Oct. 14, 1969 KUN S. LIM ET AL 3,473,017

LUMINAIRE BRACKET

Filed April 10, 1967 2 Sheets-Sheet 1

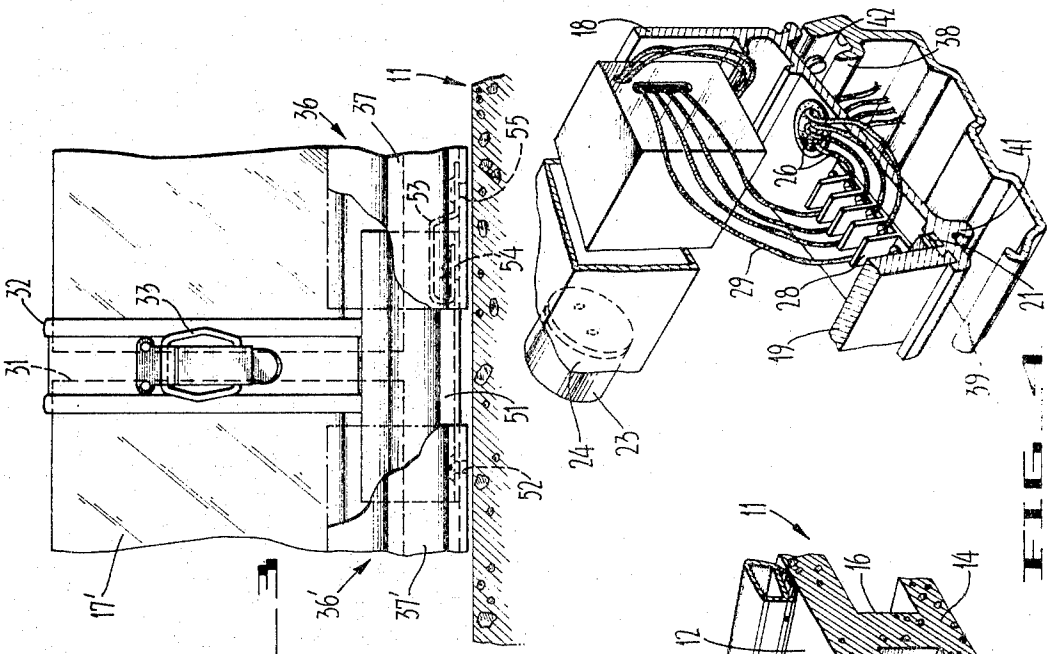


FIG. 3

FIG. 4

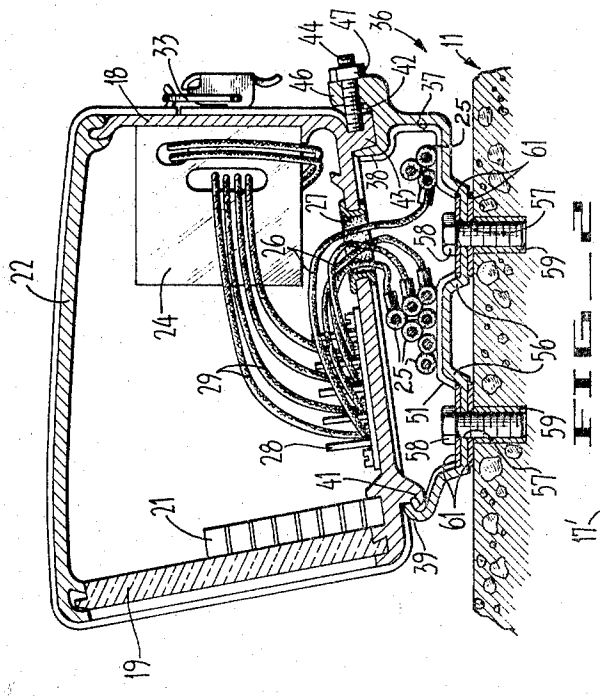


FIG. 2

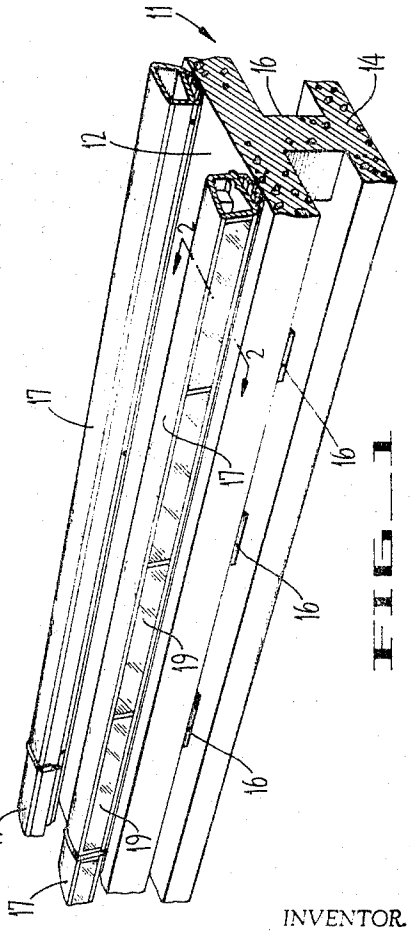


FIG. 1

INVENTORS
KUN S. LIM
BY EDWARD C. BERGEN
Gardner & Zimmerman
ATTORNEYS

Oct. 14, 1969 KUN S. LIM ET AL 3,473,017

LUMINAIRE BRACKET

Filed April 10, 1967 2 Sheets-Sheet 2

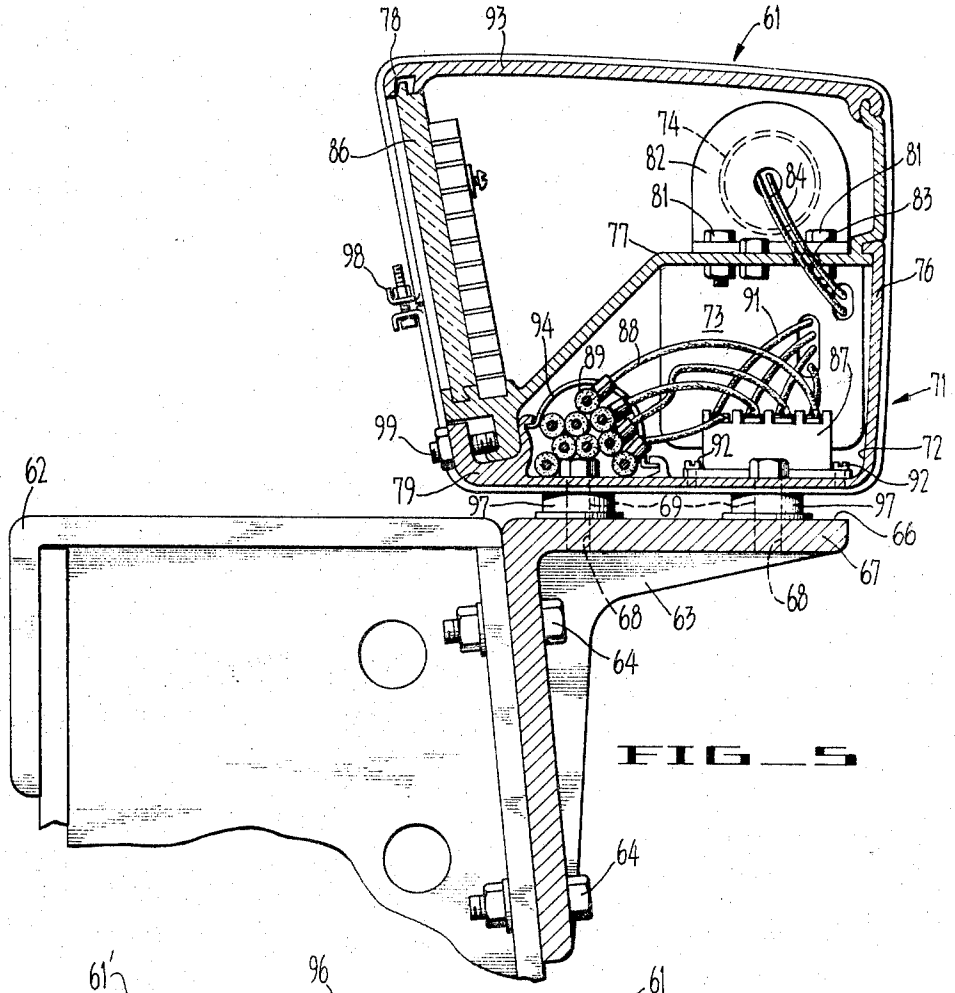


FIG_5

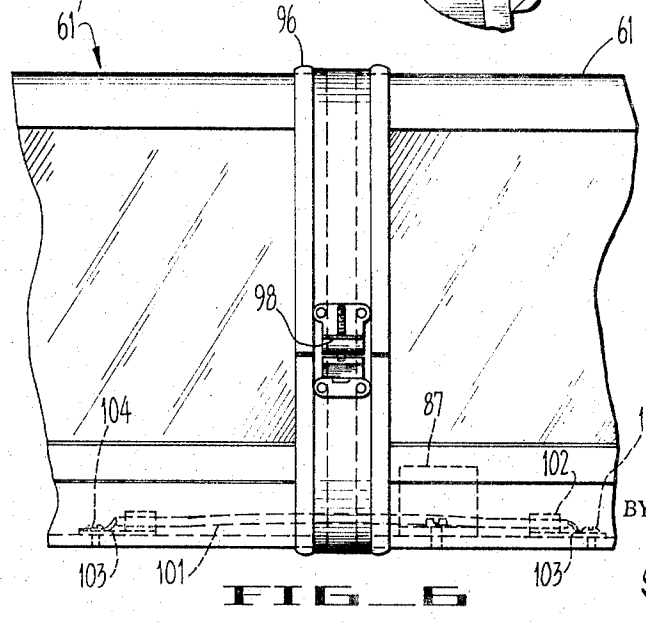


FIG_6

INVENTORS
KUN S. LIM
BY EDWARD C. BERGEN
Gardner & Zimmerman
ATTORNEYS

United States Patent Office 3,473,017
Patented Oct. 14, 1969

3,473,017

LUMINAIRE BRACKET

Kun S. Lim, Oakland, and Edward C. Bergen, Orinda, Calif., assignors to Wellmade Metal Products Company, Oakland, Calif., a corporation of California

Filed Apr. 10, 1967, Ser. No. 629,662
Int. Cl. F21s 3/02
U.S. Cl. 240—73 14 Claims

ABSTRACT OF THE DISCLOSURE

A luminaire assembly adapted to be mounted on a roadway side or division barrier for providing low level illumination of the roadway. Each assembly includes an elongated housing having a front lense and enclosing a fluorescent lamp. A plurality of such housings are adapted to be mounted in end to end relation longitudinally of the roadway barrier. Brackets for securing these luminaire housings to the roadway barrier are also mounted in end to end relation and define a continuous channel beneath the housings which provides an enclosed raceway for the luminaire power cables. The housings are secured to the brackets by a quick-release catch mechanism which facilitates release and changing of the individual housings.

BACKGROUND OF THE INVENTION

This invention relates generally to luminaires for lighting large areas such as roadways and is more particularly directed to a bracket for securing luminaires to a roadway barrier or other mounting surface and which also provides a raceway for the luminaire power cables.

