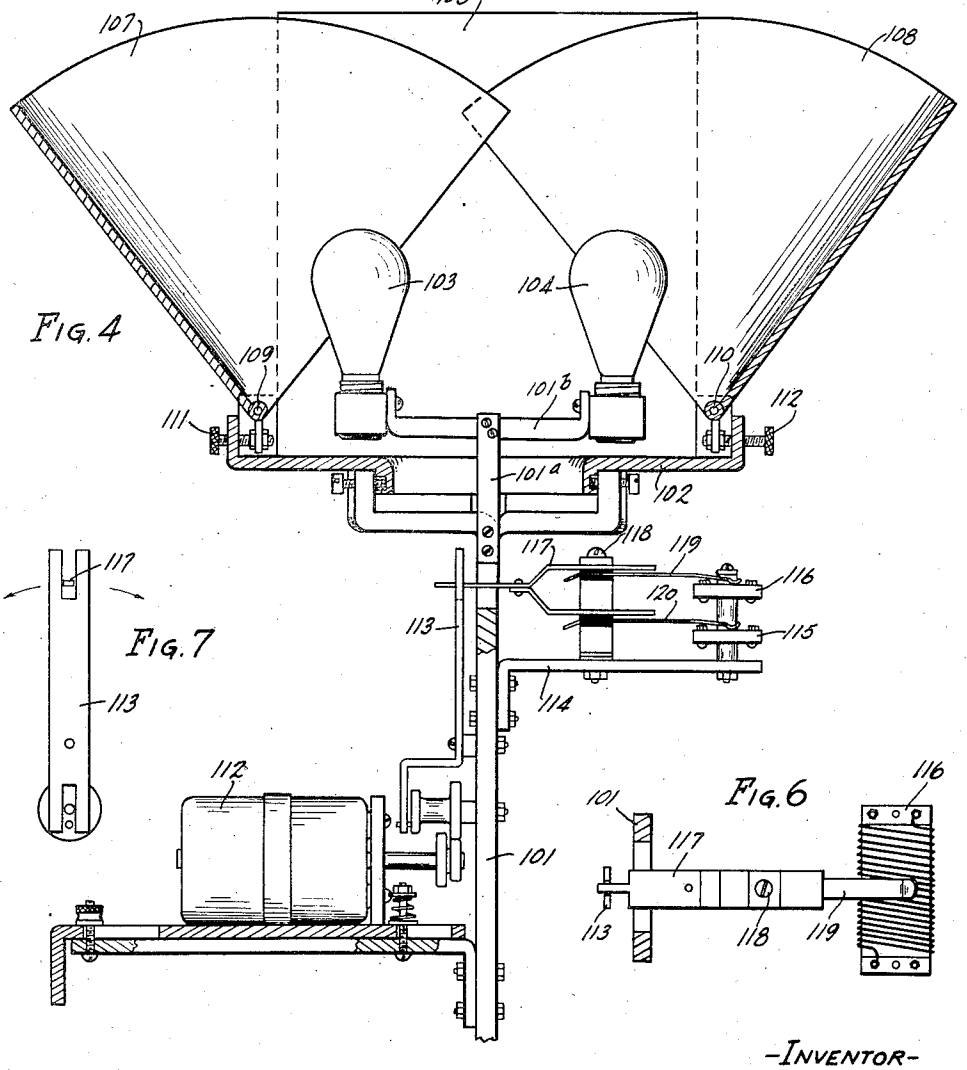



FIG. 7







FIG. 6




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Patented May 19, 1936 2,041,412

# UNITED STATES PATENT OFFICE

2,041,412

## LIGHTING SYSTEM

John H. Homrighous, Oak Park, Ill.

Application November 8, 1933, Serial No. 697,105

11 Claims. (Cl. 240—1.2)

My invention relates in general to an improved lighting system and more specifically to a lighting device which includes means for varying the colors or tints of the light rays produced and for varying the diffusion of such rays in order to provide a novel system of illumination.

It is known that the length of the rays of daylight and the colors of the rays of which it is composed vary to a certain degree at different times. I propose, therefore, to vary the rays produced by a source of artificial light in such a manner as to change the length of the rays slowly, also to slowly vary the colors of the reflected and direct rays therefrom and also to slowly vary the diffusion of the light rays in the manner hereinafter pointed out.

