LIGHTING FIXTURE MOUNTING MEANS

Gerald M. Roedeker and William R. Wedding, Cincinnati, Ohio, assignors to Joseph H. Spaulding, Cincinnati, Ohio

Filed Mar. 13, 1961, Ser. No. 95,294

4 Claims. (Cl. 240—51.11)

This invention relates to a mounting bracket for a lamp fixture, such as may be employed in illuminating various types of signs, billboards, the walls or entrances of a building or similar structure, and the like.

An object of the invention is to provide improved lamp fixture means adaptable for effecting a substantially continuous line of illumination infinite in length, with the use of fittings or mounting brackets which are identical in size and configuration, and which may perform simultaneously or alternatively as end closures for an illuminator housing.

Another object of the invention is to provide a lamp fixture for the purposes stated, which is adjustable, and easily mounted upon a wiring conduit with a minimum of effort and expense.

A further object is to reduce to a minimum the number of parts required for effecting a substantially continuous line of illumination as above described, the parts being simple and inexpensive to manufacture and assemble.

Another object is to improve the appearance and facilitate the wiring of illuminators of the class mentioned.

The foregoing and other objects are attained by the means described herein and illustrated upon the accompanying drawings, in which:

FIG. 1 is a perspective view of an illuminator embodying the fittings of the present invention, and showing, by way of example, a method of illuminating a sign, billboard, or similar upright panel.

FIG. 2 is an end elevation of one of the assembled fixtures as in FIG. 1.

FIG. 3 is a fragmentary bottom view of the structure illustrated by FIG. 2.

FIG. 4 is a cross-sectional view taken on line 4—4 of FIG. 3.

FIG. 5 is a fragmentary cross-sectional view taken on line 5—5 of FIG. 4.

FIG. 6 is a fragmentary enlarged plan view, parts broken away, taken on line 6—6 of FIG. 5.

FIG. 7 is a top plan view of an illuminator, showing how the fittings may be assembled to produce a fixture with indeterminate length.

FIG. 8 is a cross-sectional view taken vertically through the middle of FIG. 7.

FIG. 9 is an enlarged cross-sectional view taken on line 9—9 of FIG. 8.

In FIG. 1 is illustrated an upright panel or billboard 13 framed as at 14, and from the top of which projects a pair of horizontal rigid wiring conduits 16 supporting the illuminator 18. The illuminator as shown comprises an elongate housing 20 of sheet metal or other appropriate material, carrying preferably though not necessarily, a convex translucent door 22 to protect an elongate fluorescent lamp 24 arranged lengthwise within the housing.

The housing includes end fittings or end plates 26, adjustably supported upon bracket arms 28 which may be screw-threaded upon the forwardly projecting ends 30 of the wiring conduit members 16. It may be noted that the bracket arms are coaxial with the conduits, the illuminator suspension being effected without need for bending the conduits in order to direct light from the housing onto the panel or board 12, in view of an adjustable swivel relationship between the bracket arms and the end plates or fittings 26, as will be explained hereinafter.

Each bracket arm 28 may be constructed as a metal casting the body of which is hollow to accommodate electric conductors 32 extending from a conduit 16. At one of its ends 34, the bracket body is provided with an internally threaded opening 36 to receive the correspondingly threaded end of the conduit.

At its opposite end 38, the bracket body is hollow to accommodate electric conductors 40 leading from the lamp sockets 42 and extending into the wiring chamber 44, wherein connection is made to the conductors 32 by means of wire nuts 46. The electrical connections may be effected through an access opening 48 formed in the bracket body intermediate its ends, and closed normally by means of a removable cover plate 50.

It is noted that the opposite end 38 of the bracket body is offset from the axis of the threaded opening 36, and includes a side opening 52 whose axis is transverse to threaded opening 36. Upon the axis of opening 52 is a bore 54 adapted to receive a clamp screw 56 extending axially through opening 52. Opening 52 preferably is circular, and is provided marginally thereof with a series of teeth 58, or equivalent frictional means, for a purpose to be explained.

Each end plate or fitting 25 may be a casting of metal or other appropriate material, having a body portion 69 with a flat solid outer face 62, and an extending hollow neck 64 providing a conductor chamber 66. The chamber 66 is open in the plane of the outer face 62, thereby providing an access opening 68 over which a cover 70 may be detachably mounted.

Opposite the access opening 68 is located a solid wall 72 including a web bored at 74 to receive the clamp bolt 56. Said wall, about bore 74, is apertured as at 76 (FIG. 6) to accommodate the wiring 40. Marginally of the apertures 76, wall 72 carries a series of teeth or other friction means 78, adapted to register with the corresponding teeth or friction means 58 of bracket body 28, so that bolt 56 may effectively hold the parts 25 and 26 in adjusted positions, such as the positions suggested by the broken lines and the full lines at 18 of FIG. 4.

At the inner end of chamber 66 there is formed a passageway 80 for conductors 40, terminating in an inside hollow box 82 which provides a support for the usual socket 42 that carries the customary contacts for the base of lamp 24.

