June 28, 1949. K. FRANCK ET AL 2,474,308

SURFACE ATTACHED LIGHTING EQUIPMENT

Filed Nov. 29, 1946

2 Sheets-Sheet 1

Fig. 1.

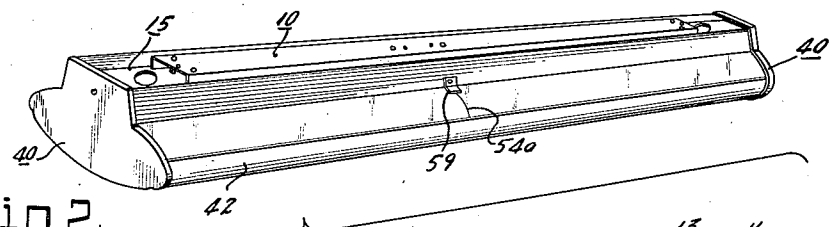
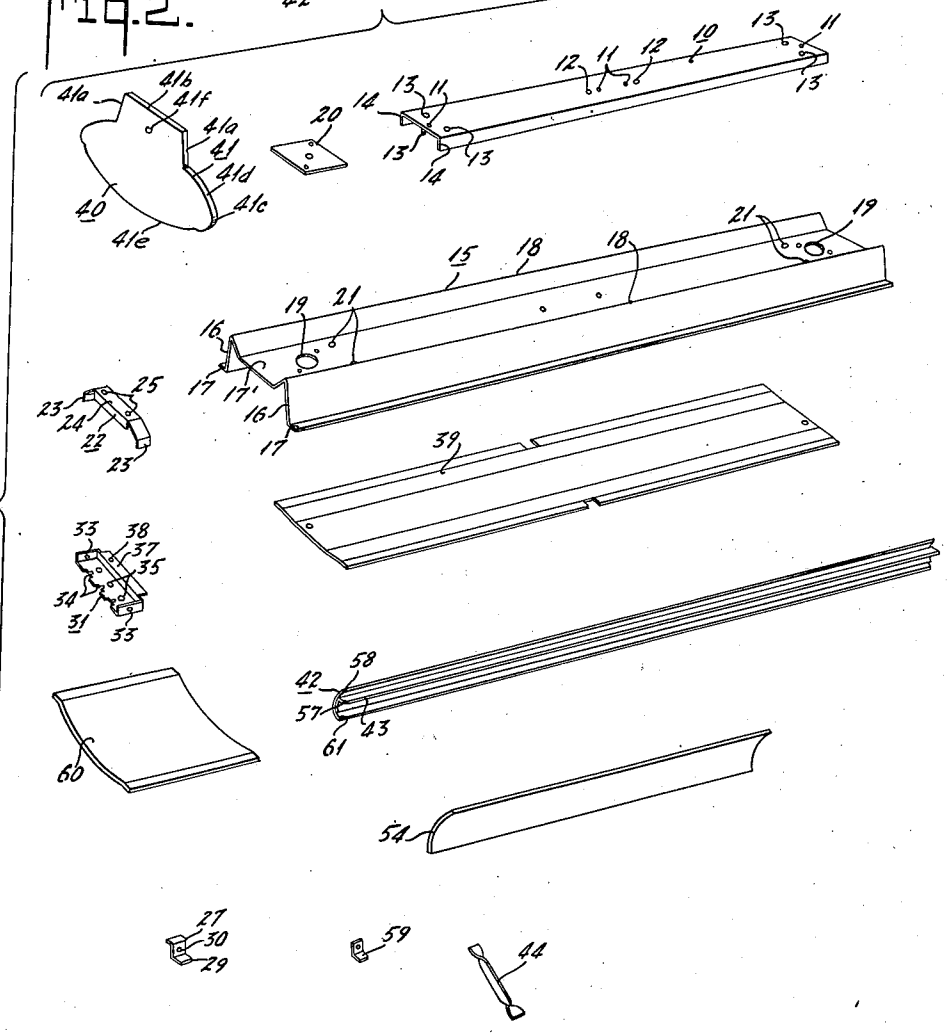


Fig. 2.



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FIG. 3.

