

May 13, 1952

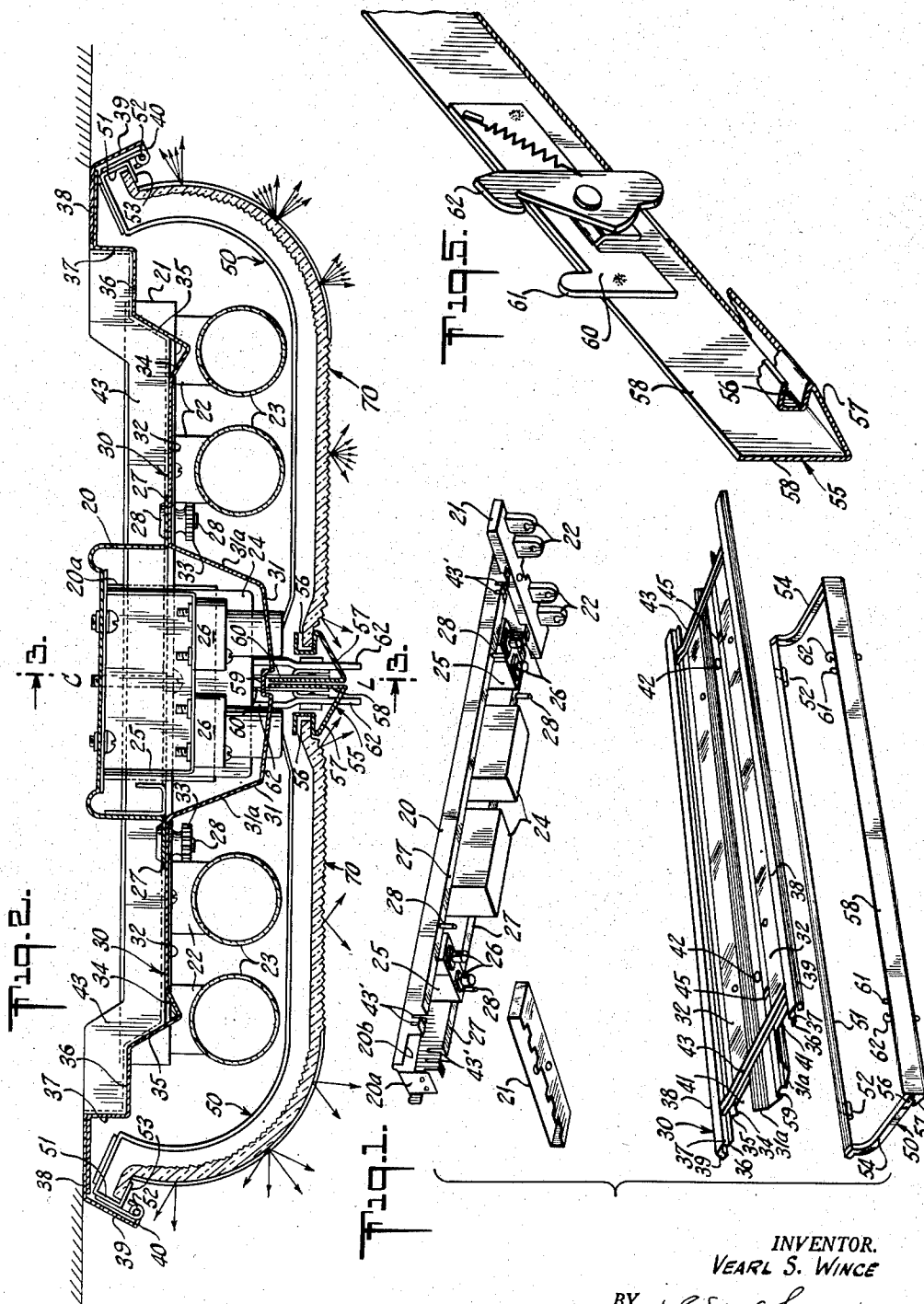
V. S. WINCE

2,596,634

DIRECT LIGHTING FIXTURE

Filed Jan. 25, 1951

2 SHEETS—SHEET 1



INVENTOR.
VEARL S. WINCE

BY

John M. O'Connell

ATTORNEY.