The body portion 69 of the end plate or fitting 25 carries an inwardly directed peripheral flange 84, shaped to the approximate cross-sectional contour of housing 20, so that one end of a housing may be secured to the flange as by means of screws 86. Another inwardly directed flange 88 opposes the flange 84, provides a surface against which a housing door such as 22 may abut, when closed upon the fixture. The flanges 84 and 88 preferably are integral with the end plate body, and are disposed at right angles to the outer face 62 thereof.

As indicated upon FIGS. 1, 2 and 3, the end plates or fittings 26 may be employed to close opposite ends of a single housing 20, with the outer faces 62 thereof exposed outside the fixture. On the other hand, when the fixture is to traverse a greater expanse of area to be illuminated, adjacent end plates or fittings 26 may be secured together with their faces 62 abutting one another in registry, according to FIGS. 7, 8 and 9.

When the end plates or fittings 26 are butted so as to align two illuminator housings, as in FIGS. 7, 8 and 9, the friction faces or teeth 78 thereof are exposed outwardly, and one group thereof is to engage the corresponding teeth or friction face 58 of a bracket member 28, as in FIG. 7. The other group will rest against an enlarged nut 90 applied at the threaded end of clamp bolt 56. Tightening the clamp bolt and nut thereby results in a
positive interconnection for two end plates 26 and a bracket end 38, see FIGS. 7 and 8. The connected of the swivel end 38 of bracket arm 28, places the connected end plates or end fittings 26 in substantial alignment with conduit 16, thereby facilitating and expediting calculations for locating the fixture relative to the sign panel length, since no added thickness of the bracket arm need be taken into account. The butting of one end plate or end fitting 26 against the other, when assembling a tandem form of fixture as in FIG. 8, eliminates any space between fixtures, because, as clearly shown in FIG. 8, the axis of each conduit 16 and the axis of the free end of arm 28 both lie in the planes of the flat faces 62. Therefore no intermediate fillers are needed in order to attain a pleasing appearance while at the same time a substantially continuous line of illumination along the length of the surface requiring lighting, is attained.

It may be noted that in FIG. 5, wherein the end plate or fitting 26 provides the terminal closure for an illuminator, the clamp bolt 56 may be of reduced length so that its threaded end terminates within the conductor chamber 66. A small nut such as 92 thereupon may be applied to the bolt, with the nut concealed by access plate 76. Lugs such as 94 formed integrally within the conductor chamber of the fitting, may be employed to hug the nut 92 to prevent turning thereof when the clamp bolt is rotated.

FIG. 4 illustrates, by means of broken lines 18, a few of the many positions to which the lamp housing may be angled for directing light to a nearby surface. This drawing view shows also the translucent door 22, formed preferably of a suitable plastic material, held to the housing 20 by spring clips 96 and an opposed hinge 98.

The hinge may extend substantially the full length of housing 20, and may be provided very simply by forming a half-round bead 100 along one edge of the elongate housing, adapted to be embraced by a half-round sheath 102 formed along one edge of the door or lens 22. Such a hinge will permit downward swinging of the door 22 upon release of clip 96, with the lip 104 entering the confines of bead 100 to retain the hinge connection.

The remaining longitudinal edge of door 22 may be provided with a channel 106 in which may seat a longitudinal bead 108 of housing 20. Spring clip 96 normally holds the door channel 106 against the bead 108, but may be grasped and displaced to release the door for swinging about hinge 98 whenever access to the interior of lamp housing 20 is necessary. The housing may be provided with several spring clips 96, sufficient in number to safely hold the door 22 in normally closed position.

The manner of mounting and securing the door 22 upon the lighting fixture housing, is subject to modification within the purview of the invention. Moreover, as was previously suggested herein, the door may be eliminated as an element of the lighting fixture, if desired.

From the description given, it will be appreciated that an illuminator of limited length may be effected, as in FIG. 1, with the use of two identical end fittings 26, and two identical bracket arms 28, secured together by two simple screws 56 permitting angular adjustment of fittings 26 and the housing 20 carried thereby, for selective directing of light rays from the housing onto a surface to be illuminated. The fittings 26 then form the terminal ends of the illuminators.

When the surface to be illuminated is extensive in length, thereby requiring a line of lamps arranged in end-to-end fashion, the long fixture required may be assembled with the use of a plurality of housings 20 aligned end-to-end, and with fittings 26 arranged face-to-face as in FIGS. 7, 8 and 9, intermediate the ends of successive housings 20. Such an assembly produces in effect a continuous rigid fixture or illuminator, with its succession of tubular lamps aligned and closely coupled end-to-end, so that no noticeable break is apparent throughout the full length of the light source. As a result, the surface to be illuminated is flooded with light of even intensity over the entire surface, with no dark spots in evidence where the housing ends meet another.

