Feb. 23, 1960 M. R. ANDERSON ET AL 2,926,238

LUMINAIRE

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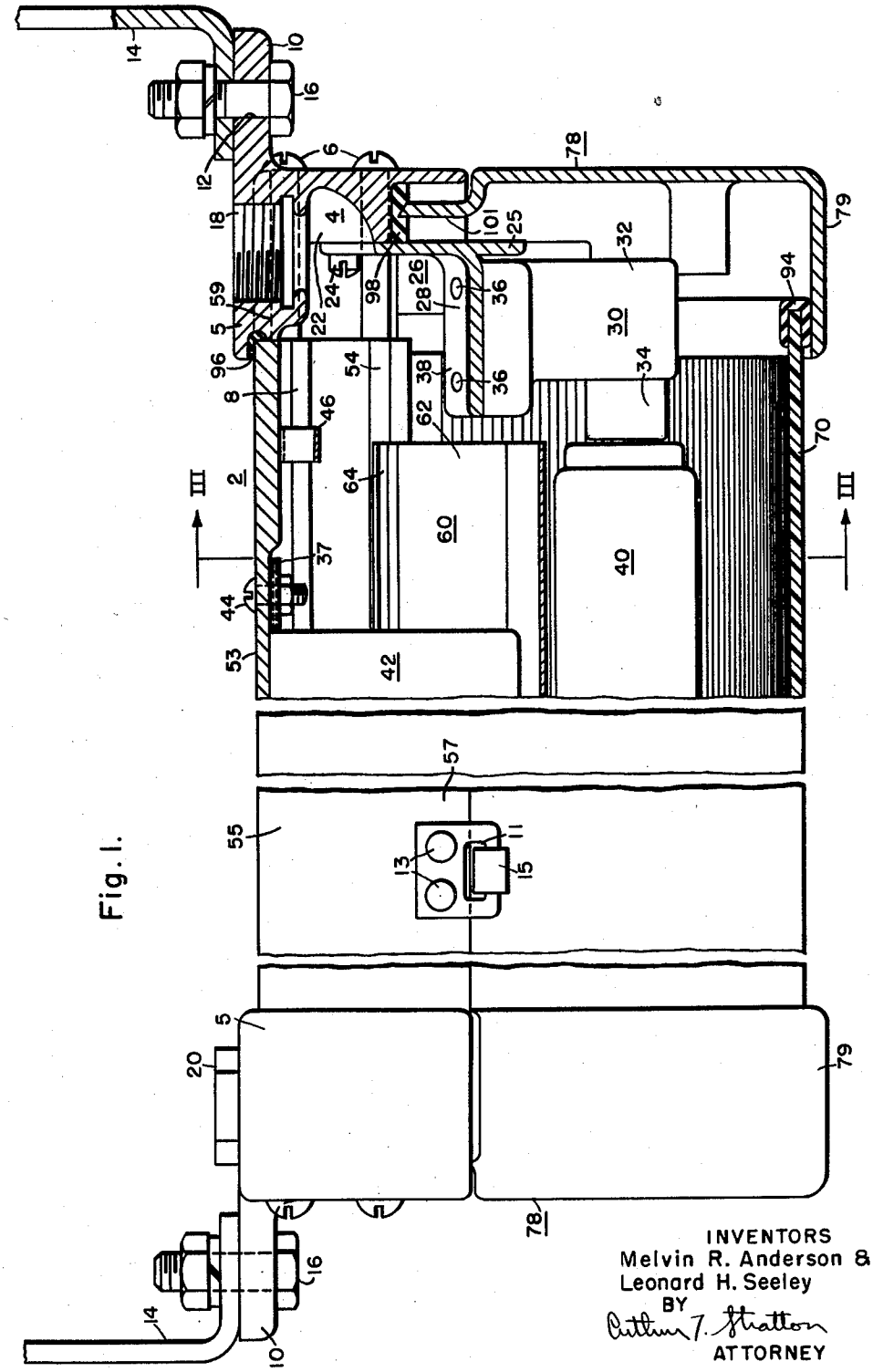


Fig. 1.

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LUMINAIRE

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Fig. 2.

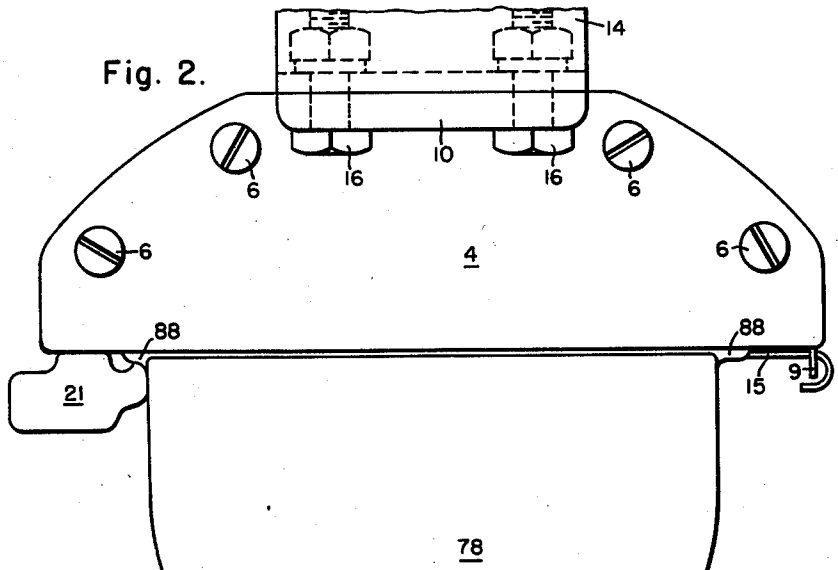


Fig. 4.