In the accompanying drawings I have shown several methods of influencing the rays of a source of light, any or all of which may be combined together as desired.

Fig. 1 shows certain of the features applied to a lighting fixture.

Fig. 1A is a top view of certain of the detailed parts of Fig. 1.

Fig. 2 is a view of the shade or reflection of Fig. 1 with the screen removed.

Fig. 3 is a top or plan view of the screen of Fig. 1 showing the arrangement of the divisions thereof.

Fig. 4 is a plan view of another lighting fixture embodying certain other features of my invention.

Fig. 5 is a top view of the reflector of the device of Fig. 4.

Fig. 6 is a detail view of one of the rheostats of Fig. 4.

Fig. 7 is a detail view of one of the operating parts of Fig. 4.

Referring now to Fig. 1, the device illustrated may be either an indirect or a direct lighting fixture and comprises a standard or support 1 having various devices mounted thereon. At the top of the standard 1 and rigidly secured thereto is a cylindrical bearing 2 and a pair of rings 3 and 4 around the outer surface of the bearing. Between the rings 3 and 4 and rotatably mounted on the bearing 2 is a disc 5 having its lower surface, at least, of friction material. The disc is held in place by rings 3 and 4 which are secured by screws as shown passing through a metal insert 5a and into the standard. Fig. 1A shows a plan view of the bearing and related parts. Mounted on the upper side of the disc by suitable screws is the circular ring or reflector holder 6 having clamping screws 7 at various points in its periphery for securing the reflector 8. Thus the reflector 8 is rigid with and rotatable with disc 5.

Secured to one side of the upright 1 by a pair of bolts is a motor support 9. On the upper side of support 9 is mounted a slidable motor plate 10 held in place by a pair of bolts 11 and 12 which may be loosened to slide the plate to the right or left. The motor 13 is secured to plate 10 in any desired manner and on its shaft 14 carries a friction disc 15 bearing on the under side of disc 5. The two discs 5 and 15 constitute a known type of friction drive, adjustable as to speed by sliding motor 13 back and forth to bring disc 15 in and out on the radius of disc 5. The motor 13 may be of any desired type but is preferably a so-called telechron or clock motor of the slow moving type and rotates disc 5 and the reflector 8 as a unit. Disc 15 may be moved far enough out to disengage disc 5 to stop rotation thereof.

I purpose to have the inside of reflector 8 colored in two or more different colors as indicated in Fig. 2 or to have different shades of the same color on different sections thereof. Thus the inside half indicated at A (Fig. 2) may be red and the half indicated at B may be green, in which case the reflected rays in any one spot will vary from red to green as the reflector rotates. The reflecting surface may have as many tints or shades of color as desired.

On the upper edge of reflector 8 I have mounted a spider or bridge shaped element 16 which may either be clamped over the edge of reflector 8 or secured thereto by set screws, similar to 7, in the ends of the arms of the spider. There is a pivot hole 17 in the center of spider 16 through which a bolt 18 is inserted. On the washer 19 is mounted a screen 21 of two or more parts having a screen support 20 around its periphery. The screen is secured within the support 20 by an inner rim 22. The screen and support are rotatably mounted on bolt 18 and are frictionably held in any place in any position to which they may be moved by a spring and nut on the upper end thereof. The screen 21 may be as shown in Fig. 3 with one half C of one colored glass and the other half D of another color. Also the half C may be frosted to one degree of opaqueness while half D may be frosted to a greater or less degree of opaqueness. It will be seen that screen 21 may be rotated by hand relative to reflector 8 and will stay put in any desired position. The screen may be of separate pieces of glass held by

support 20 and rim 22 or may be in one piece with the parts treated differently. Thus if A is red and B is green and if C and D are frosted to different degrees then 21 may be rotated to different positions to cause greater diffusion of the reflected rays from A (red) and less diffusion of the reflected rays from B (green) or vice versa. Also, when C and D are different colored glass then the rotation of 21 relative to 8 will change the tint of the reflected and direct rays. Complementary colors may be used on the screen and reflector to either produce any desired tints or shades of color or to neutralize each other.

