

Nov. 29, 1938.

L. C. DOANE

2,138,373

LUMINAIR

Filed June 26, 1935

2 Sheets-Sheet 1

Fig. 2.

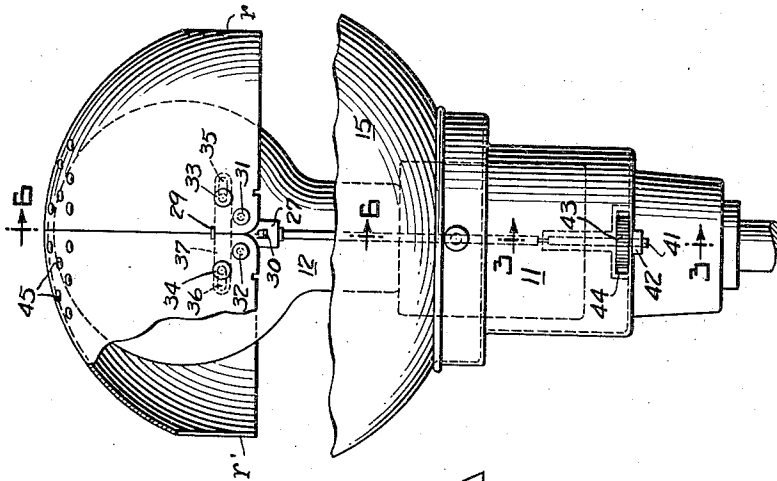


Fig. 1.

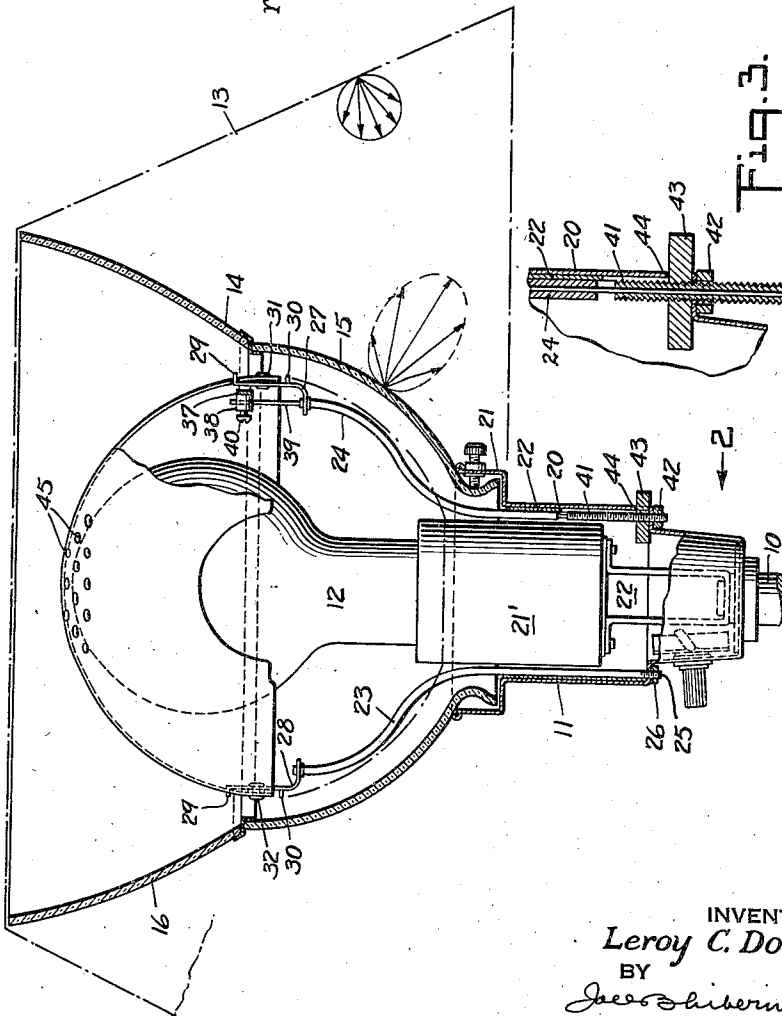
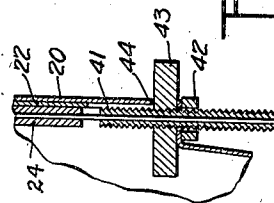


Fig. 3.



INVENTOR
Leroy C. Doane
BY
Joseph Shierman
ATTORNEY

Nov. 29, 1938.