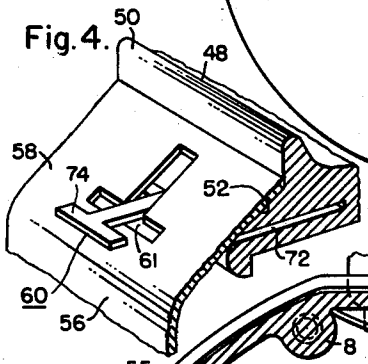
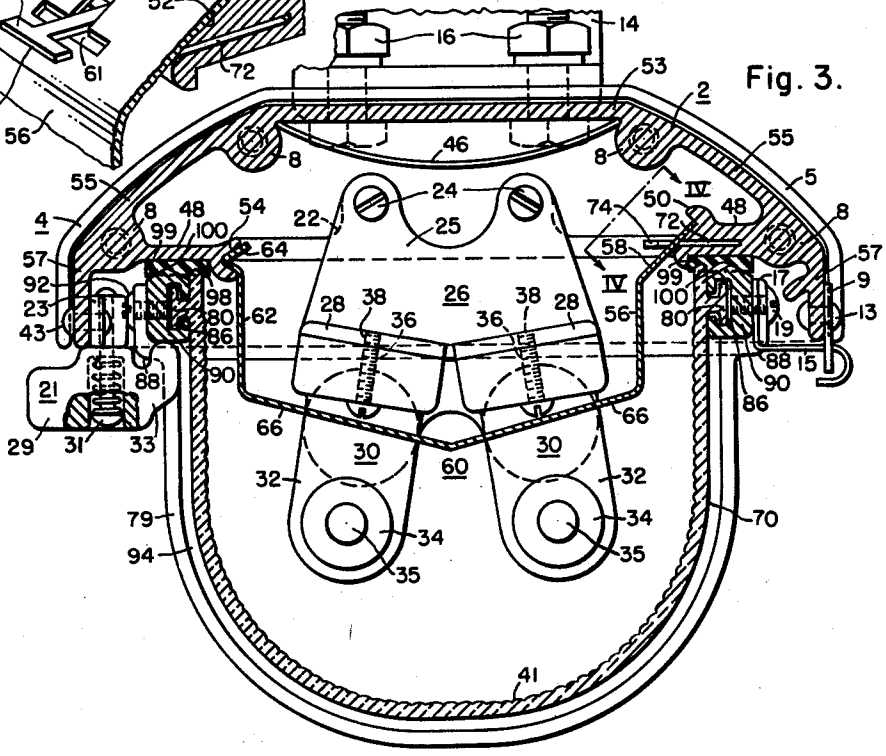


Fig. 3.



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Fig.5.

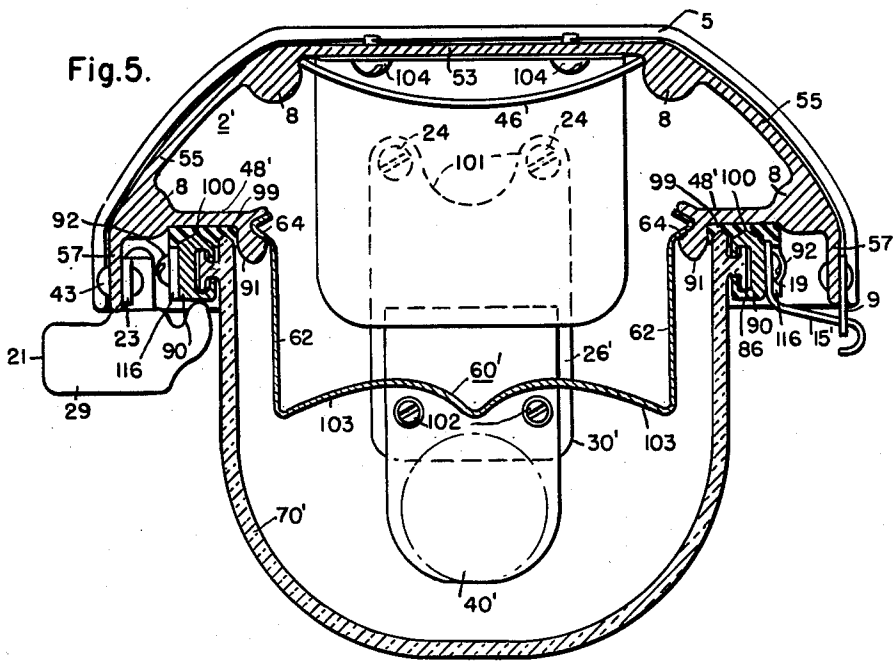
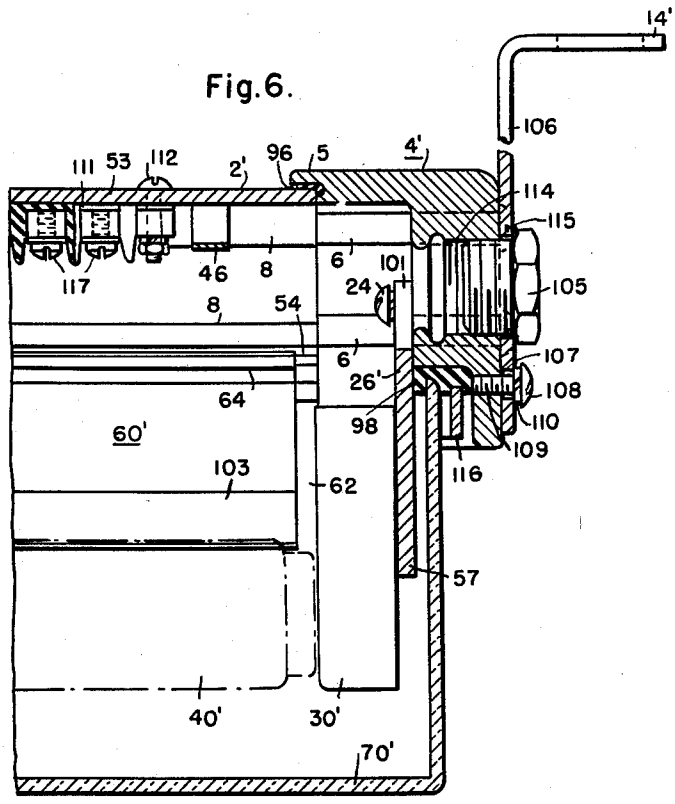


Fig.6.



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2,926,238

LUMINAIRE

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Application August 31, 1954, Serial No. 453,248

11 Claims. (Cl. 240—51.11)

Our invention relates to luminaires, and more particularly to elongated luminaires for street lighting purposes.

In selecting a luminaire for such purposes, there are obviously numerous considerations which determine the final selection. It is equally obvious that in most instances it is an overall basis rather than a particular feature alone which determines the selection of a particular luminaire. In view of these factors, we have designed a new and improved luminaire which may be produced at a lower cost than similar luminaires presently on the market.

Accordingly, broadly speaking, one object of our invention is to provide a new and improved luminaire.

Another object of our invention is to provide a novel reinforced cover construction for a luminaire.

Still another object of our invention is to provide a novel removable reflector construction for a luminaire.

Yet another object of our invention is to provide a novel shallow luminaire housing in which are located control elements and a removable reflector located adjacent such control elements.

Another object of our invention is to provide a new and improved luminaire which may easily be installed.

Still another object of our invention is to provide a new and improved luminaire which may easily be maintained.

A more specific object of our invention is to provide a new and improved luminaire which has a shielding cover supported at each of its sides substantially along its entire length by side rails, one of which is pivotally supported by the luminaire housing.

Another more specific object of our invention is to provide a new and improved luminaire which has a reflector which is supported substantially along its entire length at each of its sides by means of side arms engaging an integral formation on each side of the luminaire housing.

Another more specific object of our invention is to provide a new and improved luminaire which has a reflector which is supported substantially along its entire length at each of its sides by means of identical side arms engaging an identical integral formation on each side of the luminaire housing.

