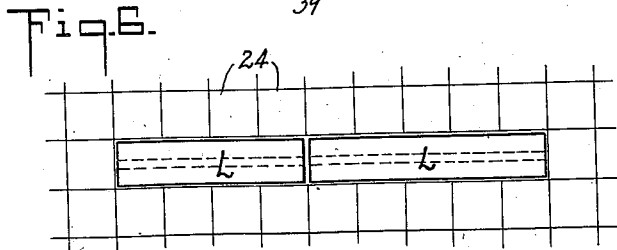
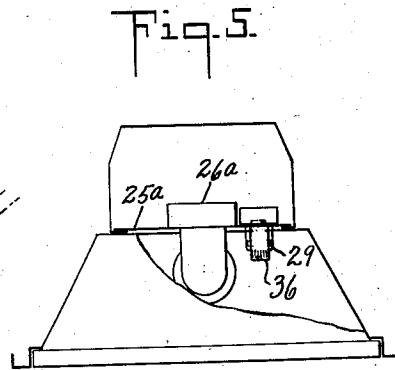
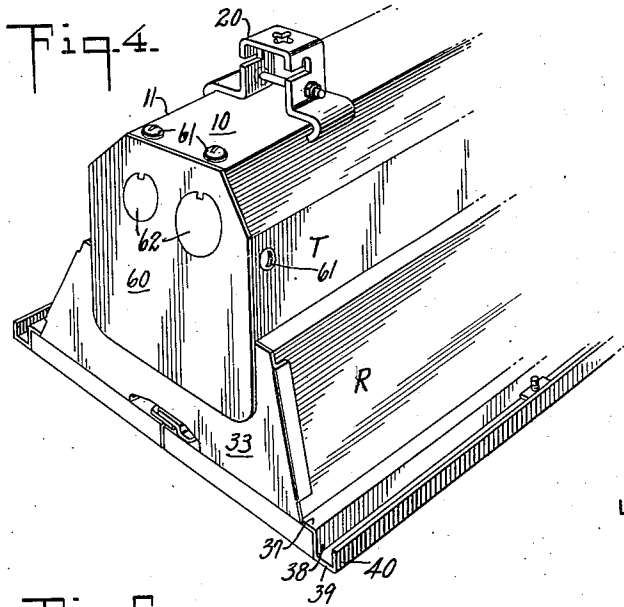
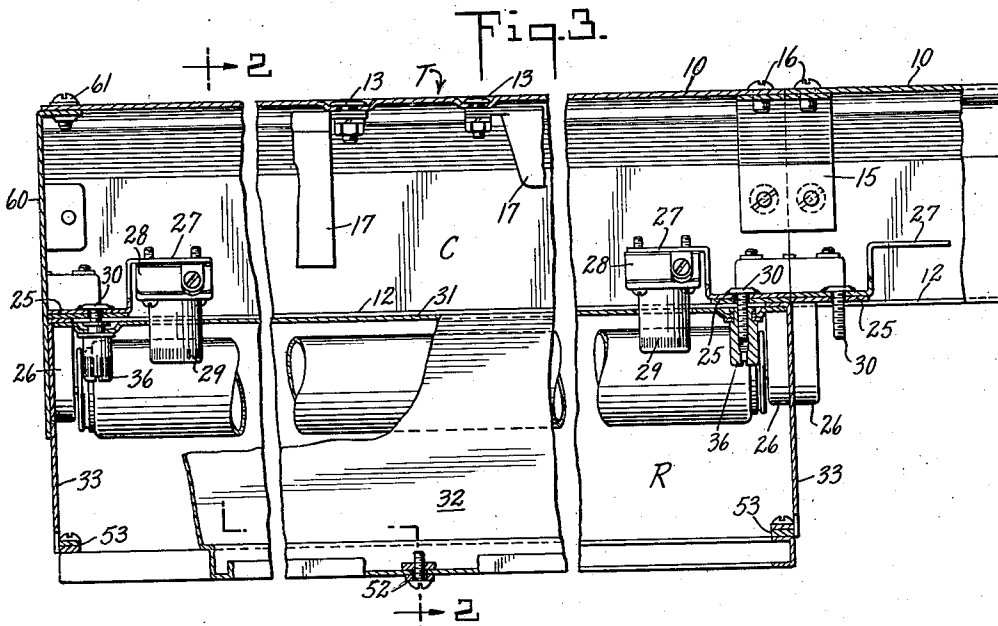


