

July 14, 1953

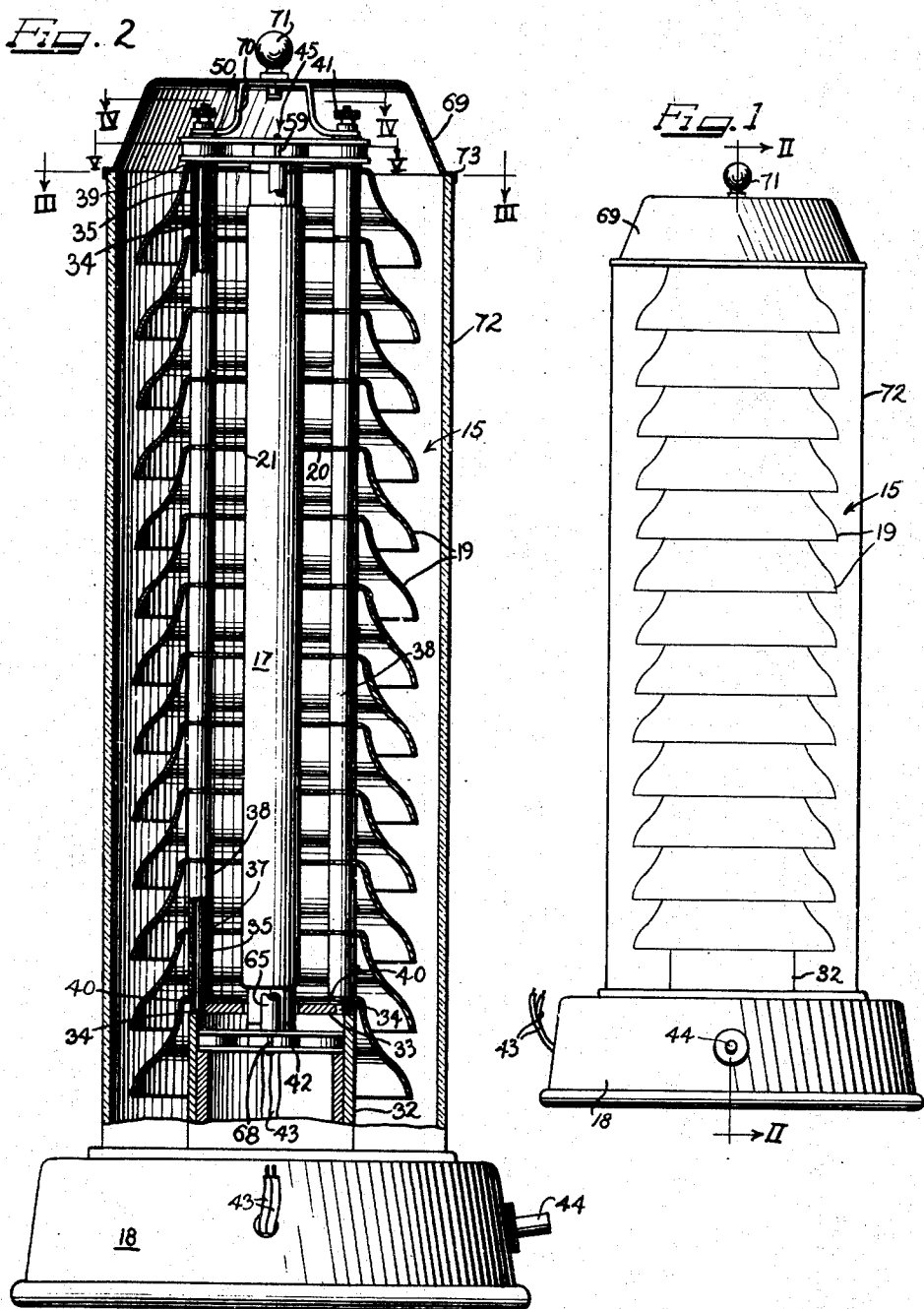
M. C. THORSTENSEN

2,645,709

ORNAMENTAL FLUORESCENT STAND LAMP

Filed April 29, 1947

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3

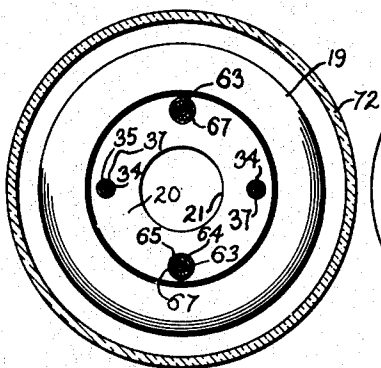


Fig. 4

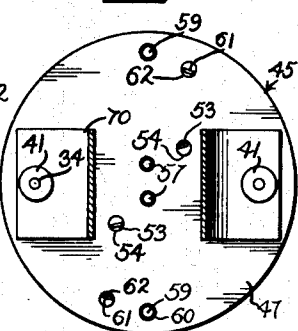


Fig. 5

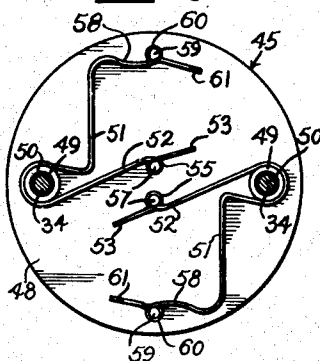


Fig. 6

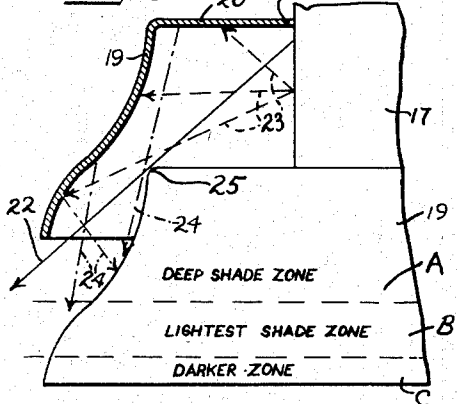


Fig. 7

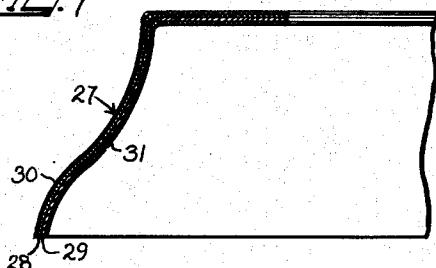


Fig. 8

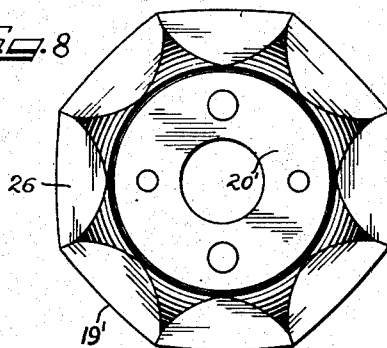
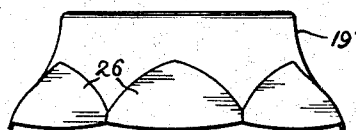


Fig. 9



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UNITED STATES PATENT OFFICE

2,645,709

ORNAMENTAL FLUORESCENT STAND LAMP

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1 Claim. (Cl. 240—51.11)

1

This invention relates to improvements in ornamental illumination and is more particularly concerned with the attainment of novel color effects in lighting fixtures.

An important object of the present invention is to provide for the attainment of novel color effects through a unique utilization of reflected light.

Another object of the invention is to attain varying color tones in a decorative lighting fixture having but a single illumination source.

Still another object of the invention is to provide a new and improved lighting fixture with which highly attractive ornamental color effects are obtained.

It is also an object of the invention to provide improved structures in electrical lighting fixtures.

A further object of the invention is to provide novel lamp shade or reflector structure for the attainment of novel ornamental illumination effects.

Yet another object of the invention resides in the provision of a novel method of utilizing reflected light for ornamental illumination.