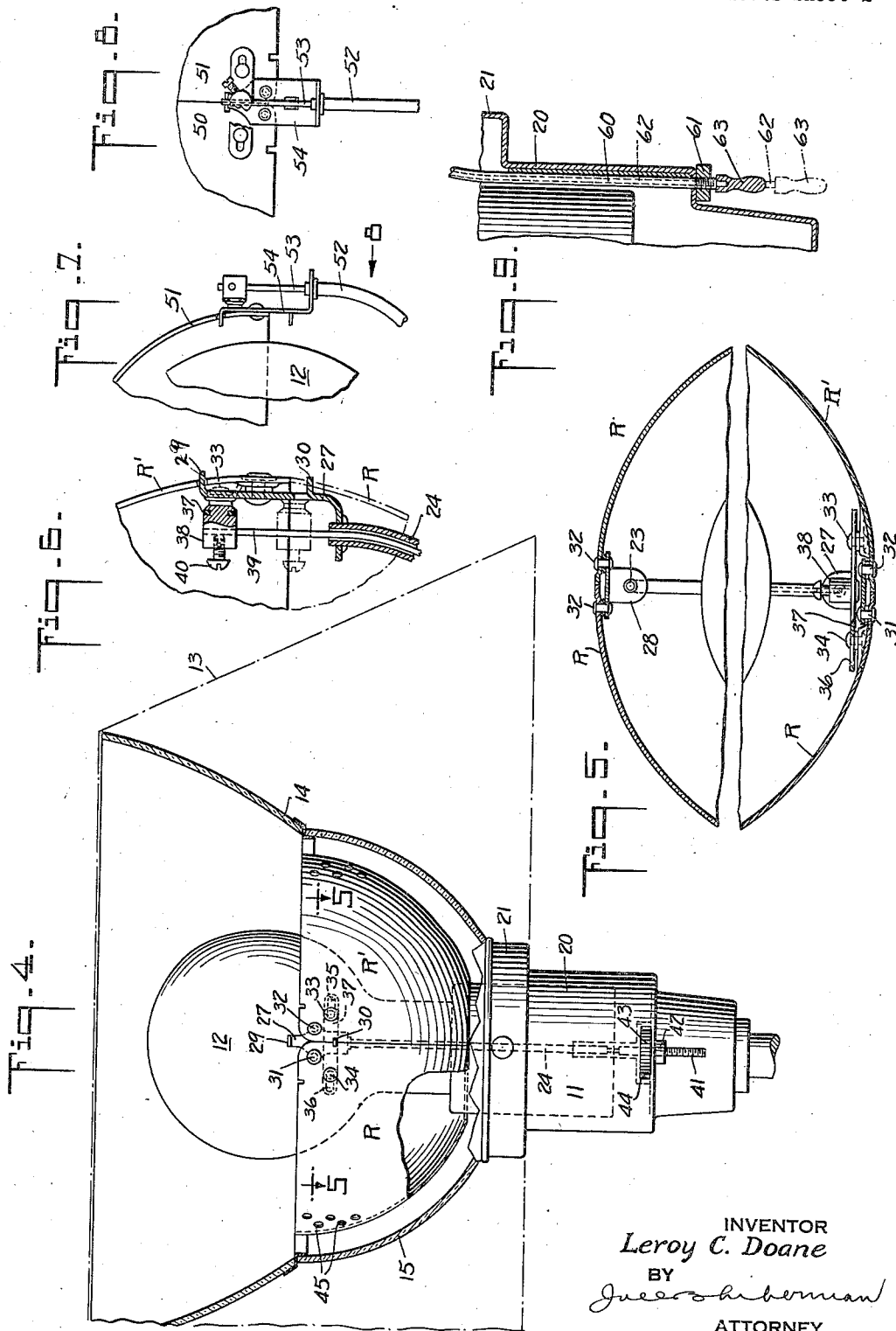
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2 Sheets-Sheet 2



INVENTOR
Leroy C. Doane

BY
Julius H. Herman
ATTORNEY

UNITED STATES PATENT OFFICE

2,138,373

LUMINAIR

Leroy C. Doane, Meriden, Conn., assignor to Earl
L. Canfield, Hillside, N. J.

Application June 26, 1935, Serial No. 28,402

14 Claims. (Cl. 240—81)

The present invention relates to luminaires and is more particularly directed toward luminaires such as floor and table lamps having means whereby the color characteristic of the light directed downwardly onto the reading plane may be varied.

The present invention is also designed for use with table and floor lamps and lighting fixtures, and contemplates an arrangement whereby the luminaire may be readily changed to provide indirect lighting or direct lighting or to proportion the output so that either upward or downward light may predominate.