UNITED STATES PATENT OFFICE

2,596,634

DIRECT LIGHTING FIXTURE

Vearyl S. Wince, Newark, Ohio, assignor to Holographane Company, Inc., New York, N. Y., a corporation of Delaware

Application January 25, 1951, Serial No. 207,803

10 Claims. (Cl. 240—51.11)

1

2

The present invention relates to direct lighting fixtures and is more particularly directed toward direct lighting fixtures for general lighting, using rectilinear fluorescent lamps adapted for use close up to the ceiling line.

Such lighting equipment is intended to deliver the entire light output downwardly and laterally and often is in the glare zone, so that screening of the lamps against direct observation is necessary if excessive glare is to be avoided.

Where the devices interposed between the lamps and points of observation to provide suitable light screening and redirection are made of transparent or translucent light transmitting material, the lighting equipment presents elongated—often continuous—sources of luminosity at various angles of observation in the glare zone.

According to the present invention, the lighting equipment is symmetrical on opposite sides of a central median plane, the lamp or lamps on each side of the median plane are at a common level and close to the ceiling. A reflector is employed above the lamps to return light into useful directions and light transmitting covers are provided about the lamps, these covers being close to the lamps and extending nearly to the ceiling line. The width of the luminous area from underneath the fixture, or when viewed lengthwise from underneath, is substantially the entire width of the fixture. By making the fixture as shallow as possible and yet have the lamps enclosed, the depth of the fixture may be reduced to a minimum and the subtended angle of the luminous area when one views the fixture from the side at various locations remote from the nadir is also the minimum possible.

Inasmuch as the fixtures are intended to be mounted against the ceiling, the fixtures are provided with a prewired unit including a suitable wireway, ballast housing, and lamp supports, which can be secured to the ceiling. This prewired unit supports a second unit which includes a pan or reflector which covers the wireway and ballast and extends above the lamps, and a light transmitting closure about the lamps. The closure means about the lamps includes frames supported from the reflector margins and the central portion of the pan or reflector. These frames were preferably hinged at the outer edges and held in place by releasable catches or the like at the center.

Other and further objects of the invention will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, one embodiment in which the invention may take form, it being understood that the drawings are

illustrative of the invention rather than limiting the same.

In the accompanying drawings:

Figure 1 is an exploded perspective view diagrammatically illustrating in the upper part of the figure the wiring channel and associated parts assembled as a unit to be secured to the ceiling, wiring being omitted and one of the socket holders out of position, and illustrating in the lower part of the figure the wiring channel cover and reflector unit adapted to be secured to the first mentioned unit, and one of the hinged frames for the light transmitting cover;

Figure 2 is a transverse sectional view taken on the lines 2—2 of Figures 3 and 4 and illustrating the completely assembled fixture;

Figure 3 is a longitudinal view on the line 3—3 of Figure 2, parts being broken away;

Figure 4 is an inverted plan view of the fixture of Figure 2, parts being broken away; and

Figure 5 is a perspective view at a larger scale, illustrating the catch mechanism employed to hold the doors closed.

Fixtures embodying the present invention preferably have a length corresponding with lamp length. They may be used singly or in continuous rows. The fixture has an elongated inverted channel-shaped, wireway-forming member 20 adapted to be secured to the ceiling in a suitable manner. This wireway 20 has flanges 20a at the ends for coupling wireways together as indicated in Figures 1 and 3. The flanges are narrower than the channel so that wiring may extend throughout the channels. The wireway channel 20 has cutouts 20b at the ends to receive cross members or arms 21, 21, which are shown in the form of channels. These cross-arms carry fluorescent lamp sockets 22, 22 arranged in pairs so as to support fluorescent lamps 23. The structure is very compact, the top of the socket bodies being approximately $\frac{3}{4}$ " below the ceiling line. Four such lamp sockets may be carried by each cross-arm 21 for the support of two pairs of lamps (i. e., T-12 lamps) side by side as indicated in Figure 2, or provisions may be made for carrying two lamps of larger diameter using a single pair of lamp sockets each side of the median or center line CL of the fixture.