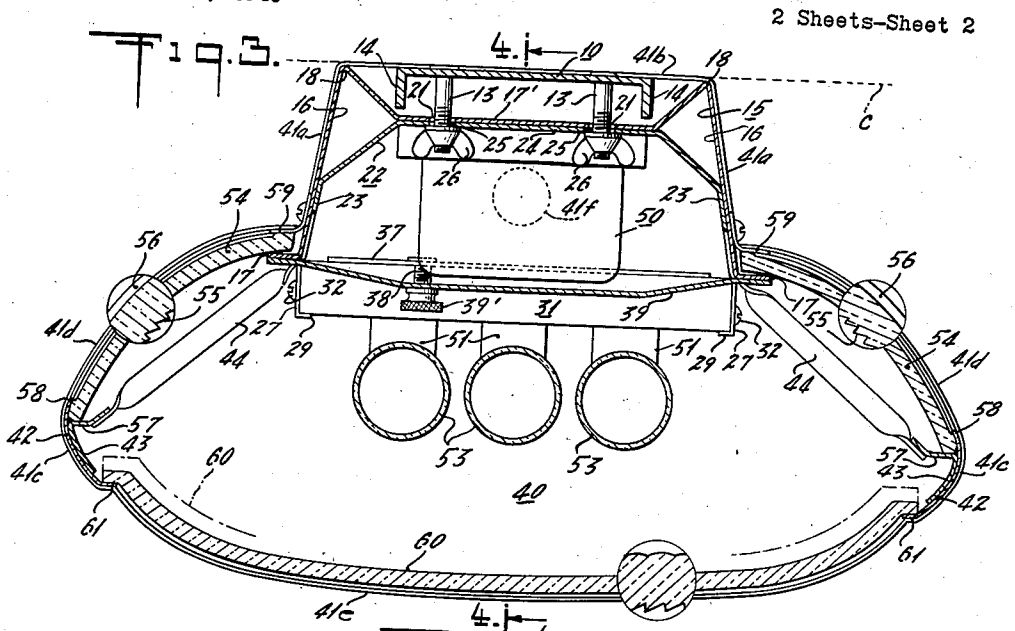


FIG. 4.

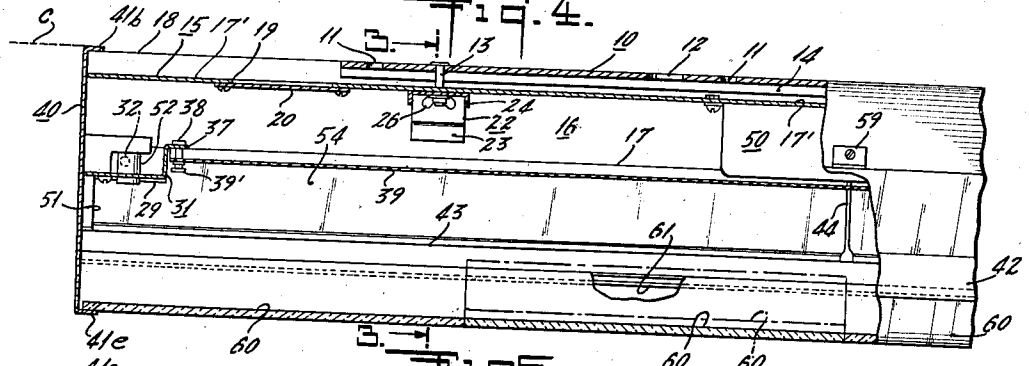
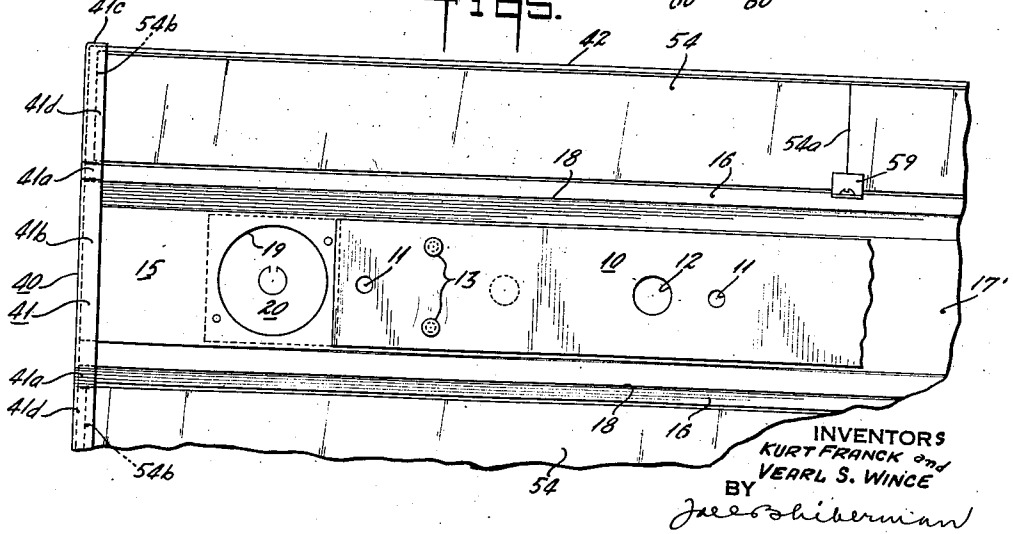