Another object of our invention is to provide a new and improved luminaire for street lighting purposes which occupies a minimum space.

A further object of our invention is to provide a new and improved luminaire having component parts of improved simplified construction.

These and other objects will become more apparent upon consideration of the following detailed description of preferred embodiments of the invention when taken in conjunction with the following drawings, in which:

Figure 1 is a side elevational view partly in section of a luminaire constructed in accordance with the principles of our invention;

Fig. 2 is an end view of the luminaire shown in Fig. 1;

Fig. 3 is a cross-sectional view of the luminaire shown in Fig. 1 taken substantially along the line III—III thereof;

Fig. 4 is a top perspective view of a segment of the reflector and housing shown in Fig. 3 looking generally in the direction of the arrows IV—IV;

Fig. 5 is a vertical cross-sectional view of another luminaire constructed in accordance with the principles of our invention taken substantially on a plane located transversely to the longitudinal axis of the luminaire; and

Fig. 6 is a longitudinal cross-section view of one end of the luminaire shown in Fig. 5.

Referring to Figs. 1, 2 and 3, it will be noted that a luminaire constructed in accordance with the principles of our invention comprises an elongated trough-shaped open ended upper housing **2**, which may be made from any suitable material. As shown housing **2** comprises an upper flat bight portion **53** having outwardly and downwardly extending arms **55** at each side thereof which terminate in approximately vertically downwardly extending flanges **57**. In view of the fact that such luminaires are frequently employed in underpass or tunnel installations wherein there is a serious corrosion problem, housing **2** is preferably formed from a commercially available aluminum alloy which is highly resistent to corrosion and which is light in weight. Each end of housing **2** is adapted to be closed by an end plate **4**, which is secured thereto by means of machine screws **6** which extend through plates **4** and engage bosses **8**. Bosses **8** are formed integral with and extend the entire length of housing **2**, and each has a tapped opening at each of its ends for receiving screws **6**. As shown, two bosses **8** are located on the inner surface of each arm **55**, one of which is adjacent the bight portion **53** of housing **2** so as to form an upper spaced pair of bosses **8**, and the other of which is adjacent the flange **57** so as to form a lower spaced pair of bosses **8**.

End plates **4** are, for the reasons as indicated with reference to housing **2**, preferably formed from a commercially available aluminum alloy and are each provided with an inwardly extending flange **5** which is generally of the same shape as the cross section of housing **2**, and which extends over the adjacent outer end of housing **2**. Each plate **4** is provided with an outwardly extending flange **10** which extends longitudinally outwardly from its upper flattened surface for the purpose of securing the fixture to any suitable support, such as a support bracket **14**, by any suitable means, such as a bolt and nut assembly **16**, extending through aligned openings **12** in the flange **10** and the support bracket **14**. It will be noted that the top of each flange **5** of plate **4** is provided with an integral downwardly extending boss **59** having a fairly large threaded opening **18** therein, in order that wiring connections (not shown) may readily be made by any suitable connecting means (not shown). In the event that only one opening **18** is utilized for such wiring connections, the other opening **18** may be closed by any suitable means such as a threaded plug **20**. It should be noted that the wiring connections are made adjacent the support bracket **14** in order that such connections are fairly rigid and the effects of vibration and shock upon the connections will be minimized.

The inner surface of each plate **4** is provided with an integral inwardly extending boss **22** to which is secured by any suitable means, such as machine screws **24**, the back plate **25** of a downwardly extending lampholder supporting bracket **26**. Bracket **26** may be fabricated from any suitable material and for the reasons as previously indicated, is preferably formed of cast aluminum. Bracket **26** is irregular in shape, but is symmetrical about its vertical center line so that at each side thereof it in-

cludes an inwardly projecting plate 28 which is inclined upwardly from the vertical center line toward the sides of the housing 2. Plates 28 are provided for supporting any suitable lampholding means and, as shown, a lampholder 30 comprising a housing 32 into which a retractable plunger 34, having a central contact receiving opening 35 therein, may be secured to one of the plates 28 by means of screws 36 passing through the base of the lampholder 30 and engaging threaded openings 38 in the one plate 28. As shown in Fig. 6 a lampholder 30' which is similar to lampholder 30, except that it is not provided with a retractable plunger 34, may be secured to the other plate 28 in the same manner as lampholder 30 is secured. Thereafter, any suitable lamp means, such as a fluorescent lamp 40, having contacts at its ends insertable within openings 35 may be located between oppositely located lampholders 30 and 30' on opposite end plates 4, in the well known manner.

In order to provide suitable control means for such a lamp, a ballast 42 is enclosed within the housing and is secured to the inner surface of the bight portion 53 of housing 2 by any suitable means, such as machine screws 44 extending through the bight portion 53 of housing 2 and through integral legs 37 extending outwardly from the ballast 42. A downwardly curved clip 46 of any suitable material having a degree of resilience, such as hard sheet aluminum, may be sprung between the upper pair of bosses 8 to provide a supporting means for the electrical conductors (not shown) which would extend from at least one of the openings 18 to the ballast 42.

As more clearly shown in Fig. 3, housing 2 is provided with a pair of integral support flanges 48 which extend inwardly towards the center of housing 2 from the lower pair of spaced bosses 8 and which may extend longitudinally the entire length of housing 2. As shown, the right hand support 48 is provided on its inner end with an upper angularly upwardly and inwardly extending projection 50 which is approximately at right angles to an integral inwardly and downwardly extending flat surface 52 on the inner end of this support 48. The left hand support 48 is provided at its inner end with an integral enlargement having a longitudinally extending V-shaped groove 54 in its inner side. A generally U-shaped reflector 60 is secured between the arms 48 and it may be made from any suitable reflecting material, preferably from a commercially available hardened aluminum alloy which is capable of being treated to obtain a high reflecting surface. Reflector 60 is supported along its entire length from the supports 48 by compressing its upwardly extending arms therebetween and it does not require the use of any additional securing means. As shown, the right hand upwardly projecting arm 56 of reflector 60 is provided with an angularly upwardly and outwardly extending flange 58 which abuts against the projection 50 so that its undersurface is supported by the flat surface 52. The left arm 62 of reflector 60 is provided with an outwardly extending V-shaped projection 64 at its outer edge which engages the V groove 54 of the left hand support 48. Reflector 60 may easily be installed by placing flange 58 thereof, against the projection 50 so that the projection 50 functions as a stop. Thereafter, the reflector 60 is pivotally rotated upwardly and the left arm 62 bent inwardly so that the V projection 64 on arm 62 clears the lower edge of the V groove 54 in the left hand support 48. Once reflector 60 is so located, the left arm 62 is released so that V projection 64 may engage and be held in V-groove 54. In order to remove reflector 60 the reverse procedure is followed. It is, of course, believed obvious that the position of the supports 48 and arms 56 and 62, as described, is interchangeable and that the terminology left and right is in no sense limiting. It will further be noted that the lower portion of reflector 60 is inclined downwardly toward the vertical centerline of the housing 2 in somewhat of a broad V shape so that the longitudinally extending reflecting surfaces clear the bases of lampholders 30 and to locate a reflecting surface for each of the lamps 40 so as to direct incident rays from the lamp 40 downwardly and outwardly from the vertical centerline of the fixture.