Other objects, features and advantages of the present invention will be readily apparent from the following detailed description of certain embodiments thereof taken in connection with the accompanying two sheets of drawings, in which:

Figure 1 is an elevational view of an exemplary lighting fixture embodying features of the invention;

Figure 2 is an enlarged vertical sectional view taken substantially on the line II—II of Figure 1;

Figure 3 is a horizontal sectional view taken substantially on the line III—III of Figure 2;

Figure 4 is a horizontal sectional view taken substantially on the line IV—IV of Figure 2;

Figure 5 is a horizontal sectional detail view taken substantially on the line V—V of Figure 2;

Figure 6 is an enlarged fragmentary vertical sectional view of a portion of the lamp shade structure of Figures 1 and 2, schematically explanatory of the manner in which certain novel ornamental lighting effects are attained;

Figure 7 is a fragmentary vertical sectional view through a modified form of reflector structure;

Figure 8 is a top plan view of a further modification in the reflector structure; and

Figure 9 is a side elevational view of the reflector structure shown in Figure 8.

According to the present invention, highly ornamental effects are attained by shielding a source of illumination from normal line of vision

2

and reflecting light from said source onto visible surfaces or surface areas affording certain predetermined visual effect under the reflected illumination. Several variants of the method afford different visual effects.

By directing white light against a colored surface and reflecting the illuminated color of such surface against a white reflecting surface contoured to receive the reflected colored illumination in zones of varying intensity, strikingly attractive color values, tones and shades are attained.

Variegated color effects can be obtained by providing a plurality of visible reflecting surfaces and companion hidden colored reflecting surfaces of various respective colors so that in one lighting fixture rainbow color effects or other desired combination of color effects can be secured as desired.

In a highly desirable arrangement, soft direct illumination is secured while the only visible light is that provided by the reflecting surfaces in novel color effects. A striking aspect of this arrangement is that direct white light illumination thus provided is unaffected by any of the color from the reflecting colored surfaces and the visible reflected light does not appreciably reflect from the surfaces to which it is reflected in creating the ornamental color effects. This makes such an arrangement especially desirable for use in table lamps or the like.

Where the visible reflecting surfaces are coated with a fluorescent material which is self-luminous in the dark, rather striking effects are obtained by reflecting colors thereonto when the source of illumination is turned on.

A further variant using a fluorescent coated visible reflecting surface attains from reflecting colored light from a colored illumination source onto the visible fluorescent coated surface.

By coating the visible reflecting surface with a material which will absorb the color of a colored light source, a white or glowing reflection can be obtained from the visible reflecting surface while, where desired, colored direct illumination from the hidden light source may be secured.

In the attainment of the highly decorative, even spectacularly attractive, ornamental reflected color effects, it is important that the visible decorative reflecting surfaces be shielded from the direct source of illumination since that apparently operates to wipe out, or at least to a large extent, negative the reflected illumination of such visible reflecting surfaces and thus sub-

3

stantially, if not altogether, destroying the ornamental value of the visible reflecting surfaces.

As shown in Figures 1 and 2, the invention is applied to a table lamp comprising an ornamental shade assembly 15 disposed about an illumination source such as a fluorescent electrical tube 17, and supported upon a suitable base 18.

The lamp shade assembly 15 comprises a plurality of generally bell or cup-shaped reflector units 19, which may be made from any suitable material such as thin sheet metal, plastic or the like. Each of the reflector units 19 has a base wall 20 formed with an axial aperture 21 of appropriate diameter to receive the fluorescent tube 17 freely in coaxial relation. The over-all diameter of the base 20 is substantially greater than the diameter of the fluorescent tube 17 so that the side wall of the reflector 19 is spaced a substantial radial distance from the fluorescent tube.

By having the side walls of the reflector units 19 flared and the base portions 20 of the reflectors in stacked assembly spaced apart less than the side wall width, the reflectors being disposed in coaxial generally nested relation, the only light that can escape from within the stack will be obliquely generally parallel with the flare of the reflectors and entirely out of the line of normal vision. In other words, the generally overlapping relation of the several companion reflectors shields the illumination source from the direct line of vision and confines any direct illumination to relatively narrow flaring limits from the narrow annular slots provided between the stacked, spaced reflectors. This is indicated by the arrow 22 in Figure 6. Thus, where the reflectors 19 are arranged inverted, as shown, a soft direct illumination from the light source 17 prevails in a limited area surrounding the lamp, the rings of light from the slots between each of the companion reflectors diffusing into a common area of illumination. Similar results are obtained where the reflectors are directed upwardly, as in a ceiling light. It will also be readily apparent that this sort of reflector arrangement is readily adaptable for wall brackets, corner brackets, and the like.