In the illumination of roadways of, for example, freeways or bridges, it is often preferable that the illumination means be at a level relatively close to the road, e.g., slightly below the normal eye level of a driver of a motor vehicle. It is found that this positioning of the illumination means results in brighter and fuller illumination of the roadway than does conventional overhead lighting, and yet reduces the glare to vehicle drivers. Roadway luminaires for this type of illumination are commonly mounted on roadway barriers, such as the median barrier between lanes of oppositely directed traffic or the side rails of a roadway. These luminaires are usually elongated and are mounted in end to end abutting relationship to provide continuous illumination of the roadway.

It is to be appreciated that to provide power for the illumination sources of this type of luminaire, cables or wires must lead to each of the luminaires. Thus, some means for accommodating the cables along the length of the barrier must be provided, and it is preferable that such means enclose the cables in a manner protecting them from the elements. If when a roadway barrier is being constructed it is contemplated that luminaires of this type will be installed on it, a wireway or raceway for the cables can be built into the barrier as a part thereof. Most existing barriers, however, do not include a raceway for luminaire power cables, although it is desirable to be able to substitute this type of luminaire for the overhead lights now provided on most existing roadways. Moreover, the space available on many existing barriers is not sufficient to permit mounting of both a wireway and luminaire thereon. Thus, heretofore it has not always been practical to convert existing overhead lighting arrangements to low level lighting. It should be noted that the luminaire housings themselves cannot be used as a wireway since it is desirable to be able to remove or replace each luminaire independent of the others should one become damaged or otherwise in need of repair.

SUMMARY OF THE INVENTION

The instant invention permits luminaires of this type to be installed on existing roadway barriers irrespective of whether such barriers have raceways. The brackets for securing the luminaires to the barrier are adapted, in combination with the luminaires, to provide a continuous raceway from the luminaire cables. More particularly, each bracket includes a channel member adapted to accommodate the power cables and having means for securing a luminaire over its mouth to define an enclosed raceway. The channel member of each bracket meets with the channel member of the adjacent brackets to provide continuity of the raceway for the length of the luminaire assembly.

The combined bracket-raceway provides the luminaire assembly as a generally self-contained unit. The unit takes up only a minimum amount of space and obviates the necessity of modifying existing roadway barriers for the mounting of the low-level roadway luminaires.

BRIEF DESCRIPTION OF THE DRAWING

With reference to the drawing:

FIGURE 1 is a perspective view of a roadway median barrier having luminaires mounted thereon by a combined bracket and raceway of the invention;

FIGURE 2 is an enlarged, cross-sectional view taken on a plane indicated by line 2—2 of FIGURE 1 illustrating constructional details of the luminaire and bracket of the invention;

FIGURE 3 is a fragmentary rear view of a joint between two luminaires illustrating the manner in which adjacent brackets are joined to provide a continuous raceway between them;

FIGURE 4 is an enlarged fragmentary perspective view illustrating a luminaire and a bracket of the invention exploded from one another;

FIGURE 5 is a cross-sectional view similar to FIGURE 2 of another luminaire and bracket of the invention; and

FIGURE 6 is a fragmentary front elevation view of a joint between two luminaires and brackets of the embodiment of FIGURE 5 illustrating the manner in which adjacent brackets of this embodiment are joined to provide a continuous raceway between them.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGURES 1–4, and particularly to FIGURE 1, a roadway barrier **11** is shown which includes a continuous beam **12** supported on a base **14** by a plurality of upwardly extending longitudinally spaced posts **16**. The illustrated exemplary barrier **11** is a median barrier adapted to be positioned between lanes of oppositely directed traffic. From the following description, it will be appreciated, however, that the invention is equally applicable to roadway side barriers and other forms and configurations of barriers.