The lamp 23 is mounted in reflector 8 on a reciprocating bracket 24 riveted, or otherwise secured by screws as shown, to the lamp socket. I have not shown all details of the socket connections to lamp 23 as such terminals and connections would only complicate the drawings. Bracket 24 is pivoted inside bearing 2 to the upright 1 by a pivot or screw 25. At the lower end bracket 24 is keyed to a rotatable stud 26 which carries an off center pin 27 passing through a slot in bracket 24. On stud 24 are a pair of friction discs 28 and 29, and a cooperating pair of friction discs on the shaft of a motor 30 furnishes a two speed drive for stud 26. The motor 30 is similar to motor 13 and is mounted in a similar manner on bracket 31. It is also slidable to bring either disc 28 or 29 into frictional engagement with the corresponding disc on the shaft of the motor to change the speed of rotation of stud 26. Through this arrangement it will be seen that lamp 23 is tilted slowly back and forth in reflector 8 first close to one side thereof and then close to the opposite side. When the inside of reflector 8 carries two colors it will be seen that the tilting of lamp 23 will first accentuate or increase the reflected rays of one color and then the other. Of course with the rotation of the reflector and screen and the tilting of the lamp all in operation at once at a slow speed the varying of the rays is accomplished slowly and almost imperceptibly and one shade or tint may fade into another. Although I have shown the above features all in one indirect fixture it will be understood that any one of the features may be used alone or with any other. The features may also be utilized in an ordinary floor lamp or direct lighting fixture. For instance the shade and screen may be rotated by hand by a reader from one position to another to vary at will the color of the light rays or the amount of light or diffusion thereof. The motors of the type indicated are reversible and the reflector and screen may therefore be rotated in either direction.

Referring now to Figs. 4 and 5 I have shown a similar device having somewhat different means for accomplishing the same objects previously defined. In Fig. 4 a standard 101 supports a bracket 101a which carries a pair of lamps 103 and ed on the upper end of support 101 and consists 104. I have shown a somewhat different type of reflector in this figure which may also be used with the device of Fig. 1. The reflector is mount- of two side reflectors 105 and 106 and a pair of end parts 107 and 108. Each of the end parts are pivoted on a rod such as 109 and 110. The two end parts are of such shape that they may be moved in and out on their pivots and the sides thereof telescope in and out of side parts 105 and 106. Each end part may be held in a desired position by set screws such as 111 and 112 so reflected and direct rays from the lamps may be restricted to a small area or spread over a larger area.

In these figures instead of rotating a reflector or tilting a light I have shown a pair of lamps with means for simultaneously varying the brightness of the two lamps. That is, I propose to have one half of the reflector of one color and the other half another color and to then dim one light slowly and at the same time increase the brightness of the other lamp. The lamps themselves may be of different tints or shades of colors if desired. On upright 101, I have shown a motor 112 with cooperating parts and mountings similar to motor 30 of Fig. 1 for operating slowly a reciprocating arm 113. On the other side of upright 101 is a bracket 114 carrying a pair of resistance elements 115 and 116. A pivoted arm 117 is linked with arm 113 by a tongue and slot arrangement as shown in Figs. 6 and 7, and is pivoted on a bolt 118. The arm 117 carries a pair of wipers or slide contacts 119 and 120 which wipe slowly back and forth over resistances 115 and 116. The resistances 115 and their wipers are oppositely connected in circuit with lamps 103 and 104, so that, as arms 119 and 120 rotate back and forth thereover arm 119 for instance is gradually cutting out the resistance of 116 in series with one lamp while arm 120 is cutting more of the other resistance 115 in series with the other lamp. Thus one lamp is being made brighter while the other is being dimmed. The arrangement of operating arms 119 and 120 is of course somewhat diagrammatic and various means may be utilized to accomplish the same purpose. The advantage of using a system such as shown is to enable the speed to be kept very slow and to enable the changing of speed if desired by means of the bearing.

It will be seen that one of the lamps in Fig. 4 may be of the violet ray or infra-red ray type of lamp, or there may be one of each, and in this case the system shown provides a very simple and efficient method of varying the strength of the violet rays so as to increase and decrease the proportion of such rays in a novel manner. Also it is proposed to use the reflector of Figs. 4 and 5 with the arrangement of Fig. 1. This reflector, it will be apparent, is adjustable to vary the size and shape of the area over which light from a source is reflected. Therefore, when such a reflector is rotated by a motor such as shown in Fig. 1 the rotation thereof, when the reflector is adjusted to its widest area, will vary the shape of the reflected area as the device rotates in addition to varying the coloring or hue of the reflected rays. It will also be apparent that the resistance varying arrangement of Fig. 5 may be used with either one light only as shown in Fig. 1 or with two lights of different hue or shade of color mounted in a rotating reflector and when used with one light will merely dim or brighten the light. The bracket 101b of Fig. 4 holding the two lights may be mounted on the reciprocating arm 24 of Fig. 1. Also the reflector of Fig. 4 may be mounted on the disc 5 of Fig. 1 by screws 7. In addition the motor 112 and its cooperating mechanism may be mounted on support 1, Fig. 1, to control one or two lights in the rotating reflector if desired.