As more clearly shown in Fig. 4, flange 58 of reflector 60 may be provided with a plurality of longitudinally spaced T-shaped slots 61. Slots 61 are located so that their cross portions are approximately parallel to the outer edge of flange 58 and so that their stem portions extend transversely upwardly from the cross portions toward the outer edge of flange 58, but which terminate short thereof. The right pivot support 48 is provided with an open ended slot 72 which may extend the length thereof and in which are located a plurality of T-shaped hinges 74 which are spaced to correspond to the spacing of slots 61. Hinges 74 may be made from any suitable material having sufficient strength, such as steel, whereby the stem portion of hinge 74 may be forced into slot 72 and held frictionally therein. The stem portions of hinges 74 are of sufficient length so that the cross portion thereof extends inwardly of housing 2 spaced from the right support 48. By such a construction the reflector 60 may easily be supported by the hinge 74 for maintenance purposes. In initially installing such a reflector 60 the cross portion of slots 61 is inserted over the cross portion of hinges 74 so that the stem portion of flanges 74 extend through the stem portion of slots 61. Thereafter, reflector 60 is installed in the same manner as previously indicated. It is of course obvious that with the stem portions of hinges 74 and slots 61 being so engaged, the reflector 60 may conveniently be supported in a downwardly extending position whereby the inner area of housing 2 along its entire length is readily accessible. Also, by merely lifting reflector 60 so that the cross portions of the hinges 74 and slots 61 clear each other the reflector 60 may easily be removed from housing 2. It will be noted that hinges 74 are only utilized to hold the reflector 60 in the open position and that they are not used to support the reflector 60 in the closed position.

Although the luminaire 60 as heretofore described may be used as an open type luminaire, it is often desirable that such a unit be completely enclosed in order to protect the lamps 40, the surface of the reflector 60 and also to eliminate electrical hazards. In order to accomplish these purposes, a cover assembly is pivotally supported from the housing 2. As shown, the cover assembly comprises a U-shaped light transmitting cover 70 which is preferably formed from any suitable transparent plastic material, such as methylmethacrylate, and which extends longitudinally below the housing 2 between the end plates 4. Each end of cover 70 is adapted to be closed by an end cover 78 having an integral generally U-shaped inwardly extending flange 79 which engages the outer surface of cover 70, and the covers are preferably formed from an aluminum alloy for the same considerations as has been previously mentioned. If desired, cover 70 and end covers 78 may be made integral from one piece of transparent material. In order to obtain a more diffused light pattern, a plurality of ribs 41 may be provided on the inner surface of the cover 70.

In order to support the cover 70, each of its upwardly extending arms are provided with integral outwardly extending integral T-shaped projections 80 adjacent its upper edge. Projections 80 are located so that their cross portion is spaced outwardly from and substantially parallel to the arms of cover 70. A side rail 90, which is preferably formed from a commercially available aluminum alloy for the same reasons as has been previously indicated, is provided having a central open ended T-shaped opening 86 therein which is adapted to be slid over the projections 80 at each side of the cover 70. Side rails 90 substantially engage the entire outer surface

of each arm of cover 70 beneath the cross portion of T-shaped projections 80, whereby cover 70 is supported along its entire length at each of its sides. The upper ends of flange 79 of each end cover 78 are each provided with an outwardly offset portion 88 which are adapted to receive the ends of the side rails 90 therein. Thereafter, end cover 78 may be secured to each side rail 90 at each of its ends by any suitable means, such as machine screws 92 extending through flange portions 88, and threadedly engaging the bight portion of side rails 90. In order that the connections between the cover 70 and the end covers 78 are waterproof, a U-shaped gasket 94, which may be made of any suitable compressible resilient material such as synthetic rubber, is placed over the outer edges of the cover 70 so as to have one of its arms located between the cover 70 and the inner surface of the flange 79 of end covers 78. A gasket 96 of similar material may also be provided at the meeting surfaces of the end plates 4 and the housing 2. A third gasket 98, which is also formed of a similar material, is secured on the lower surface of boss 22 of each end plate 4, for a purpose hereinafter described. Still another gasket 99, which is made from a similar gasket material as gasket 94, is secured to the longitudinally extending undersurface of each support flange 48, as will be hereinafter described.

As more clearly shown in Fig. 3, flanges 57 of housing 2 are spaced outwardly from side rails 90 and are in overlapping relation thereto. In order to pivotally support the cover assembly from housing 2, the outer surface of one of the flanges 57 is provided with a plurality of longitudinally spaced pivot supports, each of which comprises a plate 9 which are secured thereto by any suitable means, such as rivets 13. Plates 9 have portions which extend downwardly below the lower elge of flanges 57, which portions are each provided with an opening 11. A plurality of hooks 15 are secured to the side rail 90, adjacent the flange 57 having the plates 9 secured thereto, and these extend outwardly from such side rail 90 and engage in openings 11 in plates 9, respectively. Hooks 15 have an upwardly extending portion 17 at their inner ends which abut against the outer surface of such side rail 90 and are secured thereto by any suitable means such as machine screws 19 extending through plates 17 and threadedly engaging the bight portion of such side rail 90.

In order to provide a latch for the cover assembly, a plurality of latch members 21 are secured to the other flange 57 on the other side of the housing 2. Although a variety of latch members may be used, as shown, latch 21 comprises a U-shaped keeper plate 23 having outwardly extending flanges which are secured to the inner side of the other flange 57 by any suitable means, such as rivets 43. Each latch 21 also comprises a formed handle 29 having a central opening therein for receiving a pin 31 which is supported at its upper end by keeper plate 23. If desired, the upper end of pin 31 may be turned over in any suitable manner in order to prevent the pin 31 from being withdrawn downwardly from the keeper plate 23. An upward force for holding the cover assembly closed is provided by a spiral compression spring which is positioned in an enlarged portion of the central opening of each handle 29 around the pin 31. Pin 31, in turn, is headed to prevent the spring from being withdrawn downwardly. Handle 29 is also provided with an integral upwardly extending projection 33, which when the cover is manually placed into its proper position, engages the lower surface of the side rail 90 adjacent thereto, to bias such side rail 90 into engagement with the gasket 99, thereby resulting in a water-proof joint. With such a construction, it is obvious that the cover assembly may easily be removed by merely rotating handles 21 so that projections 33 clear the side rail 90 and thereafter, pivoting the cover assembly around hooks 15 in openings 11 for any maintenance purposes.

