

March 7, 1961

D. E. HUSBY

2,974,219

LUMINAIRE

Filed Sept. 6, 1957

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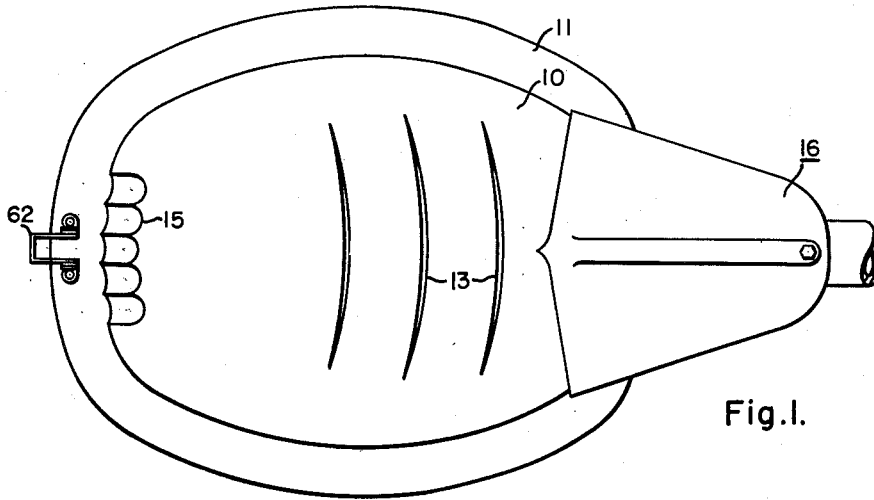


Fig. 1.

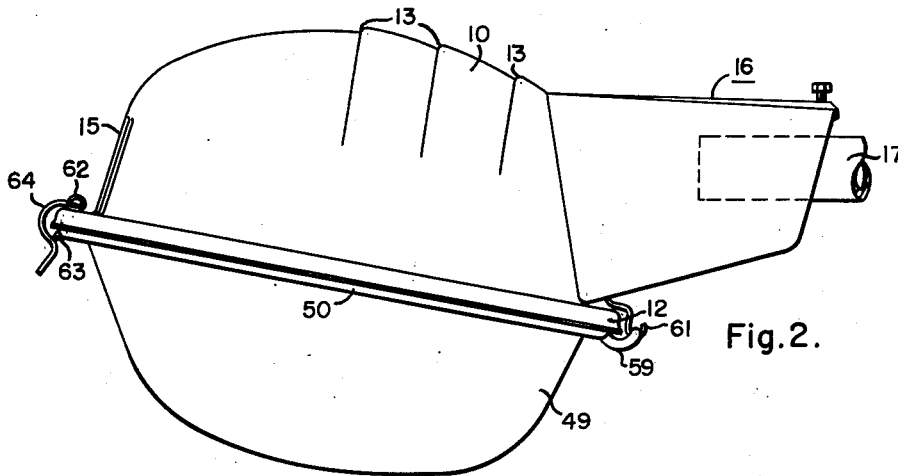
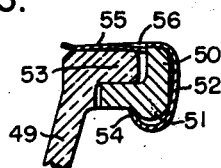


Fig. 2.

Fig. 3.



WITNESSES

Edwin L. Bassler

Wm. B. Sellers.