Ornamental color effects are attained on the exposed visible portions of the reflectors 19 by reflecting light from the interior of the respective reflectors onto the visible exterior of the companion internested reflectors. To this end, the inner surface of the reflectors may be coated with any suitable material such as enamel or the like having the particular color desired such as red, blue, yellow or any combination or variant thereof. Hence, light from the light source 17 impinging the interior of any one of the reflectors 19, as indicated by the directional arrows 23 in Figure 6, will reflect the color of the interior surface against the exterior surface of the companion internested reflector 19 exposed thereto, as indicated by the directional arrows 24.

Since the reflected, colored light is of less intensity than the direct white light from the illumination source 17, means are provided for shielding the visible exterior surfaces of the reflectors 19 from the direct light while exposing such surfaces to the reflected colored light. Thereby the colored light is permitted full visual effect value and will not be, so to speak, wiped out by the more intense direct light from the illumination source. Herein, such means comprises a shoulder formation 25 at the juncture

4

of the side wall portion of each of the reflectors 19 and the base portion 20 thereof and from which the side wall portion flares at an angle generally greater than any direct line drawn from the shoulder to any effective part of the light source fluorescent tube 17. Hence, in the absence of any reflected light upon the exposed side wall exterior surfaces of the reflectors 19, the same would remain dark in the presence of the illumination afforded by the tube 17. Therefore, the reflected colored light from the interior of the companion partially surrounding reflector 19 is fully visible on the exposed surface of the reflector against which it impinges. The visual effect where the exposed surfaces are of a naturally light or white color is one of a colored glow of unusual warmth and attractiveness. As will be readily appreciated many different or multi-colored effects can be obtained by having different colors on the inner surfaces of different ones of the reflectors 19. This affords many possibilities for different artistic arrangements.

By preference the visible surfaces of the reflectors 19 are contoured to afford even more pleasing effect. In the form shown in Figure 6, the visible surface is of generally ogee curvature in cross-section to provide a generally concave annular section or zone, identified by the letter A, merging with a generally convex annular section or zone B, running into a substantially axially extending terminal section C. Through this arrangement the zone A receives a heavy concentration of the reflected colored light and thus produces a relatively deep shade band of the reflected colored light which gradually thins out to a noticeably lighter shade in the zone provided by the convex section B where the concentration of reflected colored light is substantially less but is nevertheless high-lighted by the reflected colored light. Since the terminal section C turns substantially away from the range of the reflected colored light, the reflected colored light rays impinging thereon rapidly thin out to substantial darkness, depending, of course, upon the particular angle of the terminal section C. As a result, a strikingly attractive arrangement of bands of varying color tones is attained throughout the reflector assembly.

Various visual effects can be obtained by appropriate variations in the visible reflecting surfaces of the respective reflectors. For example, having reference to Figures 8 and 9, a reflector structure 19', in all essential respects the same as the reflectors 19, may be provided having a uniform series of connecting flats 26 extending from the side wall free edge through the several contour zones or sections. Thereby colored light reflected onto the outer visible surface of the reflector impinging upon the flat areas 26 interrupts the annular colored tone bands with relatively solid-shade areas of the color affording a spectacular contrast. This particular arrangement in a lamp shade of the type shown in Figures 1 and 2, gives a substantially oriental, pagoda-like effect when the lamp is illuminated.

Where the visible surfaces of the reflectors are covered with a luminous coating, such as a coating containing a radium or radioactive substance, the lamp shade is visible in the dark, and when the light is turned on reflected colored light affords similar color tone effects as hereinabove described, with the difference, of course, that a more luminous appearance is obtained and the terminal zone C will not appear as dark

as where such surface area is merely painted or enameled white.