The wireway carries ballast means indicated at 24, suitable for the lamps employed. This ballast means (at least in certain sizes) projects down below the bottom of the wiring channel 20. Where hot cathode lamps are employed, the wireway 20 may also be provided with straps 25 which support the starter sockets 26. The wireway 20, together with ballast means, lamp sockets, starter sockets and all wiring may be

3

preassembled and attached to the ceiling. As shown in the drawings, the wireway 20 has side flanges 27 provided with downwardly threaded extending bolts 28 for the support of the detachable portions of the fixture.

The detachable portions of the luminaire which are adapted to be secured to the wireway after it has been installed, are indicated diagrammatically at the lower part of Figure 1 and in detail in the other figures. The principal structural element of the detachable portion of the fixture is a combined channel cover and reflector (or pan) 30 made of sheet metal. This stamping has an overall length corresponding with the overall length of the wireway 20 and is considerably wider than the socket carrying arms 21. The wireway has a central upwardly opening channel portion 31 with sloping sides 31a adapted to close the wireway channel 20 and of a depth to receive the ballasts 24. It has outwardly extending flat, horizontal portions 32 adapted to be above the lamps 23 (when in place), and is secured to the wireway by nuts indicated at 33. The pan 30 is provided with V-shaped ribs indicated at 34 above the outermost lamps. The outer side 35 of each V-shaped rib extends upwardly to a higher elevation than the portion 32 of the reflector member 30. The pan then extends outwardly as indicated at 36, upwardly as indicated at 37 to provide flat areas at the level of the top of the wireway 20. Straps 38 are welded to the pan. These straps are bent downwardly as indicated at 39 and have notched flange portion 40 returned as indicated to form fixed hinge parts.

At the ends, the cover or pan 30 is notched as indicated at 41 for the cross-arms 21 and has holes as indicated at 42 for the starter sockets. This pan is provided with a highly reflecting lower surface so that light from the lamps is reflected into useful directions. It occupies a region between substantially 10° below the horizontal through the midpoint 23a between the lamps and substantially 60° from the zenith. The light from the portion 35 is reflected upwardly in relatively high angles. The pan 30 is stiffened by transverse channel members 43 welded to it. The wireway has notches 43' to accommodate these channels. Near the center line, the pan 30 is provided with openings 44 and 45 for the closure frame carried latches and guides to be described.

The closure frames 50 are alike. Each has an upper, outer, longitudinally extending side member 51 provided with hinge pins 52 adapted to enter the notches in the flanged portion 39 supported from the pan 30 and shelf 53 to support the light transmitting closure plates 70. Frame end members 54 of the shape indicated support an inner side member 55. The side member 55 is channeled as indicated at 56 to support the closure. To facilitate insertion of the lens plates, the upper wall of the channel is cut away as indicated at 56', Figure 3. The member 55 has an oblique downwardly extending portion 57 and a vertical stiffening portion 58 whose upper edge may enter into a downwardly facing groove 59 in the pan 30. To the inner face of the portion 58 are welded plates 60 having upwardly extending lugs 61 entering the openings 45 in pan 30 to align the frames when in closed position. The plates 60 support spring biased latches 62 adapted to enter the openings 44 in pan 30 to hold the frame in its

4

upper position. End plates 63 (Figure 3) close off the ends of the fixture.

The light transmitting closure 70 conforms to the shape of the end members and is held in place in the channel 56 and on the shelf 53. This closure is preferably of prismatic glass and is described and claimed in concurrently filed application of Robert G. McPhail, Serial No. 207,789.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular form shown is but one of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A direct lighting, fluorescent lighting fixture comprising a longitudinally extending, inverted, relatively shallow, wiring channel, a fluorescent lamp ballast secured to the lower side of top wall of the wiring channel and projecting below the channel, horizontal, laterally extending arms carried at the ends of the wiring channel, fluorescent lamp sockets secured to the arms on opposite sides of the ballast, a combined channel cover and reflector secured to the wiring channel and having a central channel shaped portion to receive the ballast and having upper side portions extending laterally beyond the sockets, and fluorescent lamps carried in the sockets closely underneath the side portions and on opposite sides of the central portion of the combined channel cover and reflector.

2. A fluorescent lighting fixture such as claimed in claim 1, having closure frames below and outside the lamps and extending from the central portion of the channel cover and reflector to the margins thereof, and light transmitting plates carried by the frames.

3. A fluorescent lighting fixture such as claimed in claim 2, wherein the closure frames are hinged to said margins and the central portion has latches cooperable with the frames to releasably hold them in position.