INVENTOR

Donald E. Husby

BY

Arthur T. Matton

ATTORNEY

March 7, 1961

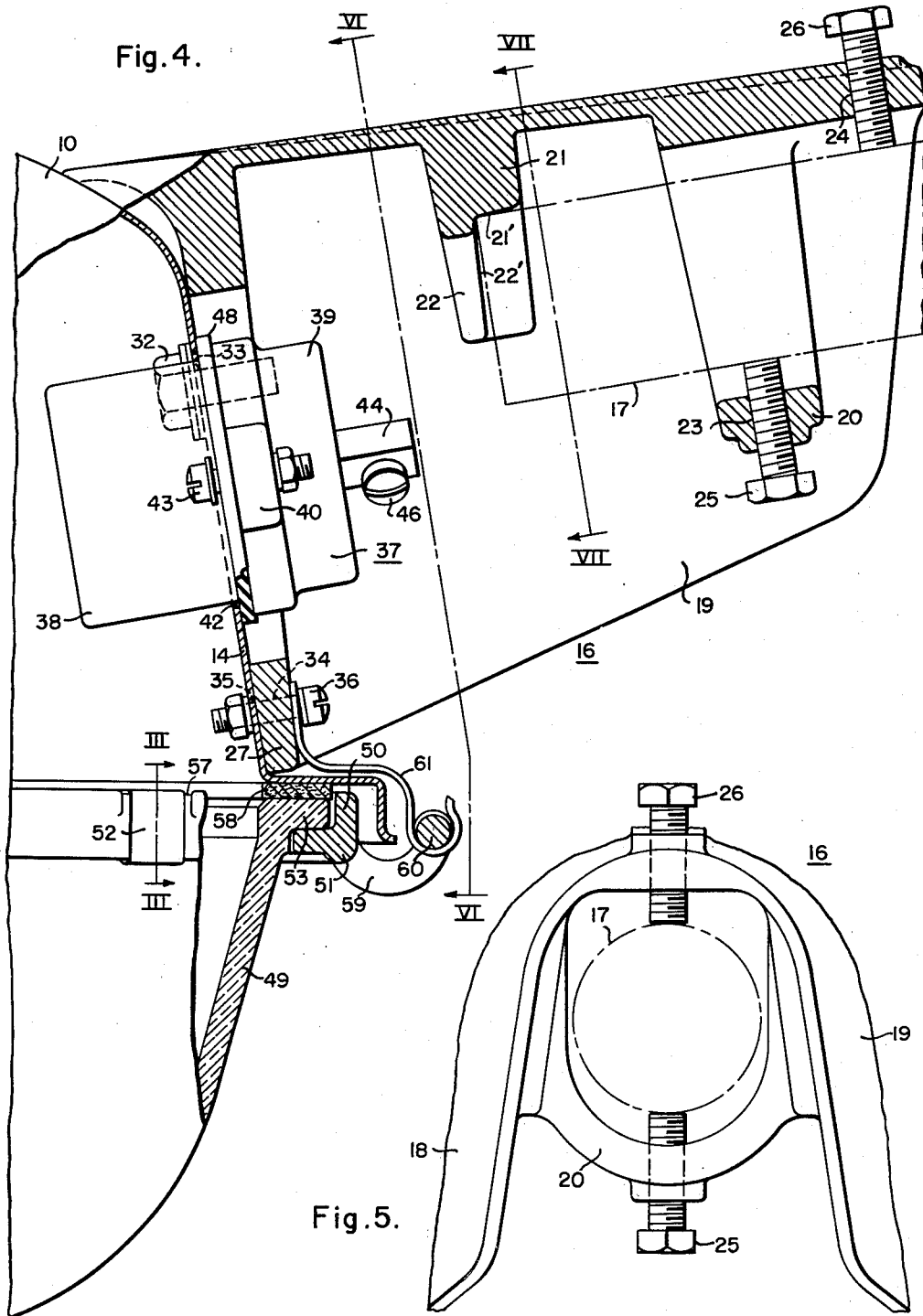
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Fig. 6.