FIG. 5.



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SURFACE ATTACHED LIGHTING EQUIPMENT

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Application November 29, 1946, Serial No. 713,126

10 Claims. (Cl. 240—51.11)

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The present invention relates to surface attached lighting equipment and is more particularly directed toward totally enclosed fluorescent lighting equipment arranged for both direct and indirect lighting.

The present invention contemplates a totally enclosed fluorescent lighting unit adapted for mounting close to the ceiling, or on a suitable suspension, and provided with light transmitting elements both above and below the fluorescent lamps, the upper elements being arranged to permit some light to escape toward the ceiling and the lower elements being arranged to transmit direct light from the lamps as well as transmit downwardly, light reflected about inside the enclosure.

According to the present invention the entire lighting unit except for the light transmitting elements and electrical parts, is a complete fabricated unit which is arranged to receive the electrical parts as well as the light transmitting parts, usually glass. These light transmitting parts may be readily shifted in position to permit lamp renewal and may be readily removed to permit cleaning.

A further object of the invention is to so arrange the parts of the lighting unit that it can be readily mounted against the ceiling surface to avoid spacing the fixture below the ceiling.

Other and further objects will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, an 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 these drawings:

Figure 1 is a perspective veiw of the complete lighting unit;

Figure 2 is an exploded view of the non-electrical and non-light controlling structure employed in the lighting unit;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 4;

Figure 4 is a longitudinal sectional view taken on the line 4—4 of Figure 3; and

Figure 5 is a fragmentary top plan view of the lighting unit.

The drawings illustrate a type of lighting unit designed to use a plurality of 48 inch fluorescent lamps. The size of the fixture will, of course, be altered where lamps of different length or diameter are to be employed.

In the drawings each lighting unit is shown as

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being supported from a mounting strap 10 composed of a length of comparatively heavy channel shaped steel somewhat shorter in length than the over all length of the fixture. The mounting strap is provided with four anchorage holes 11 by which it may be secured to the ceiling. It is also provided with holes 12 by which it may be secured to pendent rods. The mounting strap 10 carries pairs of bolts 13—13 preferably welded to it and slightly longer than the depth of the sides 14—14 of the mounting strap.

The body of the lighting fixture employs a sheet metal wireway 15 preferably of uniform cross-section throughout its length. It has side walls 16—16, lower outwardly extending flanges 17—17, and the upper mid-section is depressed as indicated at 17' so that the mounting strap 10 may be accommodated below the level of the upper corners 18—18 of the wireway. This wireway has access openings 19 adapted to be closed by plates 20. The wireway is provided with holes 21 spaced the same as the bolts 13.

The wireway is stiffened by strap members 22 having lower ends 23—23 welded to the sides of the wireway, and mid-portions 24 adapted to fit under the depressed portion 17' of the wireway. These mid-portions are channel shaped (as indicated in the drawings) for stiffness, and have holes 25 to register with the holes 21. Wing nuts 26 threaded on the bolts 13 make it possible to secure the wireway and the mounting strap together.

