Sept. 11, 1934. J. F. LIVERS 1,973,086

LIGHTING FIXTURE

Filed Jan. 30, 1932

Fig. 2.

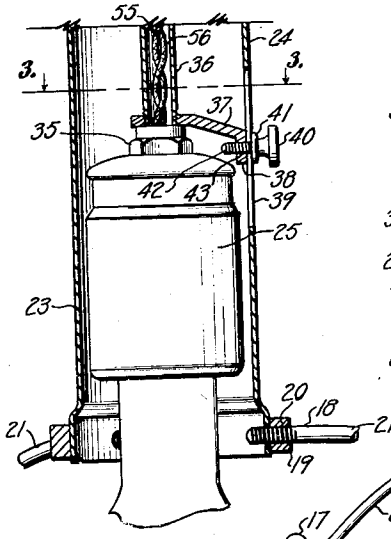


Fig. 1.

Fig. 5.

Fig. 4.

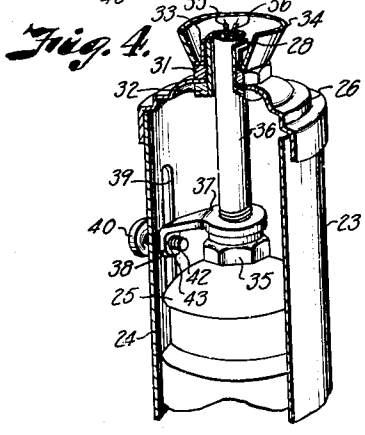
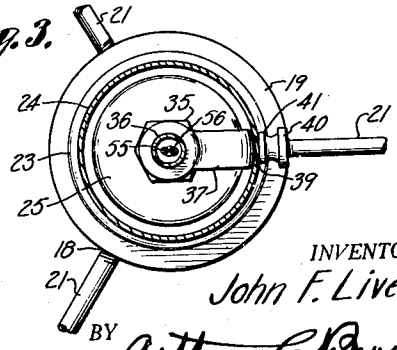


Fig. 3.



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LIGHTING FIXTURE

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2 Claims. (Cl. 240—78)

This invention relates to lighting fixtures and more particularly to those of that character adapted to distribute both direct and indirect light, and has for its principal object to selectively regulate the ratio of the direct and indirect light volumes to suit the various lighting requirements for which the fixture is desired.

Another important object of the invention is to control reflection and diffusion of the direct lighting to minimize the exposed brilliant surfaces tending to produce glare.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawing, wherein:

Fig. 1 is a vertical section through a light fixture constructed in accordance with my invention.

Fig. 2 is an enlarged detail section of the socket-supporting assembly illustrating the adjustment means for regulating the ratio of the direct and indirect light rays.

Fig. 3 is a horizontal section on the line 3—3, Fig. 2.

Fig. 4 is a perspective view of the socket-supporting housing.

Fig. 5 is a fragmentary section of a portion of the reflectors illustrating the application of an accessory element for converting the fixture to one which simply distributes indirect light.

Referring more in detail to the drawing:

1 designates a lighting fixture including a circular band 2 which may be formed of drawn or spun metal to provide the peripheral wall of a housing 3 for enclosing and supporting oppositely facing reflectors 4 and 5.

The reflector 4 is arranged to reflect and distribute direct light from a light source in a downward direction. In the form illustrated it assumes a truncated cone-shape having its lower base edge 6 preferably integrally connected with the lower rim of the band 2, while its upper edge 7 terminates in an annular flange 8 encircling a passageway 9 through which the light source, such as a light bulb 10, may be adjustably extended as later described.

The reflector 5 is arranged to reflect and distribute indirect light and may comprise an annular, reversely curved disk 11 extending upwardly and outwardly toward the upper rim of the band 2. The inner and outer edges of the disk are preferably flanged to engage with the flange 8 on the reflector 4, and in an annular seat 12 formed in the upper rim of the band 2.