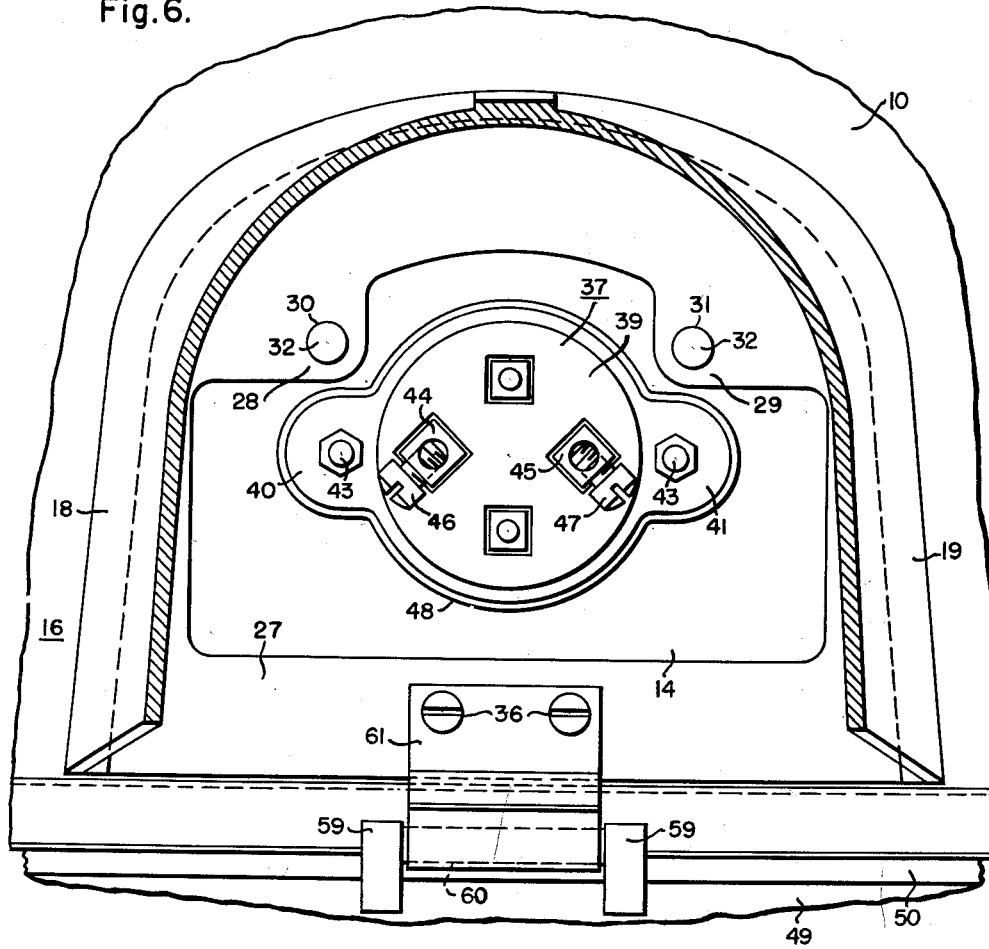
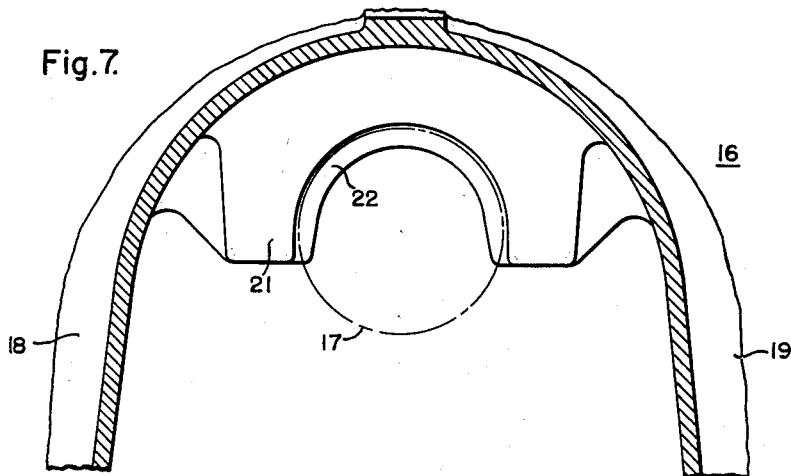


Fig. 7.