On the other hand, where the illumination source 17 produces a colored light for the purpose of affording a colored light in the area of direct illumination therefrom, and the exposed, visible surfaces of the reflectors are coated with a material or substance which will absorb the color predominating in the light reflected thereonto, a striking light or white appearance will be afforded for the visible portions of the lamp shade.

Since the coating of the inside of the reflectors differently than the outside entails several handlings of each reflector in the finishing thereof, it may be preferred to make the reflectors of a composite construction, such as shown in Figure 7. Therein a reflector unit 27 is made as an assembly of complementary closely nested outer and inner sections or shells 28 and 29, respectively. In this way, the outer shell 28 can be coated with an appropriate outer coating 30 by the most inexpensive or desirable manufacturing expedient to attain the particular effect desired, such as by a surface treatment or by dipping the same in paint or enamel, or the like. The inner shell 29 can be similarly treated to provide it with an inner colored coating 31. Thereby each of the shells requires but a single coating treatment and when the shells are assembled a single composite reflector results in which the outer surface is of one color and the inner surface is of another color. The shells 28 and 29 may be formed from quite thin stampings which in the composite structure affords the strength desired in the completed unit.

Although it is to be understood that the reflectors, or rather assemblies of reflectors, are susceptible of many different lighting fixture arrangements, such as wall fixtures, corner fixtures, overhead fixtures, and the like, an important utility thereof will be in table lamps, such as shown in Figures 1 and 2. In the particular construction shown, the base 18 is provided with a tubular axial post or standard 32 to the upper end of which is secured in any suitable fashion, means such as a supporting plate 33 at diametrically opposite sides of which are secured respective vertical guide and locating rods 34. These rods 34 serve as retaining guides for the shade assembly 15 which is preferably secured together into a self-contained unit by means such as respective tubes 35 extending through appropriate aligned apertures 37 in the base portions 20 of the reflectors, the tubes being surrounded by spacer sleeves 38 and having the opposite ends thereof turned over as indicated at 39 and 40 at the top and bottom thereof, respectively. Thereby the entire series of reflectors 19 is secured into a self-contained shade assembly which is adapted to be removably slid into position on the supporting base by registering the tubes 37 with the rods 34.

Thereupon the shade unit 15 is adapted to be held against sliding off of the rods 34, should the lamp be tipped over or the like, by securing the same as by means of thumb nuts 41, threaded onto the upper ends of the rods 34 where they project above the shade unit.

By reason of the registering axial apertures 21 in the reflectors 19, and which preferably are dimensioned to receive the fluorescent tube 17 with ample clearance to remain out of contact therewith, the tube is adapted to be mounted in the assembly or replaced as required, there being

appropriate electrical contact means provided for the tube. Herein such contact means comprise a fixed base contact assembly 42 supported within the base standard 32 and having appropriate electrical leads 43 secured thereto and, if desired, extending from the base 18, as shown, for connection to a source of electricity. An appropriate electrical switch is connected in the electrical circuit and adapted to be operated, as by means of a push button 44 located conveniently on the base 18. The base contact unit 42 is preferably of a character to receive contact points at the associated lower end of the fluorescent tube 17 slidably as is customary for ready replacement of the tube.

At the upper end of the shade unit 15, an appropriate separable electrical contact device 45 is provided which, cooperating with the lower contact device 42 completes an electrical circuit for the fluorescent tube 17, and serves to maintain the tube 17 in centered relation in the assembly.

Having reference particularly to Figures 4 and 5, the contact device 45 comprises a spaced pair of coaxially disposed disks 47 and 48 made from any suitable dielectric material held in spaced relation by spacer sleeves 49 disposed at diametrically opposite sides and held in assembly with the disks 47 and 48 by means such as grommets 50. Thereby assembly apertures are provided through the sleeve portions of the grommets 50 for assembly of the contact assembly device 45 upon the retaining and guide rods 34.