Also, the coloring used for reflector and screen may be varied at will to produce different results. Vivid shades may be used if desired for certain effects. Complementary shades of colors may be used on screen and reflector so that in

certain positions the two will neutralize and produce a white light when desired and a shade or hue of the color when desired. Also, of course, the screen and reflector may be divided into any number of parts of different colors, different shades of the same color, or different degrees of frosting or treatment as regards the screen.

It will be seen, therefore, that the arrangement shown has many possibilities of variation all within the scope of the invention and all tending to produce a lighting system in which the light rays from a source are slowly varied as to color, character or intensity.

Having described the invention, what is considered to be new and is desired to be protected by Letters Patent will be set forth in the following claims.

What is claimed is:

1. In a lighting system, a source of light, a reflector therefor having a multicolored reflecting surface, a screen having sections of different color mounted on the reflector, said screen adjustable to vary the relation of the color section in the screen to the colors on the reflector.

2. In a lighting system, a source of light, a multicolored reflector thereon, a movable screen adjacent the reflector and intercepting the light rays therefrom, said screen divided into a plurality of parts, each part of a different color, said screen rotatable relative to the source, to vary the color of certain of the rays therefrom, all rotations of the screen maintaining the original direction of the direct and reflected light rays.

3. In a lighting system, a lamp, a reflector therefor having different colored reflecting surfaces, means for continuously varying the relation of the lamp to the colored parts of the reflector, and means for continuously moving the reflecting surface of the reflector relative to the lamp.

4. In a lighting system, a pair of lamps, a common reflector for the lamps having different colored sections, means for automatically and continuously varying the strength of light from both lamps to vary the proportion of the strength of the rays from one reflecting section to another.

5. In a lighting system, a source of light, a reflector therefor having a plurality of colors on its reflecting surface, a screen intercepting both direct and reflected rays from the source, said screen having parts each having different characteristics differently affecting said rays, said screen adjustable relative to the colored parts of the reflector, said screen and reflector rotatable as a unit relative the source.

6. A lighting system as claimed in claim 5 in which the light source is also movable relative to the colored parts of the reflector to vary the proportion of reflected rays of one color to the rays of another color.

7. In a lighting system, a source of light, a reflector therefor for reflecting rays of light of different colors from said source, a screen having different parts, each part affecting a different degree of diffusion to light rays, the parts of said screen so positioned relative to the reflector that movement of the screen increases the diffusion of light rays of one color from the source and decreases the diffusion of rays of another color.

8. In a lighting system, a lamp having means for producing light rays of different colors, a reflector therefor, said reflector substantially rectangular in shape, and having two sides thereof each of different color and adjustable relative the two other sides to elongate the rectangular shape and vary the size of the area of reflected light and to change the color characteristics of the reflected light.

9. In a lighting system, a lamp, a reflector therefor having a multicolored reflecting surface, a screen mounted on the reflector having sections, each of which affects the reflected light in a different manner, means for moving the lamp in the reflector to bring it from close relation with one colored surface and into close relation with another colored reflecting surface, and from close relation with one section of the screen into close relation with another section thereof for changing the characteristic of the reflected light.

10. In a lighting system, a source of light, a reflector therefor having a multi-colored reflecting surface reflecting rays of such multi-colors from the source, a screen associated with the light having segments of different characteristics, said screen rotatable to bring each segment into position to affect different colors, each position of the screen causing different diffusion of the reflected light from the colors in the reflector.

11. In a lighting system a source of light, a reflector therefor having sections reflecting rays of different color from the source, a screen having sections associated with the reflector, each section adapted to diffuse light to different degrees, said screen rotatable relative to the reflector to different positions, one position causing one degree of diffusion of rays of one color and a different degree of diffusion of rays of an another color, and another position causing different degrees of diffusion of rays of both of said colors.

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