2,974,219

LUMINAIRE

Donald E. Husby, Fairview Park, Ohio, assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

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11 Claims. (Cl. 240—25)

This invention relates generally to luminaires, and in particular, to luminaires for street lighting with sources of light mounted at one end.

An object of the invention is to provide ready access to the members of a luminaire to facilitate installation and assembly of the parts in cooperative relationship and without imposing excessive stresses on members that may be readily broken or damaged.

It is also an object of the invention to provide a slip-fitter mounting for luminaires that may be adjusted within predetermined limits to properly position the luminaire for efficient lighting.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a top plan view of a luminaire embodying the features of the invention;

Fig. 2 is a view in side elevation of the luminaire illustrated in Fig. 1;

Fig. 3 is a partial view in section along the line III—III of Fig. 4 showing details of a clip for locking the reflector to a mounting ring;

Fig. 4 is a view partly in longitudinal section and partly in side elevation showing a slip-fitter applied to the reflector and the manner in which the reflector is suspended from the reflector;

Fig. 5 is a view in end elevation showing details of the slip-fitter;

Fig. 6 is a transverse sectional view taken along the line VI—VI of Fig. 4; and

Fig. 7 is also a transverse sectional view taken along the line VII—VII of Fig. 4.

Referring now to the drawings and Figs. 1 and 2 in particular, the luminaire comprises a reflector 10 which is shaped somewhat like an elongated inverted bowl. The edges of the bowl-shaped reflector 10 are turned outwardly to provide a rim or ledge 11 on which members to be described hereinafter will be mounted. In addition, the rim or ledge 11 is turned downwardly to provide a depending or overlapping skirt 12, the purpose of which will appear as the description proceeds.

The reflector 10 is usually made from iron or aluminum sheet both of which may be readily worked to provide the bowl-shaped structure required. The top rear end of the reflector has a series of stepped portions 13 formed in it, which give parts of the top of the reflector a somewhat different slope from the side walls. This definitely improves the reflecting capacity of the reflector. The rear end 14 of the reflector, best shown in Fig. 4, is flattened and somewhat steeper in slope than the side

walls. The purpose of this is for the mounting of parts, the details of which will be given as the specification proceeds. As shown at 15, the lower forward end of the reflector is somewhat corrugated in shape. This improves the strength of the reflector and does not adversely affect the reflecting capacity materially.

After the reflector has been fabricated from sheet material which will stand the deep drawing to give it the required shape, the inner surface is treated by some of the well-known processes for giving it a mirror reflecting surface. These processes are well-known in the art and need not be described.

It is common practice to so design luminaires that when they are mounted they will be oblique to the horizontal or street surface. Ordinarily, they are designed to sit at an angle of about 25° to the horizontal. In order to locate the luminaires in a proper position, it is desirable to provide for some adjustment after an installation has been made. This enables the luminaires to be set closer to the most efficient angle for illumination. Heretofore, the making of the adjustment was rather difficult and no provision was made for doing it with any appreciable accuracy.

In this invention what we have designated as a slip-fitter 16 is provided for supporting the luminaire on a bracket and for adjusting the reflector 10 relative to the bracket or standard on which they are ordinarily mounted.

It is common practice in standards to provide a horizontally extending pipe or bracket 17 for supporting the luminaire. The member 16 which we have termed a slip-fitter is a fitting which may be attached to the reflector and slipped over the end of the pipe 17 to support the luminaire in a predetermined position.

