Feb. 6, 1934. T. W. ROLPH 1,945,567

ULTRA-VIOLET LIGHT LUMINAIR

Filed Aug. 1, 1931

FIG. 1.

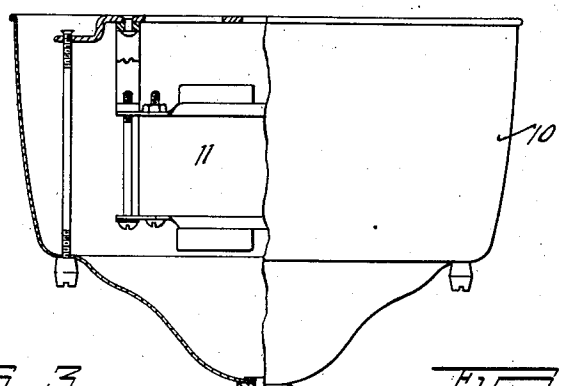


FIG. 3.

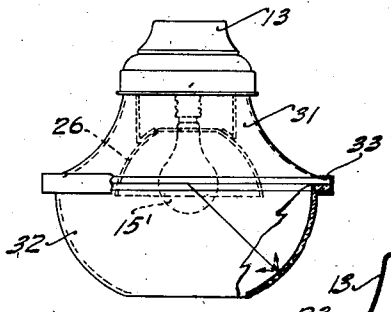


FIG. 4.

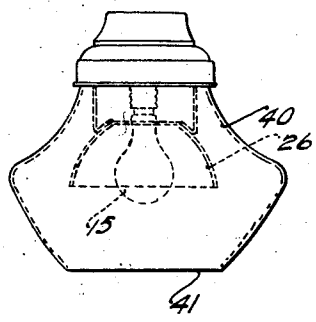


FIG. 2.

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ULTRA-VIOLET LIGHT LUMINAIR

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20 Claims. (Cl. 240—78)

The present invention relates to luminairs and is of particular value for luminairs utilizing lamps which produce both visible and ultra-violet light. With ultra-violet lamps, a luminair is contemplated having a glass globe or enclosure for transmitting visible light and provided with an opening or window in the bottom to permit the passage of visible and ultra-violet light downwardly from a reflector carried inside the enclosure and placed above the lamp. While the invention is of particular value for this form of luminair, it will prove useful also for other luminairs utilizing various types of lamps.

The present invention contemplates luminairs having the general appearance of luminairs designed for employing ordinary incandescent lamps but provided with an ultra-violet light producing lamp and a reflector arranged so that ultra-violet light may be transmitted downwardly through a window or opening in the glass enclosure and having the reflector so arranged as to permit diffusion of scattered light back of the reflector. By designing the ultra-violet luminair in this manner it is possible to utilize the same, or substantially the same, glass parts for luminairs irrespective of the type of illuminant. An installation of fixtures may, therefore, be made wherein all the fixtures appear uniform, even though some of them use one form of illuminant and others another form of illuminant.

The accompanying drawing shows, for purposes of illustrating the present invention, several embodiments in which the invention may take form, it being understood that the drawing is illustrative of the invention rather than limiting the same. In the drawing:

Fig. 1 is a sectional view with parts in elevation showing a hanging fixture employing a two-part glass globe or enclosure made of prismatic glass and having an opening in the bottom;

Fig. 2 is a fragmentary view illustrating an ultra-violet light transmitting plate in the opening of the unit of Fig. 1;

Fig. 3 shows a two-piece glass envelope made of blown glass; and

Fig. 4 is a side elevational view, more or less diagrammatic, illustrating an ultra-violet light luminair utilizing a one piece glass envelope of diffusing glassware.

