May 16, 1944.

L. SCHEPMOES

FLUORESCENT LIGHTING FIXTURE

Filed May 6, 1942

2,348,930

2 Sheets-Sheet 2

INVENTOR

Lindsley Scheepmoes

ATTORNEYS

Blair, Cutler & Hayward

ATTORNEYS
This invention relates to lighting fixtures and more particularly to a lighting fixture for a fluorescent tube.

One of the objects of this invention is to provide a lighting fixture characterized by simplicity and durability and which may be readily manufactured from inexpensive materials. Another object is to provide a lighting fixture, the illuminating portion of which is self-contained, and which may be mounted or demounted from a ceiling or the like with a minimum of assembly or disassembly operations. Another object is to provide a lighting fixture the several parts of which may be quickly assembled. Another object is to provide a fixture for a fluorescent tube which is capable of maximum diffusion without glare. Other objects will be in part patent apparent, and in part pointed out hereinafter.

The invention accordingly consists in features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the drawings, wherein there is shown one embodiment of my invention,

Figure 1 is a perspective view of the fixture;

Figure 2 is an enlarged sectional elevation taken along the line 2—2 of Figure 1;

Figure 3 is an enlarged perspective view of a supporting bracket which forms a portion of the fixture; and,

Figure 4 is a fragmentary elevation, partly in section, taken along the line 4—4 of Figure 2.

Similar reference characters refer to similar parts throughout the various views of the drawings.

The ever increasing use of fluorescent lighting has given rise to numerous problems in the provision of suitable fixtures within which the tubes can be installed so as to take full advantage of the numerous beneficial advantages of fluorescent lighting. While fluorescent light tubes are obtainable in various sizes, their length almost always substantially exceeds their diameter, and thus require various auxiliary equipment, starters and ballast in order to operate. Thus, the length of the fluorescent tubes, together with their regulating apparatus, must be accommodated by the fixture while, at the same time, the fixture should be of such character as to assure maximum lighting efficiency. Aesthetic problems also arise in connection with fixtures for fluorescent lighting by reason of the length of the tubes and regulating apparatus therefor.

It is accordingly another object of this invention to provide a fixture for fluorescent light tubes which solves the above-mentioned problems in a thoroughly practical and efficient manner.

Referring first to Figure 1 of the drawings, my fixture is generally indicated at 10, and preferably comprises an elongated cylindrical unit which may be suspended as by supports, generally indicated at 11 and 12, from suitable ceiling brackets 13 and 14 (Figure 4) preferably concealed by a canopy 15 (Figure 1). Cylindrical fixture 10 is closed at its ends by end caps, and contains not only the fluorescent light tube or tubes, but also suitable reflectors together with the usual starters and regulating apparatus and ballast for the tubes, all as will be described in detail hereinafter.

As is more clearly shown in Figure 4, cylindrical fixture 10 includes an arcurate elongated top plate 16 (see also Figure 2), the opposite longitudinal edges of which are provided, respectively, with inturned flanges 16a and 16b, the purpose of which will be described hereinafter. Top plate 16 (Figure 4) is drilled at spaced points along its top to receive supports 11 and 12, only one of which will be described, as both are alike.

Support 11 includes a pipe 17, threaded at its opposite ends, and surrounded by a suitable decorative tubing 11a which also acts as a spacer between ceiling bracket 13 and the top of top plate 15. The lower threaded end of pipe 17 extends through one of the drilled portions of the top plate, and also through a hole in an arcuate washer 18, and has threaded on its end a nut 19. The upper end of pipe 17 is threaded into ceiling bracket 13 so that decorative tubing 11a is clamped between the bracket and the top of top plate 16, thus holding the two in proper predetermined spaced relationship. Support 12 is similarly secured between top plate 16 and ceiling bracket 14. The two ceiling brackets are provided with suitable legs or flanges which may be secured to the ceiling as by screws 20. Preferably one of brackets 12 and 14 is secured to the ceiling adjacent a conventional outlet box (not shown), and, as noted above, the brackets are concealed by canopy 15, the exterior surface of which may be suitably decorated so as to harmonize with the decorative tubing 11a and the cylindrical fixture 10. The canopy is held in place against the ceiling by washers 21 and 22, respectively, encircling supports 11 and 12 and held in proper position against the bottom of canopy 15 as by set screws 21a and 22a. It may thus be seen that cylindrical fixture 10 is firmly...
secured to the ceiling, but in such a manner that it may readily be detached therefrom for purposes of replacement or repair. Furthermore, through the provision of brackets 15 and 16 in conjunction with 10 and the installation through the holes through which the outlet box in the ceiling, unsuitability is avoided and installation may be effected without damage to the ceiling. Inasmuch as supports 11 and 12 are hollow, either may advantageously be utilized as a means through which the leads from the outlet box may extend for connection to the regulating apparatus of the fixture which is housed within cylindrical fixture 10, as will be described.