As shown in Figs. 5 and 7, the slip-fitter 16 is a hood-shaped or U-shaped member with depending walls 18 and 19. Formed integral with the walls 18 and 19 is a transverse member 20 which is curved downwardly and in combination with the upper portion of the hood forms a ring having an inside diameter somewhat larger than the outside diameter of the pipe 17. Therefore, the slip-fitter 16 may be readily fitted over the pipe 17. About midway between the ends of the slip-fitter 16 is an integrally formed stop member 21 projecting inwardly of the top wall. The lower side of this stop is semicircular in shape and large enough to receive the end of the pipe 17. At the back of the stop there is a depending flange 22 offset from the front of the stop member 21, which offset in conjunction with the flange 22 forms a shoulder portion 21' and an abutment portion 22'. When the end of the pipe 17 engages the abutment portion 22' it is prevented from being projected beyond a predetermined distance into the slip-fitter 16. The shoulder portion 21' and the abutment portion 22' cooperate to provide a pivot point for the end of the pipe 17 as illustrated in Fig. 4.

In order to adjust the slip-fitter 16 relative to the pipe 17, threaded openings 23 and 24 are provided in the transverse member 20 and the top wall of the slip-fitter 16, respectively. Set screws 25 and 26 are mounted in the threaded openings 23 and 24, respectively.

When the slip-fitter is mounted on the pipe 17, by adjusting the set screws 25 and 26, the slip-fitter may be adjusted relative to the pipe 17. The set screws 25 and 26, the shoulder portion 21', and the abutment portion 22' cooperate to provide for angular adjustment between the slip-fitter 16 and the pipe 17 so as to maintain the proper relationship of the luminaire to the horizontal. However, the amount of adjustment will be limited. It has been found in practice that an adjustment of about 3° can be effected without in any way interfering with the making of a rigid mounting of the slip-fitter on the pipe 17. Ordinarily, an adjustment of 3° is adequate

to compensate for inaccuracies which occur in mounting the pipe 17 and designing the luminaire and hood 16 to sit at a predetermined angle to the horizontal.

The end of the slip-fitter which fits over the pipe 17 has been described. The other end is provided with members for attaching it to the reflector 10 and for supporting other elements of the luminaire. Referring now to Fig. 6, an integral cross member 27 extends from one side wall 18 to the opposite side wall 19 of the slip-fitter. In addition, two integral shoulders 28 and 29 depend from the top. They are spaced far enough apart to provide room for the mounting of another element that will be described hereinafter. Threaded openings 30 and 31 are provided in the shoulders 28 and 29, respectively, to receive screw bolts 32 which are utilized for attaching the slip-fitter to the reflector. These screw bolts 32 fit through openings 33 provided in the reflector 10. The openings 33 will be so located in the reflector that they will align with the openings 30 and 31 provided in the shoulders 28 and 29 in the slip-fitter 16. In designing the reflector 10 and the slip-fitter 16, the straight wall 14 at the rear of the reflector, and the front end of the slip-fitter are given the proper slope to enable the mounting of the luminaire at substantially the required angle to the horizontal.

In addition to the screw bolts 32 for mounting the reflector on the slip-fitter 16, openings 34 are provided in the cross member 27 of the slip-fitter 16 which align with openings 35 in the reflector 10. Bolts 36 are mounted in the openings 34 and 35 to add rigidity to the connections between the reflector and slip-fitter.

Since this luminaire is intended primarily for sources of light mounted at one end only, such as certain types of mercury arc lamps, a socket structure 37 is mounted in the rear end of the reflector 10 in the straight wall portion 14. The socket structure 37 comprises a tubular socket portion 38 in which a threaded type of lamp-holder may be mounted for receiving a threaded base type of light source, such as a mercury lamp, and an enlarged porcelain insulator portion 39 for supporting the socket 38. As shown in Fig. 6, the porcelain insulator portion 39 has two laterally extending lugs 40 and 41 which extend beyond the opening 42 provided in the rear wall of the reflector 10 through which the socket portion 38 extends. Openings are provided in the lugs 40 and 41 of the porcelain insulator portion, and bolts 43 which extend through aligned openings in the insulator portion 39 and reflector firmly lock the socket structure in position in the reflector wall 14.