Brackets 27 are welded to the ends of the flanges 17—17. These brackets have inwardly bent ends 29 and are provided with a screw hole indicated at 30. Lamp socket supporting boxes 31 are received between the brackets 27 and held in place by sheet metal screws 32 passed through the holes 30 and threaded into holes 33 in the sides of the boxes 31. These boxes are notched as indicated at 34 for lamp sockets and one of the boxes is provided with holes 35 for the lamp starters. The boxes 31 have inwardly extending, elevated flanges 37 provided with downwardly extending welded bolts 38. These bolts support a removable cover 39 by means of nuts 39'.

End plates 40 are secured to the wireway. These end plates have a continuous peripheral flange indicated generally by the reference character 41. The portions 41*a*—41*a* of the flange 41 fit the sides 16—16 of the wireway at the ends of the wireway and are welded to the wireway. The portion 41*b* of the flange receives the upper corners 18—18 of the wireway and finishes off

the end of the fixture opposite the depressed portion of the wireway all the way up to the ceiling line C. The lower portion of the end plate 40 is considerably wider than the upper portion. The widest part of the end plate supports longitudinal members 42 and 43 which are welded together and whose ends are welded inside the portion 41c of the flange. Supporting straps 44 are welded to the wiring channel and to the longitudinal members 43 so as to support the members 42, 43 at the center of the fixture. The members 42, 43 tie the end plates together and provide supports for the glassware to be described.

The usual ballast 50 is secured inside the wireway and connected by the usual wiring, not shown, to the lamp sockets 51 and starters 52 in a well known manner. Lamps 53 are carried in the sockets and as is apparent in the drawings are spaced some distance below the cover plate 39. This plate is painted white and is shaped to facilitate escape of light upwardly of the lamps.

The upper light transmitting members are indicated at 54—54. These members are preferably of the contour indicated and preferably have internal light refracting prisms indicated at 55 and external totally reflecting prisms indicated at 56, as more fully described and claimed in application for Letters Patent of Vearl S. Wince Serial No. 713,125, filed concurrently herewith.

The lower edges of two light transmitting members 54 rest on each of the upper inwardly directed flanges 57 of the longitudinal member 43 and behind the upwardly extending stop elements 58—58 of the corresponding longitudinally extending member 42. The upper edges of the light transmitting elements 54 rest on the flanges 17—17 of the wireway. The over all length of the light transmitting members 54 on each side of the unit is slightly less than the over all length of the fixture between end plates so that when the adjacent ends 54*a* of two such light transmitting members are butted together as illustrated in the drawings, the outer ends 54*b* of the light transmitting members 54 are received under the portions 41*d* of the end flanges 41, as indicated more clearly in Figure 5 so as to cover the same. The adjacent ends of the upper light transmitting members are held in place by removable clips indicated at 59.

The bottom of the fixture is preferably closed off by four light transmitting plates 60 having the contour indicated and provided with light controlling prisms for diverting the light toward the nadir. They rest on flanges 61 along the edges of members 42. The end ones extend above the bottom flanges 41*e* of the end plates.

It will be noted that the wireway and parts carried thereby are in the form of a welded assemblage which is strong, rugged and suitable for mounting either close to the ceiling or on pendent supports. The units may be mounted in such a way as to be end to end, and wiring carried from one fixture to the next through suitable knockouts as illustrated at 41*f* in Figures 1 and 2. Access to the starters may readily be had by lifting one of the lower plates 60 and sliding it over an adjacent plate as indicated by the dot and dash lines 60 in Figures 3 and 4. The lower light transmitting members may be removed by shifting one of the center lens plates side ways to permit lowering one side below the supporting flange, and then removing it. Then move the end lens plate slightly inward lengthwise and then remove them in the same way.

From the light controlling point of view the light received by the light transmitting members 54 and 60 can be diverted into desired directions by suitable prismatic constructions and the fixture is at all times kept completely closed to avoid accumulation of dust inside the fixture.