In the ordinary floor and table lamp of the indirect type, the lamp bulb is received in an opaque or diffusing bowl and most of the light is directed toward the ceiling. More or less light, depending upon the design of the lamp, may be directed downwardly through a suitable diffuser, but this is not adjustable either as to intensity or as to color value. With such arrangements the light distribution is fixed and one must rely upon the general illumination obtained by reflection from the ceiling to build up the light intensity on the working plane. The maximum intensity which can be economically obtained in this manner is limited.

To effect the control of the color characteristic of the direct light, the present invention contemplates the employment of a diffusing transmitter having zones of different color value (for example, opal and "daylight blue"), a light mixing and reflecting shade about the transmitter, and an arrangement whereby the proportion of light flux falling on the zones of the transmitter may be altered so that substantially all the direct light emitted downwardly below the shade partakes of the color characteristic of one zone or of the other zone or is composed of a mixture of light passing through both zones.

More particularly, the present invention contemplates the production of lamps of the character mentioned having an arrangement of reflectors and zoned light transmitter whereby one can at will redirect the light normally projected toward the ceiling so that it is directed downwardly to produce very intense illumination in the region below the light source, and can apportion the light falling in the transmitter zones to effect control of color character of the direct light.

To obtain the desired reflection of the light, the present invention contemplates the use of an arrangement of adjustable reflectors which can be either below the light source for reflecting the

light upwardly or above the light source for reflecting it downwardly. These reflectors may conveniently be of such a form that, when they are in the upper position, they intercept substantially all the light in the upper hemisphere and screen the upper zone of the transmitter; and when in the lower position they intercept light in the lower hemisphere and screen the lower zone of the transmitter. The reflectors preferably, though not necessarily, comprise two half-hemispheres, each independently pivoted on opposite sides of the lamp bulb. The lamp bulb axis is usually vertical and the reflector axis, or axes, horizontal, and the reflectors preferably designed to close tightly over the tip of the bulb or about the neck of the bulb, appropriate cut-outs being provided for the bulb neck or socket.

The accompanying drawings show, for purposes of illustrating the present invention, an embodiment in which the invention may take form, together with modifications of certain parts, it being understood that the drawings are illustrative of the invention rather than limiting the same. In these drawings:

Fig. 1 is an enlarged vertical sectional view through the light controlling elements of a floor or table lamp;

Fig. 2 is a side elevational view taken in the direction of the arrow 2 of Figure 1 showing the reflector above the lamp bulb;

Fig. 3 is a fragmentary sectional view on the line 3—3 of Figure 2;

Fig. 4 is a view similar to Figure 1 showing the reflector below the lamp bulb;

Fig. 5 is a sectional view on the line 5—5 of Figure 4;

Fig. 6 is a vertical sectional view on the line 6—6 of Figure 2;

Fig. 7 is a view similar to Figure 6 showing a modified form of construction of the reflector support;

Fig. 8 is a view taken in the direction of the arrow of Figure 7; and

Fig. 9 is a fragmentary view showing a modified form of reflector operating mechanism.

The lamp shown in Figure 1 has a supporting column 10 and socket cover 11 of the type customarily employed in floor and table lamps. A lamp bulb is indicated at 12 and the shade at 13. The shade may be made of any suitable form of shade material, such as parchment or fabric, but preferably has a white, inner diffuse reflecting surface for the purpose of mixing and downwardly reflecting the light rays it receives. The light transmitter interposed between the source

and shade is generally in the form of a two-part bowl having an upper zone 14 of highly reflective and comparatively low transmitting glass, such as white opal glass which does not substantially alter the color of the light transmitted, and a lower colored zone 15 preferably of etched "day-light" blue glass of high transmission and not completely diffusing, so that the light coming through it may be corrected for color.