In order to facilitate the making of connections between the power source (not shown) and the socket 38, screw type terminal members 44 and 45 connected to the central contact member and the threaded member of the socket provided for receiving the lamp are provided for receiving conductors leading from the power line. The conductors for connecting the power line to the terminal members 44 and 45 are not shown since they are not usually supplied as part of the luminaire. The terminals 44 and 45 are provided with set screws 46 and 47, respectively, to facilitate the connecting of the lead conductors to the socket.

In order to provide for a tight joint between the socket structure 37 and the reflector 10, a composition gasket 48 is provided. These gaskets may be made from any of the well known gasket materials which will stand weathering conditions and which will retain an adequate resiliency over long periods of time under pressure. As shown in Fig. 4, the gasket 48 is disposed between a shoulder provided by and extends around the insulator portion 39 of the socket structure 37, and the reflector wall 14. When the bolts 43 are tightened, the gasket 48 is put under pressure and seals the openings 42 through the reflector wall 14.

The refractor 49 is shown in Figs. 2 and 4 as depending from the reflector 10. Considerable difficulty has

always been experienced in so mounting the refractor that a satisfactory tight joint is effected between the refractor and reflector.

Further, when the refractor is subjected to stresses in mounting, considerable breakage may result. In this embodiment of the invention, a ring 50 is employed for suspending the refractor 49 from the reflector 10. Rings cast from aluminum have been utilized with considerable success; however, cast iron rings or rings cast or fabricated from any suitable metal may be substituted. Referring now to Figs. 3 and 4, it will be noted that in cross-section the ring 50 resembles an angle iron in shape. In addition, there is a curved bead 51 provided on the lower surface at the corner. This bead is rounded in this particular showing, but could be made in some other shape. The function of the depending bead 51 is to hold the clip 52.

The inwardly extending shelf or rim of the ring 50 is about the same width as a laterally outwardly extending flange 53 provided on the refractor 49. Further, the ring 50 is made the proper size to fit around the refractor 49 and engage the flange 53. In order to lock the ring 50 in position on the refractor, that is with the inwardly extending rim or arm under and in engagement with the flange 53, a plurality of clips 52 are employed. These clips 52 are made from spring steel and shaped as shown in Fig. 3. The clips are generally U-shaped with one arm shorter than the other. The inner end of the short arm of the clip 52 is as shown at 54 curved upwardly to engage the inner side of the curved bead 51. The upper arm 55 of the clip 52 is made long enough to extend across the flange 53 of the refractor. Further, an integral tongue 56 is provided in the upper arm 55 of the clip. The tongue 56 extends downwardly far enough to engage the inner edge or back of the upwardly extending side of the ring 50 when the clip is slipped into place.

In order to prevent lateral movement of the clips on the ring 50 and relative to the flange 53 of the refractor, notches or indents 57 are provided in the upper edge of the upwardly extending arm of the ring member 50. Therefore, when the clips 52 are pressed into position they will hold the ring 50 in engagement with the lower face of the flange 53 of the refractor 49 and will be retained in position by the tongue 56. The number of clips used will depend on the conditions to be met. Ordinarily, about four is adequate for holding the ring in position on the refractor.

In order to provide for a tight joint between the refractor 49 and the reflector 10, a gasket 58 is cemented to the ledge 11 of the reflector. This gasket may be made from any of the well-known gasket materials. However, it has been found through experience that a gasket made from Dacron is satisfactory. The Dacron gasket is soft enough and will so compress that no uneven stresses are imposed on the refractor.

In order to suspend the refractor from the reflector and bias the flange 53 tightly against the gasket material 58 when the reflector is in position, a special structure is provided. As shown in Figs. 2 and 4, the ring 50 is made with spaced integral outwardly extending curved arms 59 at one end. An integral cross member 60 extends between the outer ends of these arms 59. The cross member is preferably cylindrical in shape to provide a bearing surface for a purpose that will be explained hereinafter.