Mounted on beam **12** are a plurality of longitudinally aligned, adjacent luminaire units **17**. Since barrier **11** is a median barrier, two sets of luminaire units are provided, one on each side of the barrier. Each luminaire includes a light housing **18** having at one side thereof a plurality of longitudinally spaced light transmitting lenses **19** of plastic or the like backed by a collimator **21** of preferably honeycomb material. The top of each housing is a hinged lid **22** which may be pivoted open to provide ready access to the interior of the housing. This facilitates replacement of the illumination source which can be a fluorescent lamp **23** having ballast **24**. Wires **26** are suitably secured to branch circuit conductor cables **25** within the raceway such as by means of split compression connectors and extend upwardly through an aperture **27** in

the bottom of housing **18**. Such wires **26** are releasably connected to a terminal block **28** mounted on the housing bottom, and wires **29** connect the terminal block to ballast **24**. Because wires **26** are releasably connected to terminal block **28**, the luminaire can be easily freed from its connection to the cables in the raceway.

With reference to FIGURE 3, it will be seen that at the joint **31** between adjacent luminaires, a small space is provided to accommodate thermal expansion and contraction of such luminaires. The joint itself is covered by a strap **32** having a quick release catch **33** facilitating separation of one luminaire from the other to permit any one luminaire to be removed from the barrier without disturbing the adjacent ones.

It is to be appreciated that as described to this point, the luminaire assembly is generally conventional. This type of luminaire is also described in Patent No. 3,387,-126 issued on Jan. 4, 1968, to Kun S. Lim, one of the present co-applicants, for Roadway Luminaire.

In accordance with the invention, luminaires **17** are secured to barrier **11** by novel brackets generally referred to by the reference numeral **36**. Each bracket **36** includes a channel member **37** which extends for substantially the full length of the luminaire and is communicably connected with the channel member **37'** of a bracket **36'** for the longitudinally adjacent luminaire **17'**. The lateral cross sectional area enclosed by each channel member **37** is sufficiently large, e.g., 5 square inches, for the channel member to accommodate a plurality of luminaire power cables. The mouth **38** of each channel member faces upwardly and a luminaire is secured over such mouth in covering relationship to thereby define with the channel member an enclosed raceway for the power cables. More particularly, at each longitudinal edge of the channel member adjacent its mouth there is provided means for securing the luminaire housing to the bracket over the channel. At the forward edge of the bracket such means includes an inwardly curved arcuate flange **39** which extends for the full length of the bracket. Such flange engages with a lip **41** which extends downwardly and outwardly from the luminaire housing adjacent the forward edge of its bottom. Such lip extends longitudinally of the housing for substantially its full length so that when the arcuate flange **39** and such lip **41** are interengaged, a front closure seal for the raceway is provided for substantially the full length of the luminaire. The rear edge of the bracket has a generally U-shaped gutter **42** which extends for the full length of such edge. A complementary L-shaped flange **43** adapted to fit within gutter **42** projects downwardly and outwardly from luminaire housing **17** adjacent the rear edge of its bottom. Flange **43** also extends for the full length of the housing so that when such flange is engaged with gutter **42**, a closure seal for the raceway is also provided at the rear side thereof to protect cables therein from the elements.

To provide for quick release securance of each luminaire housing to a bracket **36**, a set screw **44** threadably passes through outer flange **46** of gutter **42** and engages the shank of L-shaped flange **43**. A jam nut **47** on the free end of set screw **44** locks such screw in position. In the depicted embodiment wherein each bracket **36** is substantially coextensive with one luminaire **17** at least two of the set screws **44** are provided for each bracket with one adjacent each end of the luminaire for securing the luminaire housing to the bracket.

The manner by which the above described complementary engaging elements of the bracket and housing and the set screws provide for quick release of the luminaire housing should be apparent from the above and is fully described in the previously mentioned Patent No. 3,387,126. The set screws employed with the respective brackets can be dissimilar as described in such patent to provide positive locking securance at one end of each housing and longitudinal slippage at the other so that thermal expansion and contraction of the housing is accommodated.