4. A fluorescent lighting fixture such as claimed in claim 1, wherein the combined cover and reflector has stiffening members welded to the side portions thereof and spanning the central portion.

5. A direct lighting fluorescent lighting fixture adapted for close mounting below the ceiling and having a first preassembled unit carrying wiring and electrical parts and including a longitudinally extending, inverted wiring channel and two spaced laterally extending arms carrying sockets lateral of the wiring channel, and a lamp ballast carried by the channel and projecting below the same, and a second preassembled unit including a reflecting plate detachably secured to the wiring channel and provided with a central channel to accommodate the ballast and to cover the wiring channel, laterally extending side portions substantially in the plane of the bottom of the wiring channel and extending above lamps carried in the lamp sockets, and marginal portions beyond the sockets and extending upwardly to the level of the top of the wiring channel and laterally outwardly.

6. A fluorescent lighting fixture such as claimed in claim 5, having closure frames below and outside the lamps and extending from the central channel of the second unit to the margins of the second unit, and light transmitting plates

5

secured in the frames and intercepting light emitted laterally and downwardly.

7. A direct lighting fixture comprising an elongated horizontal body member having transversely extending arms at the ends thereof, downwardly extending fluorescent lamp sockets carried by the arms near the ends thereof and adapted to carry horizontally-spaced, horizontal, fluorescent lamps at a common level, and a lamp enclosure comprising an elongated reflector having a depressed central portion extending down to substantially the level of the bottom of the lamps, and generally horizontal portions above the lamps and marginal portions more widely spaced than the lamp sockets and extending upwardly and outwardly, door frames hinged to the marginal portions of the reflector and having adjacent meeting portions detachably secured to the central portion of the reflector, and frame carried, light transmitting plates extending from the regions of the hinges toward one another and adapted to intercept direct and reflected light and screen the lamps.

8. A direct lighting fluorescent lighting fixture for mounting close to the ceiling and having a downwardly opening, central wireway carrying a fluorescent lamp ballast which projects below the wireway and pairs of fluorescent lamp sockets on opposite sides of the median plane through the wireway, a fluorescent lamp in each pair of sockets, the sockets being at an elevation to support fluorescent lamps immediately below the level of the bottom of the wireway so that the ballast is between the lamps, a ballast cover and reflector member having a central portion which receives the ballast and side portions above the lamps and below the top of the wireway so as to intercept direct light emitted upwardly and direct light emitted toward the median plane, and a light transmitting cover including plates coextensive in length with the length of the lamps, the plates extending horizontally laterally from the bottom of the ballast cover beyond the lamps and upwardly to the reflector so that the depth of the luminous area of the plates at 90° from the nadir laterally is substantially equal to the depth of the ballast cover.

6

9. A lighting fixture comprising an elongated horizontal body member having transversely extending arms at the ends thereof, downwardly extending fluorescent lamp sockets carried by the arms near the ends thereof and adapted to carry horizontally spaced horizontal fluorescent lamps, at a common level, and a lamp enclosure comprising an elongated reflector having a depressed central portion extending down to substantially the level of the bottom of the lamps, generally horizontal portions above the lamps, and marginal portions more widely spaced than the lamp sockets and extending upwardly and outwardly, door frames hinged to the marginal portions of the reflector and having adjacent meeting portions detachably secured to the central portion of the reflector, and frame carried, light transmitting plates extending from the region of the hinges toward one another and adapted to intercept direct and reflected light and screen the lamps.

10. A fluorescent lighting fixture having an elongated pan-like reflector having marginal portions adapted to fit against the ceiling, hinge elements immediately below the ceiling fitting portion, a shallow depressed portion within the marginal portions, and a central depressed portion intermediate the shallow portion, a downwardly opening wireway secured to the pan above the central portion, wiring and ballast carried on the space provided thereby, wireway supported lamp sockets adapted to carry lamps below the first mentioned depressed portion of the pan and alongside the central depressed portion, frames hinged to the hinge elements and extending to the central portion of the pan, the central portion of the pan and the frames having releasable frame supporting devices, and light transmitting plates in the frames and of a configuration to be close to the lamps below the lamps and outside them.

VEARL S. WINCE.

No references cited.