In order that the upper reflector may be anchored in position in the housing, the band 2 is provided intermediate its width with an annular offset shoulder portion 13 having openings 14 through which bolts 15 are projected to extend through aligning openings 16 in the upper reflector rim for mounting clamping nuts 17. From the offset 13 the band is preferably provided with a series of upwardly and outwardly extending mouldings finally terminating in the annular seat 12 to enhance the appearance of the fixture.

The bolts 15 may also form anchoring means for securing a spider 18 by which the housing may be suspended from a chain or the like in the manner of a chandelier, as now described. The spider includes a ring 19 having threaded openings 20 for mounting the threaded inner ends of the spider arms 21. The outer ends of the arms 21 extend radially from the ring and terminate in eyes 22 engaging over the protruding ends of the bolts so that they may be clamped between the nuts 17 and the upper face of the reflector rim when the parts are assembled. The spider arms are preferably arched upwardly to space the ring 19 a sufficient distance above the upper reflector to amply accommodate the length of the bulb therebetween. Fixed within the spider ring is a socket housing 23 which forms an important feature of the present invention, as now described.

The socket housing includes a tube 24 of sufficient length to house a lamp socket 25 and give ample room for longitudinal adjustment of the socket therein for positioning the bulb relatively to the reflectors. To simplify the construction, the socket housing may be effectively anchored to the ring by means of the ends of the spider arms which may extend through aligning openings in the tube. Since the outer ends of the arms are fastened, it is readily apparent that the housing cannot be separated from the ring without disassembling the entire fixture, because it is necessary to rotate the arms to disengage the ends thereof from the openings in the tube.

The upper end of the tube is closed by a cap member 26 having a central opening 27 therein to mount a nipple 28 carrying an eye member 29 at its upper end to which a chain or the like 30 is secured for suspending the fixture. The lower end of the nipple may be secured to the cap by nuts 31 and 32 threaded on the end thereof and engaging the upper and lower faces of the cap, as shown. If desired, the nipple may be enclosed in a suitable casing tube 33 and an ornamental fitting 34 to enhance the appearance of the fixture.

Fixed on the upper end of the socket 25, by a nut 35, is a tube 36 having a suitable diameter

to slide freely within the nipple, and fixed thereto adjacent the nut 35 is a radially extending arm 37 having a depending ear 38 adapted to slidably engage the inner face of the socket housing when the socket is located centrally thereof.

Formed in the side wall of the housing and extending longitudinally thereof in line with the arm 37 is a slot 39 of a length equal to the required adjustment of the light bulb relative to the reflectors, and in which a clamping screw 40 may operate to anchor the arm. The clamping screw 40 has a head 41 adapted to engage the outer face of the housing and is provided with a threaded shank 42 threaded into an opening 43 in the ear 38.

It is thus apparent that the socket may be adjustably supported within the housing by the arm 37 and may be retained in adjusted position by simply turning the screw to draw the arm tight against the inner face of the housing adjacent the side edges of the slot.

In order that the direct light rays projected downwardly by the reflector 4 may be diffused, I provide a relatively flat glass diffusion disk 44 closing the lower end of the housing, as now described.

It will be noted from the drawing that this disk is extremely flat and is provided with a number of relatively shallow concentric moulding rings 45 to break up the plane surface of the glass without greatly increasing its thickness. These moulding rings also tend to strengthen and reinforce the glass so that it may not be easily broken. The outer edge of the disk extends beyond the reflector housing and is provided with an upwardly extending flange 46 overlapping the lower edge of the band 2 and provided with an annular, inwardly facing groove 47 for receiving the ends of a plurality of spring clips 48 located about the periphery of the housing, for example there may be three in number, two of which are fixed to the reflector and the other is preferably in the form of a spring latch fixed to the inner wall of the band 2 and having its lower end bent laterally and provided with a curved head 49 projecting through an opening 50 in the reflector to snap into the groove 47. In order to disengage the latch from the groove in the glass, a screw 51 is provided having a threaded shank 52 projecting through an opening 53 in the band and threaded into a nut 54 carried by the clip, as shown in Fig. 1. Thus by turning a single screw it is possible to free the disk for removal from the reflector housing.