This represents a distinct advantage much to be desired. Further, each intermediate pair of fittings 26 so arranged face to face, will at every location along the length of the composite fixture have a bracket arm mounting identical to all the others, for rigidly supporting the fixture and directing the necessary electric conductors to the several lamps constituting the assembly. The needed wiring connections may be effected very conveniently and with dispatch, through the access openings provided in the fittings and in the bracket arms as previously explained. The assembly and mounting procedures are greatly simplified and expedited, and great savings are effected in both the labor and the materials employed.

The fact that many different lighting problems can be met with the use of only two major parts 26 and 28, results in great savings that might otherwise be lost where an assembly requires the use of numerous small parts that might become lost or misplaced on the job or in transit.

Should it become necessary or desirable to supplement the connection effected by screw 56 in an assembly such as FIG. 8 discloses, an additional screw or equivalent fastener may be driven through the abutting fittings 26, at a location such as 62, remote from the swivel connection at 56.

It is to be understood that the fittings may be cast or otherwise formed of any material, including aluminum, suitable for the purposes of the invention, and that various modifications and changes in the structural details of the parts may be resorted to, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. A support mechanism for an illuminator fixture of the elongate luminous tube type, comprising a hollow bracket arm having a chamber therein, an offset terminal portion formed with an opening communicating with said chamber, said chamber adapted to receive electrical connectors, said arm including a forwardly closed end portion having a flat side face formed with an aperture communicating with the chamber, said side face having serrations formed therein circumcircumscribing the aperture, a clamp screw mounted in the closed end and extending through said aperture, said screw having a portion projecting from said aperture, a pair of fixture supporting end plates pivotally mounted on the projecting portion of said screw, said plates comprising a pair of symmetrical oppositely disposed end fittings each having a flat outer face at one side, a hollow neck formed with a conductor chamber opening into said flat outer faces, and having a web at one end portion of the conductor chamber forming a partial closure therefor, said web being formed with apertures extending therethrough, said web having formed therein a boss receiving the clamp screw portion, said clamp screw portion extending through said plates to the inner sides thereof, said inner sides having serrations thereon circumcircumscribing the bore, laterally projecting flanges on each plate at the other end of each chamber for lighting fixture mounting, said plates being assembled on the clamp screw with their flat outer faces in directly engaged interfitting contact, one with the other and with the circumcircumscribing wall portions of the chambers contacting, jointly to enclose a single chamber common to the two hollow necks for reception of said electrical conductors and with the forwardly closed end faces in direct engagement, one with the other, thereby to effect a support for connected light fixture sections without noticeable break throughout the fixture length, when assembled the serrations of one of the plates interlocking with the serrations on the bracket arm to prevent relative pivotal movement of the bracket and plate.
3,108,751

and a serrated nut mounted on the clamp screw and interlocking with the serrations on the other plate to secure the bracket and plate in selected assembled position.

2. A support mechanism as set forth in claim 1, in which a fastener pierces the abutting plates at a location remote from the clamp screw and unites the outer ends of the plates to prevent relative rotative movement of each of the plates around the clamp screw.

3. A support mechanism as set forth in claim 2, in which a surface of the transverse web has lugs extending into said conductor chamber and forming a nut receiving socket circumscribing the clamp screw receiving bore.

4. A support mechanism for an illuminator fixture of the elongate luminous tube type, comprising a hollow bracket arm having a chamber therein, an offset terminal portion formed with an opening communicating with said chamber, said chamber adapted to receive electrical connectors, said arm including a forwardly closed end portion having a flat side face formed with an aperture communicating with the chamber, said side face having serrations formed therein circumscribing the aperture, a clamp screw mounted in the closed end and extending through said aperture, said screw having a portion projecting from said aperture, said chamber extending longitudinally through said bracket arm and having a straight portion at the end of said arm remote from said offset terminal portion, said straight portion adapted to receive an end of a rigid conduit for electrical cables, a fixture supporting end plate pivotally mounted on the projecting portion of the screw, said plate having a flat outer face at one side, a hollow neck providing a conductor chamber opening into said flat face, a removable cover plate secured to the flat face forming a closure for the chamber when the plate is individually used, said flat face being parallel to and containing the axis of said straight portion of said chamber in said bracket arm, said neck having a web at one end portion of the chamber forming a partial closure therefor, said web being provided with apertures extending therethrough, said web having formed therein a bore receiving the clamp screw portion, said clamp screw portion extending through said plate to the inner side thereof, said inner side having serrations thereon circumscribing the bore near one end and laterally projecting flanges at the other end for lighting fixture mounting, the serrations of the plate interlocking with the serrations on the bracket arm to prevent relative pivotal movement of the bracket and plate, when the clamp screw is tightened.

References Cited in the file of this patent

UNITED STATES PATENTS

2,587,917 Stone Mar. 4, 1952
2,740,885 Kruger Apr. 3, 1956
2,795,690 Cooper June 11, 1957
2,964,616 Seidman Dec. 13, 1960
2,980,792 Johnston Apr. 18, 1961

FOREIGN PATENTS

521,602 Belgium Aug. 14, 1953