The socket cover 11 as shown in Figure 1 has a cylindrical portion 20 and a large portion 21 adapted to receive the lower end of the lower part 15 of the bowl. It is slightly larger than the lamp socket 21'. A band 22 is slidably received in the socket cover 20. Two tubular members 23 and 24 are brazed or otherwise secured to the band 22. The band together with these members 23 and 24 form a bifurcated support extending up between the diffusing bowl 15 and the lamp bulb 12. The tubular member 23 is longer than member 24 and extends down through a shoulder in the socket cover as indicated at 25. It is threaded to receive a clamping nut 26. The upper ends of the tubes 23 and 24 are secured to sheet metal stampings 27 and 28. These stampings are bent laterally from the tubular members and extend upwardly as indicated. Each is provided with two outwardly extending lugs or stop members as indicated at 29 and 30. The stampings 27 and 28 are punched to receive rivets indicated at 31 and 32. These rivets form pivotal supports for reflector members R and R'. These reflectors are preferably the shape of a half-hemisphere although any other form of reflector may be used if it will intercept the light in the desired angle, approximately 90° about the horizontal axes of the reflectors. The reflectors are provided with a cut-out portion as indicated at r and r'. The reflectors R and R' are provided with inwardly extending studs 33 and 34, which pass through slots 35 and 36 in a link 37. This link is provided with an apertured lug 38 to receive the upper end of a wire 39, the wire being clamped in place by a screw 40. In the arrangement shown in Figure 1, the lower end of the wire 39 is secured to a threaded member 41 projecting through a guide bushing 42 carried by the socket cover and a thumb nut 43 is threaded on this member 41. This nut is held against up or down movement by the walls of the slot 44 formed in the socket cover and is easily accessible for turning so as to effect movement of the wire and an adjustment of the reflectors up or down into intermediate positions. During this adjustment, the link 37 passes by the pivots of the reflectors.

When the reflectors R and R' are in the position shown in Figures 1 and 2 they are above the light source and intercept all the normally upwardly emitted light, screen the upper zone 14 of the light transmitter, and reflect the light downwardly so that it falls on the colored diffusing bowl 15 for transmission by this bowl to build up the color corrected illumination underneath the lamp. When the reflectors are in the lower position they screen the lower zone 15 and reflect the light upwardly to intensify the indirect lighting and the light transmitted by the upper zone of the bowl. When the reflectors are in intermediate positions various portions of the light are reflected upwardly and downwardly and allowed to fall in the zones 14 and 15. If desired, small holes 45 may be provided in the reflectors to permit a small amount of light to pass through them for upward or downward illumination.

The shade 13 effectively screens the bowl 14,

15 against direct observation and receives a substantial portion of the light transmitted by the diffusers. It mixes this light and reflects it downwardly to provide a well-diffused downward illumination of color value determined by the glass used and the adjustment of the parts.

In the form shown in Figures 7 and 8, the construction is substantially the same as that shown in Figures 1 to 6 except that the reflectors 50 and 51 corresponding with the reflectors R and R' are made of smaller diameter than the spacing of the tubes 52 corresponding with the tubes 23 and 24. The wire 53, the stamping 54, and associated parts are outside the reflectors 50 and 51 instead of inside.

As shown in Figure 9, the tube 60 is secured in place by a nut 61 and the lower end of the reflector control wire 62 is attached to a pull knob 63. To move the reflectors it is only necessary to actuate the knob. Owing to the friction of the wire in the tube, it is not necessary to provide any other means for holding the reflectors in either the upper position or any intermediate position.

The present application as filed is a continuation in part of application, Serial No. 758,895, filed December 24, 1934.

It is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, and I wish it to be understood that the particular forms shown are illustrative. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto except as defined in the claims.

What is claimed is:

1. In a lamp, a light source, a translucent bowl about the source, the bowl having an annular colored, diffusing zone and an annular uncolored, diffusing zone, and movable screening means between the source and bowl for intercepting substantially all the light normally passing through either of said zones, or for intercepting variable portions of said light whereby the light emitted below the shade may be colored, uncolored, or a mixture of colored and uncolored light.

2. A lamp such as claimed in claim 1, wherein the screening means comprises two reflectors, each of half hemispherical contour, means for pivoting the reflectors adjacent their corners so that adjacent edges may abut to form a hemispherical reflector, and means for simultaneously moving the two reflectors about said pivots to bring the other edges into abutting relation to form a hemispherical reflector.

3. A lamp such as claimed in claim 1, wherein the screening means comprises two reflectors pivotally supported for movement about axes at right angles to the bowl axis and adjacent the light source, each reflector occupying an angle of substantially 90° measured in the plane of the bowl axis and about the reflector pivot.

4. In a lamp, an upwardly opening lamp socket, a lamp bulb therein, a translucent glass bowl about the lamp bulb, the bowl having an annular zone of color correction glass and an annular zone of glass without color correction, movable reflectors inside the bowl, the reflectors being concave toward the lamp bulb and movable from a position below the bulbous portion where they screen the lower zone of the bowl and allow light to fall on the upper zone and reflect light through the top of the bowl through intermediate positions where they intercept varying portions of light falling on the zones of the bowl and to an

upper position above the bulb where they screen the upper zone and direct substantially all the light through the lower zone, and a shade outside the bowl having an uncolored diffusing surface onto which light transmitted through the bowl is directed for downward diffuse reflection.