In Fig. 1 the luminair is shown as being suspended below a ceiling canopy 10 adapted to house a transformer 11 designed to provide the low voltage of mercury arc ultra-violet lamps. These lamps emit visible light and a relatively large amount of biologically useful ultra-violet light. A chain or other suspending device 12 supports a sheet metal canopy 13 in which is mounted a lamp socket 14 adapted to support a lamp 15. This lamp is of the so-called S-2 type and has a small reflecting and heat conserving cup 16 removably secured about the lower hemisphere of the glass bulb and adapted to cut off downwardly directed light and to upwardly reflect all the light, both ultra-violet and visible. The luminair may, of course, employ other forms of ultra-violet lamps and is not restricted to those having reflecting cups about the bulb, as indicated in Fig. 3.

In the form of construction shown in Fig. 1 the glass globe or enclosure consists of an upper glass part 20 and lower glass part 21. These glass parts may be made of the usual type of glass employed in lighting fixtures of similar appearance. This glass is translucent to ordinary light but is substantially opaque to biologically effective ultra-violet light emitted by the ultra-violet radiator. The external appearance of the fixture may be the same as standard fixtures made according to the same design. The two glass parts are held together by C-shaped clips 22, as usual, and the neck 23 of the upper glass part is secured in place in the canopy by clamping the screws indicated at 24. The lower part 21 has an opening indicated at 25 substantially larger than the lamp bulb.

A sheet metal reflector 26 is supported above the lamp bulb 15 by means of spring clips 27 adapted to engage the inside of the neck of the glass cover member 20. This reflector is preferably made of spun aluminum and provided with an oxidized finish so as to reflect both visible and ultra-violet light. This effects a spread reflection of light, the path of typical dominant light rays being indicated by the lines A, B, C shown in the drawing. The scattered light is indicated by the short arrows. The reflector 26 is of ellipsoidal shape and designed so that all the specularly reflected light passes through the opening 25 in the lower glass bowl 21. The entire luminair will be rendered luminous by light diffusely reflected by the reflector, intercepted by the lower part of the glass enclosure, and scattered about inside the globe. Some of this scattered light passes between the reflector and the glass parts and hence not only will the luminair appear illuminated but some light will be directed upwardly above the luminair.

This form of luminair may be readily assembled by inserting the reflector and spring clips in place in the upper glass part 20, after which the two glass parts may be secured together and the entire unit mounted in the canopy.

Where the glass enclosure is made in two parts divided at the point of maximum diameter, it is possible to make the lower opening considerably smaller than the reflector so that a large and efficient reflector may be utilized with a globe having an inconspicuous hole in the bottom.

In the form illustrated in Fig. 2, the lower open-

ing 25 is closed by a plate 30 made of ultra-violet transmitting glass or other ultra-violet transmitting material which forms a window for the transmission of both forms of light. It is, of course, possible to make the entire lower glass part out of ultra-violet light transmitting glass, the part which does not receive the ultra-violet light being suitably modified to render it diffusing if desired.

In the form shown in Fig. 3 the canopy 13, ultra-violet lamp 15', and reflector 26 may be the same as above described but instead of showing the pressed glass globe this figure illustrates a globe made of the upper cover member 31 and a lower bowl 32 made of blown or pressed glass, preferably opal glass. These two pieces of glass are held together in any suitable manner as, for example, by a band indicated at 33. Some light from an ultra-violet lamp, of the type having no reflecting cup, falls on the glass and is diffusely reflected upwardly behind the reflector, as indicated.

In the form shown in Fig. 4 the globe 40 is in the form of one piece of blown glass, preferably opal, and is provided with an opening 41 at the bottom sufficiently large to permit inserting the reflector 26.

It is obvious that the invention may be embodied in many forms and constructions, and I wish it to be understood that the particular forms shown are but a few of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and utra-violet light, a downwardly acting reflector above the lamp for reflecting both forms of light downwardly, and a translucent globe about the lamp and reflector, the globe having a window in the bottom of such size and location as to pass substantially all the reflected light, the globe being spaced from the reflector so as to permit the diffusion of scattered light back of the reflector.

2. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting reflector above the lamp for reflecting both forms of light downwardly, and a translucent globe about the lamp and reflector, the globe having a window in the bottom of such size and location as to pass substantially all the reflected light, the globe being spaced from the reflector so as to permit the diffusion of scattered light back of the reflector, the window in the bottom of the globe being closed with a cover of ultra-violet transmitting material.

3. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting ellipsoidal reflector above the lamp for reflecting both forms of light downwardly, and a translucent globe about the lamp and reflector, the globe having a window in the bottom of such size and location as to pass substantially all the reflected light, the globe being spaced from the reflector so as to permit the diffusion of scattered light back of the reflector.

4. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting ellipsoidal reflector above the lamp for reflecting both forms of light downwardly, a translucent globe about the lamp and reflector, the globe having a window in the bottom of such size and location as to pass substantially all the reflected light, the globe being spaced from the reflector so as to permit the diffusion of scattered light back of the reflector, the window in the bottom of the globe being closed with a cover of ultra-violet transmitting material.

5. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting reflector above the lamp for reflecting both forms of light downwardly, a translucent globe about the lamp and reflector, the globe having a window in the bottom of such size and location as to pass substantially all the reflected light, the globe being spaced from the reflector so as to permit the diffusion of scattered light back of the reflector, and means for supporting the reflector from the globe.

6. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting reflector above the lamp for reflecting both forms of light downwardly, and a translucent globe about the lamp and reflector, the globe having an opening in the bottom substantially smaller than the reflector and located so as to pass substantially all the reflected light, the globe being made in two parts which, when separated, permit the insertion of the reflector.

7. A luminair for ultra-violet lighting comprising a support, a lamp socket carried by the support, a lamp in the socket for emitting both ultra-violet and visible light, a translucent envelope carried by the support, the envelope having an upper downwardly divergent portion and a lower downwardly convergent portion, the bottom of the envelope having an opening, and a reflector supported between the lamp and the upper portion of the translucent envelope, the reflector acting on both ultra-violet and visible light to reflect it downwardly and being shaped to direct substantially all the reflected light through the opening.

8. A luminair for ultra-violet lighting comprising a support, a lamp socket carried by the support, a lamp in the socket for emitting both ultra-violet and visible light, a translucent envelope carried by the support, the envelope having an upper downwardly divergent portion and a lower downwardly convergent portion, the bottom of the envelope having an opening, and a reflector supported between the lamp and the upper portion of the envelope, the reflector acting on both ultra-violet and visible light to reflect it downwardly and being shaped to direct substantially all the reflected light through the opening, the upper portion of the envelope being spaced substantially from the reflector to permit scattered light to illuminate the envelope.

9. A luminair for ultra-violet lighting comprising a support, a lamp socket carried by the support, a lamp in the socket for emitting both ultra-violet and visible light, a translucent envelope carried by the support, the envelope having an upper downwardly divergent portion and a lower downwardly concergent portion, the bottom of the envelope having an opening, a reflector supported between the lamp and the upper portion of the envelope, the reflector acting on both ultra-violet and visible light to reflect it downwardly and being shaped to direct substantially all the reflected light through the opening, and means to support the reflector from the envelope.

10. A luminair for ultra-violet lighting com-

prising a support, a lamp socket carried by the support, a lamp in the socket for emitting both ultra-violet and visible light, a two-part translucent envelope carried by the support, the envelope having an upper downwardly divergent part and a lower downwardly convergent part, the bottom of the envelope having an opening, means to secure the two parts together, and a reflector supported between the lamp and the upper portion of the envelope, the reflector being larger than the opening and acting on both ultra-violet and visible light to reflect it downwardly and being shaped to direct substantially all the reflected light through the opening.

11. In a luminair, a two-part light transmitting envelope, the upper and lower parts being of substantially the same outside diameter, the upper part converging upwardly and the lower part converging downwardly, means to secure the two parts together, the upper part having the usual supporting neck, a downwardly acting reflector secured to the neck of the upper part and being spaced from the said upper part, a light-source within the reflector, the lower part having a hole of less diameter than the reflector, but large enough to pass the light reflected by the reflector.