The spacer sleeves 49 are formed from a dielectric material and serve as retainers for respective identical yieldable contact elements 51 which are preferably in the form of electrically conductive metal leaf springs formed to loop about the respective spacer sleeves 49. One end of each of the contact springs 51, identified at 52, is disposed near the center of the assembly and has a laterally projecting integral tab 53 which is received in an appropriate aperture 54 in the disk 47 for limited swinging movement of the associated contact arm 52. Through this arrangement the contact arm 52 is adapted to swing under normal resilient tension into partial overlying relation to a contact-terminal-receiving aperture 55 in the lower disk 48 receptive of one of the upper contact terminals of the fluorescent tube 17 and identified at 57. Through this arrangement, the contact arm 52 works under resilient tension over into partial overlying relation to the terminal aperture 55 to the extent permitted by the limit aperture 54 within which the limit tab 53 is inserted. After the fluorescent tube 17 has been inserted down through the shade unit 15 with the lower contact terminals thereof assembled in electrical contact with the contact device 42, the contact device 45 is placed thereover by pushing the same down with the upper contact terminals 57 projecting through the clearance apertures 55 until the device 45 is fully seated and the contact terminals have made thorough electrical sliding contact with the resilient contact arms 52.

The remaining arms of the contact springs 51, and identified at 58, are formed to make resilient tensioned contact with suitable electrical contact points 59 projecting up through suitable clearance apertures 60 adjacent to respective diametrically opposite marginal points of the lower disk 48 for completing the electrical energizing circuit for the fluorescent tube 17. Laterally projecting limit tabs 61 of the respective con-

tact arms 58 extend into limit apertures 62 in the disk 47 and are thereby confined to limited tensioned swinging into partially overlying contact-making relation to the respective terminal apertures 60.

The electrical contact terminals 59 form a part of contact bars or rods 63 (Figure 3) encased in tubular insulations 64 and enclosed in respective tubes 65 of rigid material assembled with the shade unit 15 by extending through appropriate apertures 57 formed in the base portions 20 of the reflectors 19. At their lower ends, the contact bars or rods 63 carry respective lower terminals 68 (Figure 2), which make separable electrical contact with the contact device 42.

It will be apparent that the upper contact device 45 may be held in the assembly by means of the thumb nuts 41 in the fully assembled relationship of the unit.

A protective and ornamental shield or hood 69 may be provided for the top of the lamp and is adapted to be removably supported in concentric relation by means such as a bridging bracket 70 secured in place by the thumb nuts 41 on top of the electrical connector device 45. Any suitable means such as a screw knob 71 may be utilized to secure the hood 69 to the supporting bracket 70.

Since it may be desirable to protect the shade unit 15 from dust or dirt, and especially against handling by curious persons, and further to protect the exposed reflecting surfaces against damage, a transparent casing 72 may be provided. This casing 72 may be a transparent plastic or glass tube supported at its lower end upon the base 18 and held in concentric assembled relation by an angular marginal flange 73 on the hood 69. It has been found that in order to avoid interference with the ornamental effect of the reflecting exposed surfaces of the reflectors 19, the transparent protective casing 72 must be spaced a sufficient distance therefrom in order to avoid the light reflected from the opposing inner surface of the casing from tending to blank out the color effects on the visible reflecting surfaces of the reflectors.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

In combination in a lamp structure for ornamental illumination effects, a base, a plurality of spaced supporting and guide rods extending upwardly from said base, a vertical series of inverted cup-shaped flaring sided reflectors having inner and outer reflecting surfaces, said reflectors having aligned central apertures for receiving a fluorescent lamp therethrough and also having aligned apertures through which said rods pass, a series of spacer sleeves encircling said rods and disposed in spacing relation between said reflectors and maintaining the reflectors with the respective lower margins thereof adjacent to but in laterally spaced relation to the tops of the immediately subjacent reflector in each instance, an electrical connector for said lamp supported by the base and engageable by the terminals of the lower end of a fluorescent lamp extending through the central apertures of the reflectors to effect an electrical connection with such terminals, an electrical connector for said lamp mounted above the uppermost of said reflectors on the upper ends of said rods, and electrical connections extending from the connector on the base upwardly through the upper portions of said reflectors and into electrical connection with said upper connector.

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