It will be noted that gaskets 98 on end plates 4, and gaskets 99 on supports 48 form a rectangular gasket area for keeping the joint between the cover assembly and the housing assembly waterproof. In order to insure proper engagement with such gaskets the upper surface of each side rail 90 is provided with a peak 100, each arm of cover 70 extends above the projection 80 and its upper edge is similarly peaked, and each end cover 78 is provided with an inwardly offset upwardly extending flange 101 which is provided with a beveled upper end. As all edges engaging gaskets 98 and 99 are relatively sharp and extend into the area occupied by the gaskets 98—99, the gaskets 98—99 will be compressed to form an enclosing seal when the cover assembly is locked in position.

Primarily it will be noted that we have provided a housing 2 which has a fairly shallow depth, but which can be readily sealed from the atmosphere, and yet be readily opened for servicing operations. It should particularly be noted that housing 2 is designed in cross section so that it may readily be formed by an extrusion process whereby the unit cost is materially reduced. Similarly, it will be noted that the cross-section side rails 90 as well as cover 70 may be made by an extrusion process, whereby inexpensive components may be obtained. Further, as no loose hardware is involved in installing the reflector 60, maintenance and installation of such a unit is readily achieved.

The modification of our invention shown in Figs. 5 and 6 utilizes many of the same components previously discussed, and accordingly, like reference numerals have been used to designate identical components, and primed numerals have been used to designate similar components. Housing 2' differs from housing 2 in that it has a pair of opposed support flanges 48' relative to the housing located similarly to support flanges 48; however, it will be noted that each support 48' is provided with an enlargement at its inner edge having an integral longitudinally extending V-shaped groove 54 therein. A reflector 60' is provided having a pair of identical upwardly extending arms 62 each having an outwardly extending U-shaped projection 64 at its outer end. It is believed obvious from previous discussions that reflector 60' may easily be supported by support flanges 48' by permitting the projections 64 to snap into grooves 54. In addition to such change, the lower side of the inner end of each support 48' has also been provided with an integral downwardly extending enlargement 91 which is flared outwardly from the lower edge of the groove 54 to form a camming surface to facilitate guiding the projections 64 of reflector 60' into the grooves 54. The outer side of each projection 91 is located vertically beside gaskets 99 to prevent gaskets 99 from expanding beyond a desirable point to insure a watertight fit between the upper edge of cover 70' and the housing 2'. Another feature of support flanges 48' is that as they have the same cross-section and are spaced the same distance from the center of housing 2', the housing 2' may more readily be formed by an extension process. Such a construction also permits the reflector 60' to be mounted so that either of its arms 62 engages either support 48'.

Figs. 5 and 6 also illustrate that a luminaire constructed in accordance with the principles of our invention may easily be modified to support a single elongated lamp. In such modification, bracket 26' comprises a flat plate having a pair of spaced upwardly extending arms 101 secured to end plate 4' by means of screws 24. A lamp-holder 30', as previously discussed, is secured to one of the brackets 26', as previously indicated. Obviously, various types of lamps 40' may be so supported and the type of lampholder 30' utilized will depend on the type of lamp used. When a single lamp 40' is used

the bight portion of reflector 60' may be provided with a pair of upwardly dished arcuate reflector portions 103 which are joined together on the longitudinal center line of housing 2' to obtain better light distribution from lamp 40'.

Fig. 5 further illustrates that the ballast 42 may be secured to the bight portion 53 of housing 2' by utilizing screws 104 which extend through integral outwardly extending legs and threadedly engage openings in the bight portion 53.

Referring to Fig. 6, it will be noted that additional modifications may be made to a luminaire constructed in accordance with the principles of our invention without departing from the spirit thereof. Primarily, each end plate 4' of housing 2' is provided with a centrally located longitudinally extending opening 114 which is threaded to receive a hollow externally threaded bushing 105 therein. One arm 106 of an L-shaped support bracket 14' extends alongside the outer end surface of each end plate 4' and is provided with a central opening 115 to receive the bushings 105. When bushings 105 are located to extend through openings 115 and are properly secured in openings 104, housing 2' may be pivotally rotated between the arms 106 of each end support bracket 14'. At least one arm 106 is provided with an arcuate slot 107 in which any suitable securing means is located to prevent housing 2' from any undesirable rotation with respect to support brackets 14'. As shown, a machine screw 108 extends through slot 107 and threadedly engages an opening 109 in the adjacent end plate 4'. Machine screw 108 is provided with a sufficient head diameter to insure that it engages the outer surface of arm 106 on each side of slot 107 at all times. If desired, a lock washer 110 may be placed under the head of machine screw 108 to obtain a better holding action on the housing 2'. By such construction housing 2' may be adjustably located in a definite rotative relationship with reference to arm 106 at a desired point. Such relationship may easily be altered by loosening screw 108, rotating housing 2' to the desired point and again tightening screw 108. If desired, a stationary reference point (not shown) may be provided on arm 106 and a plurality of arcuate reference points (not shown) may be provided on the outer end surface of end plate 4' to provide known reference points for rotating housing 2'. Regardless of what position housing 2' may occupy with reference to arms 106, wiring connections may easily be made thereto by inserting supply conductors (not shown) through bushing 105, which connections will not be twisted by rotating housing 2' as bushings 105 are the pivot points for such rotation. Such supply conductors may be terminated at a terminal board 111 formed from any suitable insulating material, such as a phenolic material, which is secured to the bight portion 53 of housing 2' in any suitable manner, such as by machine screws 112 engaging the bight portion 53. Terminal board 11 is provided with suitable spaced terminals 117 for securing both the supply conductors and the internal conductors (not shown) thereto. Finally, Fig. 6 illustrates that a cover 70' may be formed as a single piece of any suitable transparent material, such as methylmethacrylate, whereby separate end covers 78 and gaskets 94 may be eliminated and, if desired, light diffusing ribs 41 may also be eliminated. Inasmuch as flange portions 88 of covers 78 is also eliminated by such construction, a U-shaped bracket 116 having inwardly extending arms engageable with the outer surface of side rails 90 may be secured to side rails 90 by screws 92 extending therethrough to hold side rails 90 in position.

Accordingly, having described preferred embodiments of the invention in accordance with the Patent Statutes, it is desired that our invention be not limited to the specific constructions illustrated, inasmuch as it will be apparent that many modifications may be made therein without departing from the broad spirit and scope of our invention. Accordingly, it is desired that our invention be interpreted as broadly as possible and that it be limited only as required by the prior art.