It is to be appreciated that while in the embodiment being described the respective luminaire housings and brackets are substantially coextensive, this is not necessary. Several brackets could be used for each housing, or several housings could be mounted on each bracket, so long as the brackets are longitudinally adjacent one another with the channel members thereof communicably connected so as to provide the continuous raceway. FIGURE 3 depicts the manner in which the raceway defined by two adjacent brackets is continued at the joint between such brackets. An insert **51** bridges the gap between adjacent brackets **37** and **37'** and has its respective ends received within the ends of the two channel members **37** and **37'**. Insert **51** has a surface configuration which conforms to the interior surface configuration of such channel members at their ends so as to act as a continuation of the raceway between such channel members. One end of such insert is suitably rigidly secured within one of the channel members such as by bolt **52** securing it to channel member **37'**. So that thermal expansion and contraction between the brackets will be accommodated, the other end of the insert is slidably connected to the other channel member, channel member **37**, such as by means of a flexible grounding strap **53** secured between them by bolts **54** and **55**.

The base of each bracket **36** is adapted for securance of the bracket to roadway barrier **11** or other suitable mounting surface. More particularly, the base of channel member **37** is formed with two parallel, outwardly projecting gutter portions **56**. Bolt holes **57** extend through the bracket base at suitably longitudinally spaced intervals along such gutter portions and bolts **58** extend through such holes and are threadably received within inserts **59** in the barrier to provide for securance of the bracket to such barrier. Suitable sealing washers **61** on each bolt adjacent its associated hole **57** prevent liquid seepage or leakage into the raceway.

The rear side wall of the channel member of each bracket extends upwardly further than the front wall thereof so that the mounting of the luminaire will be such that light emanating therefrom will be directed downward at a slight angle. It will be appreciated that this construction can be varied depending on the particular surface configuration of the barrier or other mounting surface to which the luminaire is to be secured and depending upon the requirements attendant to the particular use to which the luminaire is to be put.

FIGURES 5 and 6 depict another preferred embodiment of the invention in which the raceway defined by the luminaire bracket is sufficiently large to accommodate the ballast for the lamps. This removal of the ballast from inside the luminaire housing allows the lamps to be placed in each housing end-to-end closely adjacent one another. Thus, a continuous longitudinal beam of light will emanate from the luminaires and no shadows will be caused by the ballast. With particular reference to FIGURE 5, a luminaire assembly of this embodiment of the invention is generally referred to by the reference numeral **61**. Assembly **61** is mounted on a roadway side barrier **62** by means of angle brackets **63** which are secured to the rear side of barrier **62** by means of bolt and nut assemblies **64**. Desirably, two angle brackets **63** are provided for each luminaire assembly **61**, one adjacent each end thereof. Barrier **62** is shown as being of the side rail type to exemplify a different form and configuration of barrier on which the invention permits the installation of low level luminaires.

The upper surface **66** of the outwardly projecting flange **67** of each angle bracket **63** is generally planar and is coextensive with the upper surface of side rail barrier **62**. Such flange has two threaded apertures for receiving the threaded end of bolts **69** which mount luminaire bracket **71** of this embodiment to the angle bracket **63**.

As previously mentioned, channel member **72** of luminaire bracket **71** defines a raceway of a sufficiently large

cross section to accommodate the ballast **73** for a fluorescent lamp **74** of each luminaire. More particularly, the rear side wall **76** of such channel member is extended upward to a much greater height than the corresponding rear side wall on the previously described embodiment. The base **77** of each luminaire housing **78** is adapted to extend horizontally inward from the upper edge of bracket wall **76** and then angularly downward to meet the relatively short front side wall **79** of the bracket channel member **72**. The horizontal portion of luminaire housing base **77** provides a platform upon which are vertically mounted by suitable bolt and nut assemblies **81** vertical end supporting plates **82** for the lamps. Ballast **73** for each lamp **74** depends from the underside of the platform portion of base **77** into the raceway defined by the channel member **72**. A suitable aperture **83** in base **77** provides an opening for passage of power wires **84** from the ballast **73** to the lamp **74**. As mentioned before, the removal of ballast **73** from the luminaire housing and placement thereof within the raceway permits longitudinally adjacent lamps **74** to be placed close to one another in end-to-end relationship to provide a generally continuous beam in the longitudinal direction and eliminate ballast shadows. The provision of the downwardly extending angular portion of the base assures that the light housing lense **86** can be of a comparable size to that of the previous embodiment without adding to the total height of the luminaire or raising such luminaire appreciably above side barrier **62**.