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

What is claimed is:

1. Fluorescent lighting equipment for direct and indirect lighting, comprising a fluorescent lamp ballast, an elongated body receiving the ballast and wiring and having longitudinally extending outwardly directed flanges along its lower edges at substantially the level of the bottom of the ballast, a bottom cover for the wireway, lamp sockets supported by the body at its ends, lamps in the sockets and at a level below the bottom cover and flanges, end plates carried by the body outside the sockets, the end plates extending below the lamps and their lower portions being substantially wider than the width of the space occupied by the lamps, longitudinal members interconnecting the end plates and disposed at a level slightly below that of the lamps, the upper portions of the longitudinal members having inwardly directed flanges and upwardly directed stops outside of and above the flanges, and light transmitting plates resting on the body flanges, the upper inwardly directed flanges and behind the stops.

2. Lighting equipment as claimed in claim 1, having supports interconnecting the body and the longitudinal members intermediate their ends and disposed within the plates.

3. Lighting equipment as claimed in claim 1, wherein the light transmitting plates are in sections, the over all length of which is less than the spacing of the end plates, and the end plates have inwardly extending flanges to receive the remote ends of the abutting sections adjacent thereto.

4. Lighting equipment as claimed in claim 1, wherein the longitudinal members have lower inwardly extending flanges, and having lower light transmitting plates supported on the lower flanges so that the lamps are totally enclosed.

5. Lighting equipment as claimed in claim 1, wherein the longitudinal members have lower inwardly extending flanges and having lower light transmitting plates supported on the lower flanges so that the lamps are totally enclosed, the lower light transmitting plates being in sections, the lower inwardly directed flanges being sufficiently spaced below the upper flanges to accommodate two sections one on top of the other.

6. In fluorescent lighting equipment, a mounting strap in the form of a channel adapted to be secured immediately below the ceiling line, a downwardly opening wiring channel longer and wider than the mounting strap and having sides and a top, the top being depressed from end to end an amount greater than the depth of the channel to accommodate the mounting strap so that the channel sides may extend up past the

sides of the channel, the mounting strap having mounting bolts extending down through the top of the wiring channel, the end portions of the depressed top of the wiring channel having access openings to admit wires to the wireway without passing them through the mounting strap, and wiring channel supporting nuts carried by the bolts so that the wiring channel may be clamped against the ceiling.

7. Lighting equipment as claimed in claim 6, having end plates, each having side flanges secured to the sides of the wiring channel, the end plates extending to the level of the top of the sides of the wiring channel to conceal the depressed ends of the wiring channel.

8. In fluorescent lighting equipment, a mounting strap in the form of a channel adapted to be secured immediately below the ceiling line, a downwardly opening wiring channel longer and wider than the mounting strap and having sides and a top, the top being depressed from end to end an amount greater than the depth of the channel to accommodate the mounting strap so that the wiring channel sides may extend up past the sides of the channel, internal reinforcing straps interconnecting the sides of the wiring channel and extending close to the top of the wiring channel, the mounting strap having mounting bolts extending down through the top of the wiring channel and the reinforcing straps the end portions of the depressed top of the wiring channel having access openings to admit wires to the wireway without passing them through the mounting strap, and wiring channel supporting nuts carried by the bolts so that the wiring channel may be clamped against the ceiling.

9. In fluorescent lighting equipment, an inverted wiring channel having outwardly extending stiffening flanges, a lamp socket supporting box secured across the ends of the wiring channel and having its bottom substantially below the level of the flanges, lamp sockets carried by

the bottoms of the boxes, the boxes having inwardly extending elevated flanges, and a channel cover plate detachably carried by the elevated flanges and bearing on the channel flanges, the cover plate being generally convex downwardly and spaced above the lamps to facilitate lateral escape of upwardly emitted light.

10. In a fluorescent lighting fixture, a downwardly opening wireway carrying fluorescent lamp ballast and sockets, and having outwardly extending side flanges, end plates welded to the ends of the wireway, the upper portions of the end plates below the wireway having downwardly and outwardly extending, inwardly facing flanges, the lower portions of the end plates also having inwardly facing flanges, stiffening straps welded to the end plates at their widest point, and having inwardly extending flanges one above the other and upwardly extending stops, upper light transmitting plates resting on the wireway flanges and the upper flanges of the stiffening straps and behind the stops, the ends of the light transmitting plates extending partially under the downwardly and outwardly diverging flanges of the end plates, and lower light transmitting plates having their side edges resting on the lower flanges of the stiffening straps and their ends extending above the lower flanges of the end plates.

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