5. A lamp as claimed in claim 4, wherein the lower zone of the bowl is of blue glass.

6. A lamp as claimed in claim 4, having means accessible below the socket and bowl for actuating the reflectors.

7. A luminaire comprising a light source, an annular translucent member disposed about the light source and having one zone without substantial color correction, and a second zone with substantial color correction, a shade having a light mixing and reflecting surface to receive and downwardly reflect light received through both zones of the translucent member, and means to vary the proportion of the light flux from such source which falls on the zones of the translucent member whereby the proportion of light corrected for color and falling on the shade for reflection thereby may be altered.

8. A luminaire comprising a light source, an annular translucent member disposed about the light source and having one zone without substantial color correction, and a second zone with substantial color correction, a shade having a light mixing and reflecting surface to receive and downwardly reflect light received through both zones of the translucent member, and movable screens interposed between the source and translucent member to vary the proportion of the light flux from such source which falls on the zones of the translucent member whereby the proportion of light corrected for color and falling on the shade for reflection thereby may be altered.

9. A luminaire comprising a light source, an annular translucent member disposed about the light source and having one zone without substantial color correction, and a second zone with substantial color correction, a shade having a light mixing and reflecting surface to receive and downwardly reflect light received through both zones of the translucent member, and reflectors disposed between the source and translucent member, and being movable between two extreme positions, the reflectors being shaped when in one such position to cover the source and screen the upper zone of the translucent member whereby all the light is directed onto the lower zone thereof, and when in the other such position to intercept only light falling on the lower zone of the translucent member whereby the upper zone receives light for transmission thereby, the reflectors in intermediate positions varying the portion of light falling on the two zones of the translucent member.

10. In a convertible lamp for direct and indirect lighting, comprising an upwardly opening lamp socket, a lamp bulb therein, a socket cover, a diffusing bowl carried by the socket cover, a tubular reflector support carried by the socket cover and extending upwardly inside the bowl and adjacent the lamp bulb, and reflectors pivoted on the reflector support, the reflectors being shaped when in one position to cover the bulb from above whereby the light normally emitted upwardly is reflected toward the bowl, and when

in the other position to intercept light normally falling on the bowl and reflect it upwardly, and a reciprocable wire operatively connected to the reflectors and extending down through the tubular support and connected to an operator accessible outside the socket cover.

11. A convertible lamp for direct and indirect lighting, comprising an upwardly opening lamp socket, a lamp bulb therein, a socket cover, a diffusing bowl carried by the socket cover, a reflector support carried by the socket cover and extending upwardly inside the bowl and adjacent the lamp bulb, reflectors pivoted on the reflector support, the reflectors being shaped when in one position to cover the bulb from above whereby the light normally emitted upwardly is reflected toward the bowl, and when in the other position to intercept light normally falling on the bowl and reflect it upwardly, a link bodily movable past the pivots of the reflectors and having a lost motion connection with each reflector, and a link shifting member extending downwardly through the socket cover.

12. In a convertible lamp for direct and indirect lighting, an upwardly opening lamp socket, a lamp bulb therein, a socket cover, a diffusing bowl carried by the socket cover, a reflector support carried by the socket cover and extending upwardly inside the bowl and adjacent the lamp bulb, reflectors pivoted on the reflector support, the reflectors being shaped when in one position to cover the bulb from above whereby the light normally emitted upwardly is reflected toward the bowl, and when in the other position to intercept light normally falling on the bowl and reflect it upwardly, the reflector support including a downwardly extending tube, and a reciprocable wire extending through the tube and connected to the reflectors to shift them back and forth.

13. A light controlling device comprising a bifurcated supporting structure one side of which is in the form of a tube, reflectors extending from one bifurcation to the other and pivoted thereto, an operating device for moving the reflectors back and forth on the pivots, and a friction wire extending through the tube and connected to the operating device for shifting the operating device and retaining the reflectors in adjusted positions.

14. A luminaire comprising a lamp socket, a lamp bulb therein, two reflectors each of half hemispherical contour having pivots adjacent their corners, independent pivot supporting means for each corner of each reflector, there being a pair of pivot supporting means on opposite sides of the bulb and between the center of the bulb and the socket whereby, when one pair of adjacent edges abut, the reflectors form a hemispherical reflector about the tip of the bulb for reflecting light in the direction of the bulb axis, and when the other pair of adjacent edges abut the reflectors form a hemispherical reflector facing in the opposite direction, and means for simultaneously moving the two reflectors about said pivots to bring the said edges into abutting relation, said means including a link bodily movable past the reflector pivots and having a lost motion connection with each of the reflectors.

LEROY C. DOANE.