The wiring for the fixture may include flexible leads 55 and 56 threaded through the links of the chain and through the nipple 28 and tube 36 to connect with the light socket 25, a sufficient amount of slack being provided in the leads to permit adjustment of the bulb as now described.

Assuming that the lighting fixture is constructed and assembled as described, the light bulb may be focused by loosening the thumb screw 40 and sliding it up or down the slot 39 until a point is reached effecting the proper ratio of direct and indirect light distributed by the respective reflectors, at which point the thumb screw may be retightened. Upon movement of the thumb screw in the slot, the bulb socket 25 is shifted vertically of its housing by means of the arm 37. This movement of the socket, of course, moves the bulb 10 through the passageway 9 in the reflectors to position the filament, the normal position of which is, of course, neutral; that is, the bulb filament is positioned in a plane passing horizontally between the reflectors so that the light is distributed equally in both directions. In this position the thumb screw is located centrally of the length of the slot and gives an indication of the ratio of the direct and indirect light volumes.

As the lamp is lowered below neutral it is readily apparent that the direct light output is increased and the indirect light is correspondingly reduced. When the lamp is raised above neutral the reverse conditions occur and the indirect light exceeds the direct light output.

The direct lighting, while it is concentrated, is diffused and softened by the diffusing disk and the indirect lighting is widely dispersed upwardly over a large area so that there are no glare spots normally visible that will tend to produce eye irritation. When the fixture is properly hung and adjusted, the diffusing disk, being relatively flat, exposes a comparatively small area of brilliant surface when viewed at an angle unless the observer is directly below the fixture, and looking up it is impossible to see the entire area of brilliancy.

In Fig. 5 is illustrated an accessory member 57 for closing the passageway through the reflectors to convert the fixture to disperse only the indirect light. The member 57 consists of a concavo-convex member that may be constructed of moulded glass or spun metal, and is insertable in the opening and provided with a peripheral flange 58 adapted to overlap the inner edge of the upper reflector. The member may also be provided with a series of openings 59 to allow escape of sufficient light to slightly illuminate the glass 44. When constructed of glass, these openings may be omitted.

What I claim and desire to secure by Letters Patent is:—

1. In a lighting fixture of the character described including a housing, oppositely arranged reflectors in the housing having a common central opening, a socket housing having a cylindrical guide wall, spider arms fixed to the lower end of the socket housing for suspending the reflector housing in axial alignment with the socket housing, a nipple fixed to the upper end of the socket housing for suspending the lighting fixture, a socket member slidable within the socket housing whereby the cylindrical guide wall of the socket housing retains the socket member in axial alignment with the opening in the reflectors, a light bulb carried by the socket member and projecting through said central opening, a tube in the socket member slidable within the nipple and cooperating with the socket housing to retain the light bulb in concentric relation with the central opening in the reflectors, a supporting arm carried by the socket member, and means for adjustably engaging the arm with the cylindrical guide wall of the socket housing to retain the light bulb in adjusted relation with said reflectors whereby the ratio of light rays reflected from the respective reflectors is varied to suit the lighting requirements of a room in which the fixture is installed.

2. In a lighting fixture of the character described including a housing, oppositely arranged reflectors in the housing having a common central opening, a socket housing having a cylindrical guide wall provided with a slot, a spider fixed to the lower end of the socket housing for suspending the reflector housing in axial alignment with the socket housing, means fixed to the upper end of the socket housing for suspending the

lighting fixture, a socket member slidable within the socket housing whereby the cylindrical guide wall of the socket housing retains the socket member in axial alignment with the opening in the reflectors, a light bulb carried by the socket member in axial alignment with said central opening, a supporting arm carried by the socket member and projecting toward the slot in the socket housing, and a screw extending through the slot and engaged with the supporting arm for adjustably anchoring the arm to the cylindrical guide wall of the socket housing to retain the light bulb in adjusted relation with said reflectors whereby the ratio of light rays reflected from the respective reflectors is varied to suit the lighting requirements of a room in which the fixture is installed.

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