As each of the opposite ends of top plate 16 is secured a supporting bracket generally indicated at 23 which, as shown in Figure 3, includes a curved top 24, the radius of curvature of which is the same as the radius of curvature of arcuate top plate 16 (Figure 2). A web 25 is integral with top 24 and extends at right angles therefrom, the web being held rigid with respect to top 24 by a reinforcing strut 26 integral with both. Bracket 23 also includes a pair of downwardly and inwardly extending legs 27 and 28 which are preferably integral with both the top support 24 and web 25 and which include an angle, preferably less than 180°. Bracket 23 includes a third supporting leg 29 which, as is more clearly shown in Figure 4, extends downwardly from top 24 and bows outwardly from web 28. Leg 29 is provided at its bottom end with a drilled and threaded boss 30 which is preferably coaxial with cylindrical fixture 10. The bracket at the other end of fixture 10, while not shown, is identical to bracket 23, and is accordingly provided with similar supporting portions. It may thus be seen that bracket 23 is a unit which may be cast in integral form from suitable metal so as to have ample strength to support various portions of the fixture as well as reinforce arcuate top plate 16, as will be described below.

Bracket 23 (Figure 2) is secured to top plate 16 by a pair of rivets 31 and 32 which extend through the bracket top 24 and top plate 16 on opposite sides of strut 26, thus to firmly secure the bracket to the top plate. The length of bracket top 24 is slightly less than the width of top plate 16 to provide respective spaces between top plate flanges 16a and 16b and the adjacent edges of bracket top support 24, to accommodate, respectively, the upper edges of a trough-shaped supporting and reflecting member, generally indicated at 33.

As shown in Figure 2, the trough-shaped reflector 33 preferably is shaped to provide elongated planar surfaces 33a, 33b, 33c, 33d and 33e, the first and last of which are respectively secured as by screws 34 to legs 27 and 28 of the brackets 23, so as to form with top plate 16 an elongated enclosure 35. The upper longitudinal edges of surfaces 33a and 33c of the member 33 preferably lie flush against top plate 16, and accordingly lie within the spaces formed by the top plate flanges 16a and 16b, and the adjacent sides of bracket 23. It accordingly follows that these upper edges of surfaces 33a and 33c of the reflector member form with top plate flanges 16a and 16b, respectively, elongated parallel narrow channels or recesses 36 and 37, the purpose of which will be explained below.

The regulating apparatus and ballast 40 for the fluorescent lamps described below is horizontally disposed within enclosure 35 and rests on the upper edges of planar surfaces 33b and 33d of the trough-shaped reflector 33, the case for this apparatus being held in this position as by screws 38 which extend upwardly through surface 33c of the reflector through the bottom of the case. It will thus appear that the regulating apparatus and ballast 40 is completely housed within enclosure 35 and not only improves the appearance of surfaces 33b and 33d of the trough-shaped reflector 33, but extends to the bottom of reflector member 33 from brackets 23.

Still referring to Figure 2, surfaces 33b, 33c and 33d of reflector member 33 have secured at the opposite ends thereof fluorescent light tube supporting sockets 41 which extend downwardly from the surfaces so as to support fluorescent light tubes 42, 43 and 44. Preferably a V-shaped refinishing and reflecting member 45 is secured, as by welding, to the bottom of reflector member 33, and accordingly lies between tubes 42 and 44 to diffuse more efficiently the light rays emanating from the tubes. As shown in the example, the bottom surface of reflector member 33 and the outer surfaces of V-shaped reflector 45 are polished or enameled so as to be highly reflectory. Furthermore, the left and right hand sockets 41, as shown in Figure 3, are spaced sufficiently from reflector member surfaces 33b and 33d so that tubes 42 and 44 are not shielded, respectively, by the adjoining edges of surfaces 33c, 33b and 33d, 33e. By so arranging the light tubes, a substantial amount of light may be directed upwardly of the fixture to provide ceiling illumination. Surfaces 33a and 33e are also presented to light rays emitted by light tubes 42 and 44 so as to produce relatively dark areas observed through shade 46.

As shown in Figure 10, this cylinder formed by the figure 10 is preferably cylindrical in shape, and is accordingly provided with an arcuate shade 46 formed preferably of a translucent, resilient plastic material having a radius of curvature the same as that of top plate 16, so that when the shade is installed it, together with the top plate, forms a true cylinder having a translucent area in excess of 250°, thus assuring general illumination of all portions of the space in which the fixture is mounted. The upper longitudinal edges of shade 46 are provided with turned lips 47 and 48 which, when the shade is installed, are disposed respectively in the elongated recesses or channels 36 and 37, and which interfit with top plate flanges 16a and 16b for support thereby. The shade may be detached from or detached from the top plate by pressing its sides toward one another so as to distort the shade sufficiently to permit withdrawal of its lips 47 and 48 from behind top plate flanges 16a and 16b, respectively. When so distorted, the shade may be withdrawn from recesses 36 and 37 and the shade accordingly may be readily removed for cleaning or replacement. Thus, the shade and top plate form an open-ended cylinder within which the fluorescent light tubes, together with their regulating and starting apparatus, are completely installed. By providing the complementary lips and flanges in shade and top plate 16, respectively, which interfit with one another to attach the shade to the top plate, the provision of supplementary fastening means, such as screws, which would have to extend through the shade into the top plate, is obviated, thus not only improving the appearance of the fixture as a whole, but facilitating its manufacture and assembly or disassembly.