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S. R. NAYSMITH
LIGHTING EQUIPMENT
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2 Sheets-Sheet 2



INVENTOR
SHIRLEY R. NAYSMITH
BY *Greenshieldman*
ATTORNEY

UNITED STATES PATENT OFFICE

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LIGHTING EQUIPMENT

Shirley R. Naysmith, Meriden, Conn., assignor to
The Miller Company, Meriden, Conn., a corporation of Connecticut

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5 Claims. (Cl. 240—78)

The present invention relates to lighting equipment, and is more particularly directed toward lighting equipment designed for recessed mounting in ceilings and to provide long or continuous lines of light.

The present invention contemplates lighting equipment more especially suitable for use in acoustical or other tile ceilings and designed to be mounted flush with the ceiling.

Acoustical and other tile ceilings are generally composed of large flat tiled areas, the tiles being one foot square, and it is possible to omit a row of tiles so as to provide a space one foot wide and any number of feet long for lighting equipment. Fluorescent lamps of outputs suitable for installation in ceilings are available in 40 watt and 100 watt sizes whose lengths are such that the overall length of the lamp and its supporting holders or sockets is exactly four feet or exactly five feet.

According to the present invention a continuous lighting trough is placed above the level of the ceiling opposite where the opening is to be, and this lighting trough comprises a continuous wiring channel of the same length as the ceiling opening, this channel supporting fluorescent lamp holders distributed lengthwise of the channel so as to support fluorescent lamps extending the entire length of the ceiling opening, except for the space required by the lamp holders.

The continuous wiring channel supports inverted trough shaped reflectors of the same length as the lamps opposite the reflectors and the reflectors are carried by the wiring channel so that the side edges of the reflector are adjacent the sides of the tile forming the ceiling. The overall length of all the reflectors installed is equal to the overall length of the ceiling opening so as to occupy the entire opening. The reflectors preferably have closed end walls which are notched to accommodate the lamp holders.

The wiring channel is preferably made of units or sections having lengths of 4, 5, 8, 10 or 12 feet, so that by assembling a plurality of these units or sections together end to end, one can have a wiring channel of any desired foot length (above 11 feet). The lamp holders may be placed at such positions along the wiring channel as to accommodate the lamps to be used. Ordinarily, however, the lengths of the unit correspond to a single lamp length or to two lamp lengths, and the lamp holders will be secured to cross members welded in position in the channel.

By providing a wiring channel arranged to support the lamp sockets and lamps, as above-de-

scribed, it is possible to design the reflectors so that each reflector occupies a length corresponding to four or five tiles as the case may be. The ends of the reflectors will therefore provide screens at the ends of each lamp and where further screening is not desired open reflectors may be used. Where however, screening of the lamps or redirecting the light is desired, the reflectors have rectangular openings of length corresponding (nearly) to the lamp length, of width somewhat less than the tile width, and adapted to receive suitable screens.

According to the present invention it is contemplated that these rectangular openings will receive individual screen frames and screens suitably mounted for downward removal to afford access to the lamps. The same screen frame structure may be used to support various forms of screen, for example, metal louvered screens, prismatic glass plates, louvered plastic sheets or diffusing glass or plastic. This makes it possible to standardize on all the equipment required to provide continuous lighting recessed in ceilings and at the same time provide different screening and light controlling equipment as conditions require.