12. In a luminair, a two-part light transmitting envelope, the upper and lower parts being of substantially the same outside diameter, the upper part converging upwardly and the lower part converging downwardly, means to secure the two parts together, a light-source housed between the parts and an opaque reflector about the light source for redirecting light in predetermined directions, the reflector being spaced from the envelope so that scattered light may be diffused about back of the reflector to illuminate the envelope.

13. A lighting fixture comprising a translucent cover member, a translucent bowl having a central opening, means for securing them together, a supporting canopy to which the cover member is detachably secured, a lamp socket supported from the canopy, a lamp carried in the socket, and a reflector between the lamp and cover member and spaced from the cover member, the reflector being shaped to redirect light downwardly through the opening in the bowl, the cover member and bowl being illuminated by stray light and concealing the reflector when the lamp is not lighted.

14. A lighting fixture comprising a translucent and diffusing envelope having a central opening, a supporting canopy to which the envelope is detachably secured, a lamp socket supported from the canopy, a lamp carried in the socket and a reflector between the lamp and the envelope and spaced from the envelope, the reflector being shaped to redirect light through the opening in the envelope, that portion of the envelope back of the reflector being illuminated by light diffused from the other portion of the envelope and concealing the reflector when the lamp is not lighted.

15. A luminair for ultra-violet lighting comprising a lamp adapted to emit both visible and ultra-violet light, a downwardly acting reflector for reflecting upwardly directed visible and ultra-violet light downwardly, and a globe around the reflector and lamp the globe being spaced from the reflector to permit scattered light to pass between the reflector and globe to illuminate the same with visible light, the globe having a window in the bottom through which reflected light of both forms may pass.

16. A luminair comprising a translucent cover member, a translucent bowl having a central opening, means for securing them together, a supporting canopy, cover member securing means carried by the canopy, a lamp socket supported from the canopy and carrying a lamp, an ellipsoidal metal reflector, and straps for supporting the reflector from the cover member, the reflector being adapted to direct substantially all the light from the lamp downwardly through the opening in the bowl.

17. The combination with a translucent cover member and a translucent bowl substantially opaque to ultra-violet light and having a central opening, of an ultra-violet light source which emits visible light in addition, an upwardly acting reflecting cup carried by the light source, and a downwardly acting opaque reflector above the light source shaped to return both visible and invisible light downwardly and pass it through the opening in the bowl, the reflector being spaced from the cover member and bowl to permit the diffusion of scattered light back of the reflector.

18. The combination with the light transmitting globe of a luminair for modifying the distribution of light from an enclosed incandescent light source and for giving the luminair its characteristic appearance, the lower portion of the globe having an opening, of an ultra-violet lamp supported within such globe and a reflector spaced from the globe and acting on visible and ultra-violet light from the lamp to redirect such light downwardly through the opening in the bottom of the luminair whereby the general appearance of the luminair will be unchanged.

19. In combination, an ultra-violet light source emitting both visible and ultra-violet light, an opaque reflector at one side of the light source for concentrating both visible and ultra-violet light into a beam, and a diffusing light transmitting enclosure for the light source, said enclosure being spaced from the reflector and having an opening to admit the light source, the enclosure being substantially opaque to ultra-violet light of a biologically effective nature and having a window opposite the said opening to pass the light beam formed by the reflector, the enclosure having a portion thereof arranged to intercept visible light emitted from the light source other than that which is transmitted through the window and scatter the light in the enclosure to render the enclosure luminous.

20. In combination, an ultra-violet light source emitting both visible and ultra-violet light, an opaque reflector about the light source, the reflector having a surface for effecting spread reflection and being shaped to concentrate the dominating reflected rays of both visible and ultra-violet light into a beam, and a light transmitting enclosure for the light source and reflector, the enclosure being substantially opaque to ultra-violet light of a biologically effective nature and having a window to pass the light beam, an opaque reflecting cup about the side of the light source adjacent the window to prevent direct light not intercepted by the reflector from falling on the walls of the enclosure, the walls of the enclosure beyond the mouth of the reflector intercepting the less intense stray light produced by spread reflection of the reflector and scattering it in the enclosure whereby the enclosure is rendered luminous.

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