We claim as our invention:

1. A luminaire comprising an elongated U-shaped body member having downwardly extending sidewalls, an elongated U-shaped light transmitting cover having upwardly extending sidewalls adapted to be located between the sidewalls of said body member, each of said sidewalls of said cover having integral outwardly extending T-shaped members extending the length thereof having a cross bar portion substantially parallel to the sidewalls of said cover, side rail members having a T-shaped slot therein telescopically engageable with said T-shaped members respectively for supporting each side of said cover substantially along its entire length, means whereby each of said side rails can be secured to said body member, and lamp supporting means secured to said body member for supporting at least one lamp therebetween above said cover.

2. A one-piece open-ended housing for an elongated luminaire having a cross section at any transverse plane along its length comprising a flat base, a pair of spaced opposed integral sidewalls extending downwardly and outwardly from said base, a pair of arms extending inwardly from the opposed surfaces of said sidewalls substantially parallel to said base for supporting a reflector therebetween, one of said arms being formed at its innermost end in a V-shaped groove, and the other of said arms being formed at its innermost end with a pair of plane surfaces at approximately right angles to each other.

3. An elongated luminaire comprising an elongated trough-shaped housing having downwardly extending spaced sidewalls, a first arm extending inwardly from each of said sidewalls, each of said firm arms being located opposite from each other so that their ends are spaced from each other, a reflector having a pair of resilient spaced second arms, each of said first and second arms extending the length of said housing and said reflector, respectively, each of said ends of said first arms having an indentation extending the entire length thereof, each of said second arms having a projection extending outwardly thereof and along the entire length thereof, said projections being insertable within said identations whereby said reflector is supported between said first arms, and means at each end of said housing for supporting a gaseous discharge device in spaced relationship with said reflector.

4. An elongated luminaire comprising an elongated trough-shaped housing having downwardly extending spaced sidewalls, a first arm extending inwardly from each of said sidewalls, each of said first arms being located opposite and spaced from each other, a reflector having a pair of resilient spaced arms, at least one T-shaped hinge member secured to one of said first arms by its stem so that its cross portion extends outwardly therefrom, said one first arm being formed at its inner end to include a surface, one of the arms of said reflector having a flange with at least one T-shaped opening therein with its cross portion lowermost, said cross portion of said opening being insertable over said cross portion of said hinge so that said stem portion of said hinge is located in the stem portion of said opening, whereby said reflector may be supported in an open position by said one reflector arm, said flange being engageable with said surface whereby said reflector flange may be substantially pivoted on said surface to and from a closed position of the reflector, the other of said first and said second arms being engageable at the closed position of the reflector to support said reflector in said closed position, and means at each end of said housing for supporting a gaseous discharge device in spaced relationship with said reflector.

5. A shallow luminaire comprising an elongated substantially U-shaped housing having downwardly extend-

of each arm of cover 70 beneath the cross portion of T-shaped projections 80, whereby cover 70 is supported along its entire length at each of its sides. The upper ends of flange 79 of each end cover 78 are each provided with an outwardly offset portion 88 which are adapted to receive the ends of the side rails 90 therein. Thereafter, end cover 78 may be secured to each side rail 90 at each of its ends by any suitable means, such as machine screws 92 extending through flange portions 88, and threadedly engaging the bight portion of side rails 90. In order that the connections between the cover 70 and the end covers 78 are waterproof, a U-shaped gasket 94, which may be made of any suitable compressible resilient material such as synthetic rubber, is placed over the outer edges of the cover 70 so as to have one of its arms located between the cover 70 and the inner surface of the flange 79 of end covers 78. A gasket 96 of similar material may also be provided at the meeting surfaces of the end plates 4 and the housing 2. A third gasket 98, which is also formed of a similar material, is secured on the lower surface of boss 22 of each end plate 4, for a purpose hereinafter described. Still another gasket 99, which is made from a similar gasket material as gasket 94, is secured to the longitudinally extending undersurface of each support flange 48, as will be hereinafter described.

As more clearly shown in Fig. 3, flanges 57 of housing 2 are spaced outwardly from side rails 90 and are in overlapping relation thereto. In order to pivotally support the cover assembly from housing 2, the outer surface of one of the flanges 57 is provided with a plurality of longitudinally spaced pivot supports, each of which comprises a plate 9 which are secured thereto by any suitable means, such as rivets 13. Plates 9 have portions which extend downwardly below the lower elge of flanges 57, which portions are each provided with an opening 11. A plurality of hooks 15 are secured to the side rail 90, adjacent the flange 57 having the plates 9 secured thereto, and these extend outwardly from such side rail 90 and engage in openings 11 in plates 9, respectively. Hooks 15 have an upwardly extending portion 17 at their inner ends which abut against the outer surface of such side rail 90 and are secured thereto by any suitable means such as machine screws 19 extending through plates 17 and threadedly engaging the bight portion of such side rail 90.

In order to provide a latch for the cover assembly, a plurality of latch members 21 are secured to the other flange 57 on the other side of the housing 2. Although a variety of latch members may be used, as shown, latch 21 comprises a U-shaped keeper plate 23 having outwardly extending flanges which are secured to the inner side of the other flange 57 by any suitable means, such as rivets 43. Each latch 21 also comprises a formed handle 29 having a central opening therein for receiving a pin 31 which is supported at its upper end by keeper plate 23. If desired, the upper end of pin 31 may be turned over in any suitable manner in order to prevent the pin 31 from being withdrawn downwardly from the keeper plate 23. An upward force for holding the cover assembly closed is provided by a spiral compression spring which is positioned in an enlarged portion of the central opening of each handle 29 around the pin 31. Pin 31, in turn, is headed to prevent the spring from being withdrawn downwardly. Handle 29 is also provided with an integral upwardly extending projection 33, which when the cover is manually placed into its proper position, engages the lower surface of the side rail 90 adjacent thereto, to bias such side rail 90 into engagement with the gasket 99, thereby resulting in a water-proof joint. With such a construction, it is obvious that the cover assembly may easily be removed by merely rotating handles 21 so that projections 33 clear the side rail 90 and thereafter, pivoting the cover

assembly around hooks 15 in openings 11 for any maintenance purposes.

It will be noted that gaskets 98 on end plates 4, and gaskets 99 on supports 48 form a rectangular gasket area for keeping the joint between the cover assembly and the housing assembly waterproof. In order to insure proper engagement with such gaskets the upper surface of each side rail 90 is provided with a peak 100, each arm of cover 70 extends above the projection 80 and its upper edge is similarly peaked, and each end cover 78 is provided with an inwardly offset upwardly extending flange 101 which is provided with a beveled upper end. As all edges engaging gaskets 98 and 99 are relatively sharp and extend into the area occupied by the gaskets 98—99, the gaskets 98—99 will be compressed to form an enclosing seal when the cover assembly is locked in position.