The accompanying drawings show, for purposes of illustrating the present invention, an embodiment in which the invention may take form, together with modifications of certain parts, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a perspective view through a wiring channel, reflector and screen frame with parts broken away to show interior construction;

Figure 1a is a fragmentary perspective view of the reflector;

Fig. 2 is a transverse sectional view taken on the plane 2—2 of Figure 3 looking in the direction of the arrows;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2 looking in the direction of the arrows;

Figure 4 is a perspective view showing the closed end of a length of lighting equipment;

Figure 5 is a cross sectional view similar to Figure 2 at a reduced scale illustrating a modification of the equipment to carry a single lamp instead of two lamps; and

Figure 6 is a diagrammatic view illustrating the installation of the lighting equipment in the ceiling.

The wiring trough or channel T illustrated in

the drawings is composed of a plurality of units or sections 10, 10 of sheet metal bent to trough-like cross section. These trough-like sections are generally made four or eight feet long where 48" fluorescent lamps are used, or five or ten feet long where 5' fluorescent lamps are used or three, six, nine or twelve feet long where 3' fluorescent lamps are used. This dimensional relation is not entirely necessary for the troughs may be of any convenient length and the equipment mounted in them at random positions along the completed trough.

The trough sections have longitudinally extending beads 11, 11 at the top and inwardly extending flanges 12, 12 at the bottom. These flanges may have holes 12a punched in them at regular distances preferably one inch apart. The back of the trough is provided with welded bolts 13 so that auxiliaries may be supported. The ends of the trough sections are provided with suitable holes for screws and the trough sections are fastened together by coupling elements 15 and screws 16. Lamp auxiliaries of suitable type are indicated at 17.

The continuous wiring channel may be supported in various manners. In Figure 4 the channel is shown as being supported by a randomly placed clamp 20 adapted to be secured to hangers, cables, or other supports. In Figure 2 the wiring channel is shown as being supported by suitable bridging devices indicated at 21, 22 suitably secured to the T-bars 23 which support the ceiling 24.

Where the sections or units of the wiring channel are exactly equal to the nominal length of the lamps, each section of the wiring channel carries on each extreme end a cross member or strap 25. These straps are preferably welded in place and act as stiffeners for the wiring channel as well as supports for fluorescent lamp sockets or lamp holders 26, 26, the cross members being notched so that the back face of each fluorescent lamp holder is in the plane of the end of the channel and the cross member. The cross members 25 may also be provided with brackets 27 to support sockets 28 for the starters 29 in a readily accessible position. The cross straps 25 are also provided with downwardly extending studs 30 secured in place by welding.

Reflectors designated generally by the letter R have top walls 31, side walls 32, 32 and end walls 33, 33. The top and end walls of the reflectors are notched as indicated at 34 and 35 (Figure 1a) to accommodate the downwardly extending lamp holders 26, 26. The reflectors are held up in position by thumb nuts 36 threaded on to the screws or studs 30. The sides of the reflectors extend downwardly and outwardly and terminate adjacent the edge of the tile as will appear more clearly in Figure 2. The lower edges of the sides of the reflector may have various configurations depending upon the type of equipment which is to be used with the reflectors. According to the preferred form of construction the sides of the reflector are bent outwardly as indicated at 37, downwardly as indicated at 38, again outwardly as indicated at 39 and upwardly as indicated at 40. The opposite sides of the reflectors therefore provide a seat for a closure to be described and extend out to the tile material forming the ceiling. The ends 33 of the reflectors preferably extend down to the level of the seat forming portion 37 and have flanges 41 which stiffen the end walls of the reflectors.

Where 100 watt five foot lamps are to be em-

ployed the wiring channel is the same as above described, except that it generally would be made of five foot or ten foot sections. The cross members 25a (Figure 5) will be the same as before, except that provisions will be made for one centrally located lamp holder 26a of the proper size for the 100 watt lamp. Each reflector will be the same, except that it is 5' long and has centrally located cutouts for the lamp holders. The starter for the 100 watt lamp may be carried in any convenient location to be accessible while the reflector is in place.