Terminal block **87** for releasably connecting the wires **88** from branch circuit power cables **89** to wires **91** leading into ballast **73** is also mounted in the raceway. More particularly, screws **92** secure such block to the base of channel member **72** interiorly thereof. The placement of the terminal block within the raceway facilitates quick removal of luminaire housing **78** from its bracket by eliminating the necessity of opening the hinged lid **93** of the luminaire housing to release the electrical connection of the lamps from the cables within the raceway. To effect release of such connection, it is only necessary to release wires **91** from the terminal block once the housing has been raised from the bracket.

It will be appreciated that ballast **73** generates heat during lamp operation. For this reason it is desirable to hold branch circuit cables **89** away from such ballast and for this purpose a cable retainer strap **94** is provided at the location of each ballast.

The complementary engaging portions by which the luminaire housing of this embodiment is secured to the bracket over the mouth of the channel member **72** are basically the same as in the previously described embodiment. For this reason they will not be described in detail. However, it should be noted that in this embodiment the U-shaped gutter-L-shaped flange engaging elements are at the front of the assembly rather than at the rear as in the first embodiment, and the inwardly directed flange—outwardly directed lip elements are at the rear thereof.

With reference to FIGURE 6, it will be seen that this embodiment does not include an insert comparable to the insert **51** of the previous embodiment for communicably connecting adjacent brackets to provide continuity of the raceway. In the instant embodiment the strap **96** for covering the joint between adjacent luminaires encircles both the luminaire housing and the bracket to thereby bridge the gap between the adjacent brackets as well as between the adjacent luminaires. Thus strap **96** communicably connects the channel member of one bracket to that of the other and eliminates the necessity for an insert. It will be noted that to permit the strap **96** to encircle both the luminaire housing and the bracket, the exterior surface configuration of the bracket has a smooth contour relative to the bracket of the previously described embodiment and is an extension of the surface configuration of the luminaire housing. More particularly, the outer surface of the luminaire housing and bracket mate with one another at the joint, and the bracket does not include wells or gutter portions at its base. Instead of the wells or gutter portions of the previously described embodiment to space the base of the bracket from the barrier to which it is mounted, spacing washers **97** are provided on mounting bolt **69** between such bracket and the angle bracket **63**.

Strap **96** is releasably secured around the joint between the adjacent luminaire assemblies by means of a bolt and nut assembly **98**. This bolt and nut assembly, as well as the set screws **99** for securing the luminaire housings to the brackets, are provided at the front of the luminaire. Individual luminaire housings can then be removed and replaced without it being necessary to have access to the rear of the assembly. This is particularly advantageous when the luminaire is mounted on the side rail barrier of, for example, a bridge on which access to the far side of the barrier is limited.

To ground adjacent luminaire brackets of this embodiment to one another, a sheathed grounding wire **101** passes through collars **102** of grounding lugs **103** secured to each luminaire adjacent the joint. The ends of the ground cable are bared of sheathing and are secured in electrical contact to the respective brackets such as by means of screws **104** which secure the grounding lugs to the brackets.

What is claimed is:

1. In combination, a luminaire comprising a luminaire housing having along a side thereof a light transmitting lens and enclosing a source of illumination positioned therein to transmit light through said lens; a bracket for securing said luminaire to a mounting surface, said bracket comprising a channel member having means for detachably securing said luminaire over its mouth to define an enclosed raceway for power cables and the like for said source of illumination, said channel member being adapted opposite said mouth for securance to said mounting surface; and means releasably connecting a power cable in said channel member with said source of illumination in said luminaire to provide power to said source, said luminaire thereby being separable from said bracket and the power cables therein for maintenance and replacement.