Primarily it will be noted that we have provided a housing 2 which has a fairly shallow depth, but which can be readily sealed from the atmosphere, and yet be readily opened for servicing operations. It should particularly be noted that housing 2 is designed in cross section so that it may readily be formed by an extrusion process whereby the unit cost is materially reduced. Similarly, it will be noted that the cross-section side rails 90 as well as cover 70 may be made by an extrusion process, whereby inexpensive components may be obtained. Further, as no loose hardware is involved in installing the reflector 60, maintenance and installation of such a unit is readily achieved.

The modification of our invention shown in Figs. 5 and 6 utilizes many of the same components previously discussed, and accordingly, like reference numerals have been used to designate identical components, and primed numerals have been used to designate similar components. Housing 2' differs from housing 2 in that it has a pair of opposed support flanges 48' relative to the housing located similarly to support flanges 48; however, it will be noted that each support 48' is provided with an enlargement at its inner edge having an integral longitudinally extending V-shaped groove 54 therein. A reflector 60' is provided having a pair of identical upwardly extending arms 62 each having an outwardly extending U-shaped projection 64 at its outer end. It is believed obvious from previous discussions that reflector 60' may easily be supported by support flanges 48' by permitting the projections 64 to snap into grooves 54. In addition to such change, the lower side of the inner end of each support 48' has also been provided with an integral downwardly extending enlargement 91 which is flared outwardly from the lower edge of the groove 54 to form a camming surface to facilitate guiding the projections 64 of reflector 60' into the grooves 54. The outer side of each projection 91 is located vertically beside gaskets 99 to prevent gaskets 99 from expanding beyond a desirable point to insure a watertight fit between the upper edge of cover 70' and the housing 2'. Another feature of support flanges 48' is that as they have the same cross-section and are spaced the same distance from the center of housing 2', the housing 2' may more readily be formed by an extension process. Such a construction also permits the reflector 60' to be mounted so that either of its arms 62 engages either support 48'.

Figs. 5 and 6 also illustrate that a luminaire constructed in accordance with the principles of our invention may easily be modified to support a single elongated lamp. In such modification, bracket 26' comprises a flat plate having a pair of spaced upwardly extending arms 101 secured to end plate 4' by means of screws 24. A lamp-holder 30', as previously discussed, is secured to one of the brackets 26', as previously indicated. Obviously, various types of lamps 40' may be so supported and the type of lampholder 30' utilized will depend on the type of lamp used. When a single lamp 40' is used

the bight portion of reflector 60' may be provided with a pair of upwardly dished arcuate reflector portions 103 which are joined together on the longitudinal center line of housing 2' to obtain better light distribution from lamp 40'.

Fig. 5 further illustrates that the ballast 42 may be secured to the bight portion 53 of housing 2' by utilizing screws 104 which extend through integral outwardly extending legs and threadedly engage openings in the bight portion 53.

Referring to Fig. 6, it will be noted that additional modifications may be made to a luminaire constructed in accordance with the principles of our invention without departing from the spirit thereof. Primarily, each end plate 4' of housing 2' is provided with a centrally located longitudinally extending opening 114 which is threaded to receive a hollow externally threaded bushing 105 therein. One arm 106 of an L-shaped support bracket 14' extends alongside the outer end surface of each end plate 4' and is provided with a central opening 115 to receive the bushings 105. When bushings 105 are located to extend through openings 115 and are properly secured in openings 104, housing 2' may be pivotally rotated between the arms 106 of each end support bracket 14'. At least one arm 106 is provided with an arcuate slot 107 in which any suitable securing means is located to prevent housing 2' from any undesirable rotation with respect to support brackets 14'. As shown, a machine screw 108 extends through slot 107 and threadedly engages an opening 109 in the adjacent end plate 4'. Machine screw 108 is provided with a sufficient head diameter to insure that it engages the outer surface of arm 106 on each side of slot 107 at all times. If desired, a lock washer 110 may be placed under the head of machine screw 108 to obtain a better holding action on the housing 2'. By such construction housing 2' may be adjustably located in a definite rotative relationship with reference to arm 106 at a desired point. Such relationship may easily be altered by loosening screw 108, rotating housing 2' to the desired point and again tightening screw 108. If desired, a stationary reference point (not shown) may be provided on arm 106 and a plurality of arcuate reference points (not shown) may be provided on the outer end surface of end plate 4' to provide known reference points for rotating housing 2'. Regardless of what position housing 2' may occupy with reference to arms 106, wiring connections may easily be made thereto by inserting supply conductors (not shown) through bushing 105, which connections will not be twisted by rotating housing 2' as bushings 105 are the pivot points for such rotation. Such supply conductors may be terminated at a terminal board 111 formed from any suitable insulating material, such as a phenolic material, which is secured to the bight portion 53 of housing 2' in any suitable manner, such as by machine screws 112 engaging the bight portion 53. Terminal board 11 is provided with suitable spaced terminals 117 for securing both the supply conductors and the internal conductors (not shown) thereto. Finally, Fig. 6 illustrates that a cover 70' may be formed as a single piece of any suitable transparent material, such as methylmethacrylate, whereby separate end covers 78 and gaskets 94 may be eliminated and, if desired, light diffusing ribs 41 may also be eliminated. Inasmuch as flange portions 88 of covers 78 is also eliminated by such construction, a U-shaped bracket 116 having inwardly extending arms engageable with the outer surface of side rails 90 may be secured to side rails 90 by screws 92 extending therethrough to hold side rails 90 in position.

Accordingly, having described preferred embodiments of the invention in accordance with the Patent Statutes, it is desired that our invention be not limited to the specific constructions illustrated, inasmuch as it will be apparent that many modifications may be made therein without departing from the broad spirit and scope of our invention. Accordingly, it is desired that our invention be interpreted as broadly as possible and that it be limited only as required by the prior art.

We claim as our invention:

1. A luminaire comprising an elongated U-shaped body member having downwardly extending sidewalls, an elongated U-shaped light transmitting cover having upwardly extending sidewalls adapted to be located between the sidewalls of said body member, each of said sidewalls of said cover having integral outwardly extending T-shaped members extending the length thereof having a cross bar portion substantially parallel to the sidewalls of said cover, side rail members having a T-shaped slot therein telescopically engageable with said T-shaped members respectively for supporting each side of said cover substantially along its entire length, means whereby each of said side rails can be secured to said body member, and lamp supporting means secured to said body member for supporting at least one lamp therebetween above said cover.

2. A one-piece open-ended housing for an elongated luminaire having a cross section at any transverse plane along its length comprising a flat base, a pair of spaced opposed integral sidewalls extending downwardly and outwardly from said base, a pair of arms extending inwardly from the opposed surfaces of said sidewalls substantially parallel to said base for supporting a reflector therebetween, one of said arms being formed at its innermost end in a V-shaped groove, and the other of said arms being formed at its innermost end with a pair of plane surfaces at approximately right angles to each other.