The sides of each reflector support a hinged screen carrying frame 50. As illustrated here the screen hinge is at 51 and the securing device to hold the screen in the upper position at 52. This screen frame is made of channel shaped members held together by devices indicated at 53. This type of screen frame may support any convenient form of screen such as plastic metal louvers, sheet plastic material, diffusing glass, louvered sheet plastic material, or prismatic glass plates. In all cases the length of the screen frame, where one is employed, will be the same as the length of the lamp and therefore the screen and its frame may occupy the same length as a number (3, 4 or 5) of tiles omitted from the ceiling.

Figure 6 indicates diagrammatically a tiled ceiling wherein the tiles 24 are indicated by the light continuous lines and the lighting equipment L, L indicated by the heavier lines. For purposes of illustration a 4' and a 5' unit are shown as closing a 9' opening. In various combinations of 4' and 5' units any opening twelve feet long or greater can be provided with continuous lighting equipment which occupies the entire opening.

The ends of the wiring channel are closed by plates 60, as indicated in Figure 4, these plates being secured in place by screws 61 employing the same holes which were provided for the screws 16. The end plate is deep enough to cover the openings or cutouts 35 in the end of the adjacent reflector. These end plates may be provided with knockouts as indicated at 62.

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 combined reflector and screen for continuous fluorescent light equipment, the reflector having a flat top wall, divergent side walls and flat end walls perpendicular to the top wall, the top and end walls being notched to accommodate fluorescent lamp holders so that the outer faces of the end walls may be flush with the outer faces of a pair of lamp holders whose overall spacing equals the length of the reflector, the lower edges of the end walls having inwardly extending flanges, the lower edges of the side walls having longitudinally extending, downwardly facing seats in the same plane as the end plate flanges, and a rectangular screen frame downwardly removably secured to the side walls below the seats, the screen frame fitting against the seats and flanges and having the same length as the overall length of the reflector.

2. Continuous lighting equipment comprising a plurality of inverted channel shaped units each having at least two stiffening cross members secured across the bottom thereof, one cross mem-

ber at each extreme end, means to couple the ends of the units together to form a continuous wiring channel, the units being of substantial width and depth to provide vertical and lateral stiffness to the wiring channel, means for supporting the wiring channel from above at random points along its length, each cross member being notched to accommodate at least one downwardly extending fluorescent lamp holder, a plurality of lamp holders, the lamp holders of alternate cross members facing in opposite directions, the length of the said units being such as to accommodate a fluorescent lamp between the lamp holders at the opposite ends of the said units and to place the backs of the lamp holders at the ends of two adjacent units in the same plane as the ends of adjacent units whereby the lamps may be carried end to end except for the space required by the lamp holders, channel bottom covers of the same length as the said channel shaped units and notched to accommodate the lamp holders, and means for securing the covers to the cross members above the lamps.

3. Lighting equipment as claimed in claim 2,

wherein each unit has a pair of cross members and a pair of lamp holders intermediate its ends, its length being equal to two lamp lengths plus the spaces required by the four lamp holders.

5 4. Lighting equipment as claimed in claim 2, wherein the bottom covers have downwardly extending reflecting side walls of the same length as the covers and downwardly extending end walls each in the plane of the backs of the lamp holders and notched to accommodate the lamp holders, said walls forming inverted trough shaped reflectors.

10 5. Lighting equipment as claimed in claim 2, wherein the bottom covers have downwardly extending reflecting side walls of the same length as the covers and downwardly extending end walls each in the plane of the backs of the lamp holders and notched to accommodate the lamp holders, said walls forming inverted trough shaped reflectors, and wall supported, rectangular screen carrying frames across the bottoms of the reflectors.

SHIRLEY R. NAYSMITH.