2. The combination of claim **1** wherein said channel member is communicably connected with a similar channel member of a second luminaire bracket longitudinally adjacent the first bracket, said channel members defining a continuous power cable raceway for said luminaire.

3. The combination of claim **2** wherein the connection between the channel member of said bracket and said similar channel member is by means of an insert which conforms to the interior surface of said channel members at their adjacent ends and bridges the gap between them to provide a continuation of said raceway between said brackets.

4. The combination of claim **2** wherein the connection between the channel member of said bracket and said similar channel member is by means of a strap which encircles said luminaire and said brackets at their adjacent ends and bridges the gap between said channel member and said similar channel member to provide a continuation of said raceway between said brackets.

5. The combination of claim **1** wherein said means for releasably connecting said power cable in said channel member with said source of illumination comprises a terminal block mounted within said raceway releasably electrically connecting said power cables to power wires for the source.

6. The combination of claim **5** wherein said channel member is of a sufficient cross sectional area to enclose within said raceway a ballast for a fluorescent lamp in said luminaire providing said illumination source, and said power wires lead to said ballast which is secured to the base of said luminaire.

7. The combination of claim **1** wherein said means for securing a luminaire over the mouth of said channel member includes a pair of elements with each being adjacent one of the longitudinal edges of said channel member and adapted to interengage with complementary elements on a luminaire, said elements extending for the full length of said channel member and providing a

closure seal between the channel member and the luminaire for the raceway.

8. The combination of claim **7** wherein said means for detachably securing a luminaire over the mouth of said channel member further includes means for providing quick release of said luminaire from said bracket.

9. The combination of claim **7** wherein one of said pair of elements is an inwardly projecting flange extending for the length of said bracket and adapted to engage with a lip projecting outwardly from adjacent one longitudinal edge of the base of a luminaire housing and the other of said pair of elements is a U-shaped gutter extending the length of said bracket and adapted to receive an L-shaped flange extending downward from adjacent the other longitudinal edge of said luminaire housing base, and the outer wall of said U-shaped gutter threadably receives a set screw for engagement with the shank of said L-shaped flange when said flange and gutter are interengaged.

10. The combination of claim **7** wherein said channel member is communicably connected with a similar channel member of a second luminaire bracket longitudinally adjacent the first bracket, said channel members defining a continuous power cable raceway for said luminaire and the channel member of said second luminaire bracket including a pair of elements with each being adjacent one of the longitudinal edges of said channel member and adapted to interengage with complementary elements on a luminaire to secure such luminaire over the mouth of said channel member.

11. The combination of claim **10** wherein the connection between the channel member of said bracket and said similar channel member is by means of an insert which conforms to the interior surface of said channel members at their adjacent ends and bridges the gap between them to provide a continuation of said raceway between said brackets.

12. The combination of claim **7** wherein the connection between the channel member of said bracket and said similar channel member is by means of a strap which encircles said luminaire and said brackets at their adjacent ends and bridges the gap between said channel member and said similar channel member to provide a continuation of said raceway between said bracket.

13. The combination of claim **7** wherein said means for releasably connecting said power cables in said channel member with said source of illumination comprises a terminal block mounted within said raceway releasably electrically connecting said power cables to power wires for the source.

14. The combination of claim **13** wherein said channel member is of a sufficient cross sectional area to enclose within said raceway a ballast for a lamp in said luminaire providing said illumination source, and said power wires lead to said ballast which is secured to the base of said luminaire.

References Cited

UNITED STATES PATENTS

3,131,871	5/1964	Foulds	240—9 XR
3,201,582	8/1965	Siegel	240—73

NORTON ANSHER, Primary Examiner

R. L. MOSES, Assistant Examiner

U.S. Cl. X.R.

240—2, 1.2