3. An elongated luminaire comprising an elongated trough-shaped housing having downwardly extending spaced sidewalls, a first arm extending inwardly from each of said sidewalls, each of said firm arms being located opposite from each other so that their ends are spaced from each other, a reflector having a pair of resilient spaced second arms, each of said first and second arms extending the length of said housing and said reflector, respectively, each of said ends of said first arms having an indentation extending the entire length thereof, each of said second arms having a projection extending outwardly thereof and along the entire length thereof, said projections being insertable within said identations whereby said reflector is supported between said first arms, and means at each end of said housing for supporting a gaseous discharge device in spaced relationship with said reflector.

4. An elongated luminaire comprising an elongated trough-shaped housing having downwardly extending spaced sidewalls, a first arm extending inwardly from each of said sidewalls, each of said first arms being located opposite and spaced from each other, a reflector having a pair of resilient spaced arms, at least one T-shaped hinge member secured to one of said first arms by its stem so that its cross portion extends outwardly therefrom, said one first arm being formed at its inner end to include a surface, one of the arms of said reflector having a flange with at least one T-shaped opening therein with its cross portion lowermost, said cross portion of said opening being insertable over said cross portion of said hinge so that said stem portion of said hinge is located in the stem portion of said opening, whereby said reflector may be supported in an open position by said one reflector arm, said flange being engageable with said surface whereby said reflector flange may be substantially pivoted on said surface to and from a closed position of the reflector, the other of said first and said second arms being engageable at the closed position of the reflector to support said reflector in said closed position, and means at each end of said housing for supporting a gaseous discharge device in spaced relationship with said reflector.

5. A shallow luminaire comprising an elongated substantially U-shaped housing having downwardly extend-

ing sidewalls, an elongated light transmitting cover having a substantially U-shaped body with T-shaped support members extending outwardly from each of its sides, side rail members having a T-shaped slot telescopically engaging with said support members, respectively, for supporting each side of said cover substantially along its entire length, means engageable with said side rails and the side walls of said housing for supporting said cover in fixed relation with said housing, covering means secured to each end of said housing, and lamp supporting means secured to each of said covering means adapted to support at least one lamp therebetween within said sides of said cover.

6. An elongated luminaire comprising, a housing having a generally inverted U-shape cross section including a base and a pair of integral spaced opposed sidewalls, a pair of opposed arms extending inwardly from the opposed inner surfaces of said sidewalls at a point spaced from the free edges thereof, one of said arms being formed at its innermost end with a groove, the other of said arms being formed to include an upwardly facing surface, an elongated reflector of generally U-shape in section having resilient spaced arms, one of the arms of said reflector projecting angularly outward to engage said surface, the other of said arms of said reflector being formed with a laterally projecting bead thereafter being engageable with said one housing arm having a groove with a snap action, and lamp supporting means mounted adjacent opposite ends of the housing to support at least one lamp therebetween.

7. An elongated luminaire comprising, a housing having a generally U-shaped cross section including a base and a pair of spaced opposed integral sidewalls, a plurality of spaced bosses projecting inwardly from said sidewalls, a pair of arms extending inwardly from opposed bosses which are spaced above the lower edges of said sidewalls, one of said arms being formed at its innermost end with a groove, the other of said arms being formed at its innermost end to include an upwardly facing surface, covering means secured to each end of said housing by means engaging at least one of said spaced bosses, reflector means having resilient extending spaced arms, one of said reflector arms having an angularly outwardly extending flange at its free end engageable with said surface, the other of said reflector arms having an outwardly projecting bead adjacent its free end engageable with said first housing arm groove with a snap action, and lamp supporting means mounted adjacent opposite ends of the housing to support at least one lamp therebetween.

8. A luminaire comprising an elongated body member having a downwardly extending sidewall at each of its sides, a laterally extending flange on each sidewall adjacent the free side edge thereof, an elongated light transmitting cover having an integral laterally extending rib at each of its sides extending the length thereof, relatively rigid elongated supporting members each having a longitudinally extending slot adapted to receive said ribs, respectively, along the length thereof, means for securing said supporting members to said body member with said supporting members aligned with said flanges, respectively, compressible gasket means interposed between said supporting members and the flanges and maintained under stress by said securing means, end caps secured to opposite ends of said body member, lamp supporting means mounted on inner surfaces of said end caps for supporting at least one lamp therebetween, supporting brackets rotatively mounted on outer surfaces of said end caps on a longitudinal axis of said body member, and means for releasably securing said brackets to said body member at selected angular positions relative to said longitudinal axis.

9. An elongated luminaire comprising an elongated trough-shaped housing having downwardly extending spaced sidewalls, an arm extending inwardly from each of said sidewalls, said arms being located opposite and spaced from each other, a reflector having a pair of resilient spaced arms, at least one hinge member secured to one of said housing arms and extending outwardly therefrom, said one housing arm being formed at its inner end to include an upwardly facing surface, one of said arms of said reflector having an outwardly extending flange with at least one opening therein, said hinge member being insertable through said opening to support said reflector therefrom in an open position by said one reflector arm, said flange being engageable with said surface at the operative position of the reflector whereby said reflector flange may substantially pivot on one edge of said surface to and from the operative position of the reflector, the other of said housing and reflector arms having interfitting projection and recess means which are engaged at the operative position of said reflector to support said reflector in said operative position, and means at each end of said housing for supporting a gaseous discharge device in spaced relationship with said reflector when said reflector is in the closed position.

10. A shallow luminaire comprising an elongated inverted U-shaped housing having downwardly extending sidewalls, an elongated U-shaped light transmitting cover having upwardly extending sidewalls, means for securing said cover to said housing, an elongated U-shaped reflector having resilient upwardly and longitudinally extending arms, means extending inwardly from and longitudinally of each of said housing sidewalls and spaced apart a different distance than the spacing of the upper ends of the arms of said reflector, interfitting projection and recess means on the outer ends of said arms and said inwardly extending means, to be engageable when said arms are stressed for releasably supporting said reflector between said cover sidewalls, end covering means secured to each end of said housing, and lampholding means secured to each of said end covering means for supporting at least one lamp between said cover and said reflector.

11. A luminaire comprising an elongated U-shaped body member having generally upstanding sidewalls, an elongated U-shaped light transmitting cover having generally upstanding sidewalls opposable to said body member sidewalls and arranged so that at least portions thereof are locatable between the body member sidewalls, each of the sidewalls of said cover having an integral outwardly protruding member extending along the length thereof, each of said members having a keyed configuration adjacent its free outward edge and extending substantially parallel to the associated cover sidewalls, side rail members having a complementarily keyed slot therein telescopically engageable with said keyed members respectively for supporting each side of said cover substantially along its entire length, means for securing each of said side rails to said body member, and lamp supporting means secured to said body member for supporting at least one lamp therebetween adjacent said cover.

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