As viewed in Figure 4, this cylinder formed by
2,848,930 shade 48 and top plate 50 is open-ended, and these ends may conveniently be closed by translucent plastic end caps 49 and 50. End cap 49 or 50 will be described as being identical hereafter.

Thus, end cap 49 is provided with a circular flange 46a, the diameter of which is slightly in excess of the diameter of shade 48, so that the end cap may be placed thereover, resisting any tendencies of shade 48 deforming from cylindrical section because of heat, its own weight, etc. The end cap is provided with a centrally disposed hole 51, through which a screw 52 extends and is threaded into boss 30 of bracket leg 29 to hold the end cap in position. Preferably an opaque plastic washer 53 is disposed between the head of the screw and the outer surface of the end cap, both for decorative and protective purposes. Preferably end cap 49 (Figure 1) is provided with a strip 54 of opaque metallic or colored etching enamel to match the finish of the metal parts of the fixture, this strip being opaque for the purpose of hiding any shadow cast on the end cap by bracket leg 29 (Figure 4) and also to add to the general decorative effect of the fixture. From the above, it will appear that reflector member 33 serves a multitude of purposes. It not only forms an enclosure capable of receiving and concealing the regulating equipment and ballast for the fluorescent light tubes, but also, through the relationship of its upper longitudinal edges with the top plate flanges 16a and 16b (Figure 2) provides the recesses 36 and 37 which receive the shade lips 47 and 48 to permit assembly or disassembly of the shade with the rest of the fixture by merely distorting the shade. Furthermore, the member 33 serves as a support for the fluorescent light tube sockets, and comprises an ideal surface for the application of such reflect-}

ber, a fluorescent light tube mounted in said socket, a curved translucent shade secured to said top plate and enclosing said socket and said tube, and a translucent end cap secured to one of the other supporting surfaces of each of said brackets, said shade and top plate together forming a cylindrical section closed at its ends by said end caps.

2. In a lighting fixture, the combination of an elongated top plate, a bracket secured to each end of said plate, means forming an inwardly directed flange at each longitudinal edge of said top plate, an elongated member secured to said brackets but spaced from said top plate, the longitudinal edges of said member lying closely adjacent said flanges to form therewith narrow elongated recesses, an elongated fluorescent light tube secured to the under side of said member, an elongated shade, the longitudinal edges of said shade having outwardly turned lips formed thereon adapted to lie respectively in said recesses and interfit with said top plate flanges when said shade is installed, and an end cap at each end of said shade and secured respectively to said brackets, each cap having an inwardly extending flange fitting about and supporting the adjacent end of the shade.

3. In a lighting fixture, the combination of an elongated top plate, a supporting bracket secured to each end of said top plate and depending therefrom, each bracket including a downwardly extending leg and a leg which extends downwardly and outwardly of said top plate, a reflector member secured to said bracket legs, an elongated light tube secured to said member, an elongated shade secured to said top plate and enclosing said member and said tube and forming with said top plate an enclosure, and an end cap secured to each of said downwardly and outwardly extending bracket legs for closing the ends of said enclosure.

4. In a lighting fixture, the combination of an arcuate elongated top plate, a bracket secured to each end of said top plate and extending therefrom, each of said brackets including an arcuate supporting surface having the same radius of curvature as that of said arcuate top plate, said bracket also including a pair of projecting supporting flanges extending generally radially from said supporting surface and a supporting surface leg extending generally axially of said supporting surface, a trough-shaped housing and supporting member coextensive longitudinally with said top plate and secured at its opposite ends to said bracket flanges, said trough-shaped member forming with said top plate an elongated chamber adapted to receive the regulating apparatus for a fluorescent light tube, a pair of sockets secured to said trough-shaped member and extending therefrom, a fluorescent light tube detachably mounted between a pair of said sockets, a curved translucent shade secured to said top plate and enclosing said trough-shaped member and said tube and forming with said top plate a generally cylindrical section open at its ends, and end caps at the ends of said cylindrical section closed respectively to said bracket legs, said end caps having inwardly extending peripheral flanges fitting about and supporting the adjacent ends of said shade.

LINDSLEY SCHEPMOES.