Referring now to Fig. 4 in particular, a leaf spring hook-shaped member 61 is mounted on the bolts 36 co-operative to hold the slip-fitter 16 attached to the reflector 10. As shown, the hook 61 has an offset provided in it to conform generally to the shape of the lower part of the reflector. At the lower end of the hook-shaped member a hook is provided which is large enough to receive the cylindrical member 60 between the arms 59 of the ring 50.

In mounting the refractor the cross member 60 is fitted in the hook of the member 61. It is then rotated forwardly carrying the flange 53 of the refractor into engagement with the gasket 58. The spring steel hook is so shaped and disposed that when the refractor is swung into position, the spring is drawn downwardly because the adjacent end of the refractor flange 53 will engage the gasket 58 before the other does, to impose a biasing pressure forcing the flange 53 of the refractor into tight engagement with the gasket 58. At the opposite end of the refractor 10 a latch 62 is fastened to the ledge 11. Any well-known type of latch may be employed, but in this particular instance a cam type spring latch is provided. This latch is secured to the flange 11 of the refractor and has a spring arm portion 64 which engages over projection 63 provided on the ring 50 when the refractor is swung into position to be locked in place. It cannot be released until an outward pull is applied pulling it back from engagement with projection 63. Thus, when the refractor 49 is rotated into position engaging the gasket 58, it is locked in position.

The structure which has been described facilitates the making of installations. The slip-fitter may be readily fitted over any support for which the members provided in it are designed. Further, the slip-fitter is open at the bottom, and access may be readily had to the terminals for making the electrical connections. The refractor may be quickly and easily applied, and it is not subjected to stresses which are liable to result in the breaking of it.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In a luminaire for street lighting employing a source of light supported at one end, in combination, a reflector, means for mounting the reflector and adjusting it to a predetermined position, a socket for receiving the source of light disposed in the reflector, terminals for supplying current to the source of light carried by the socket and disposed outside of the reflector to provide ready access for making connections, a separate removable refractor ring for suspending the refractor from the reflector, means for connecting and locking the refractor in the ring, the reflector having spring hinge means cooperating with the ring for attaching the ring to the reflector and for biasing the refractor toward the reflector.

2. In a luminaire for street lighting employing a source of light supported at one end and supplied from a power source, in combination, a refractor, an inverted bowl-shaped reflector sealed with the refractor, a generally inverted U-shaped hood member attached to one side of the reflector at one end, an opening in said reflector communicating with said U-shaped hood member, a socket for the source of light mounted in and sealing said opening in the reflector, and terminals carried by the socket for connecting it to the power source, the socket for receiving the light source being located inside the reflector and the terminals being located outside the reflector so as to make the terminals readily accessible under the hood and still maintain a sealed optical system.

3. In a luminaire for street lighting employing a source of light supported at one end, in combination, a reflector, an opening in one end of said reflector, an inverted U-shaped slip-fitter for mounting the reflector, means provided in the slip fitter for angularly adjusting the reflector relative to the horizontal and for limiting insertion of a support member, said means comprising a shoulder portion, an abutment portion, and adjustable set screws for engaging the supporting member, a refractor provided with an outwardly extending flange at its upper edge, a separate removable ring provided with an inwardly ex-

tending rim for engaging the outwardly extending flange on the refractor, substantially U-shaped clips having one end of one arm turned upwardly for connecting the refractor and ring to one another, means provided on the ring for preventing lateral movement of the clips, a gasket disposed between the reflector and refractor, and hinge means having an integral biasing portion for supporting the refractor in tight engagement with the gasket, a socket for the light source mounted in the opening in one end of the reflector, the socket extending inwardly into the reflector, and terminals carried by the socket for supplying current to the source of light, the terminals being outside of the reflector, said slip fitter covering the terminals permitting ready access thereto and ease of adjustment of the set screws.

4. In a luminaire for street lighting employing a source of light supported at one end, in combination, a reflector having an opening in one end of the reflector, a socket for supporting the source of light mounted in the opening of the reflector, terminals disposed outside of the reflector and electrically connected to the socket, a refractor, having a peripheral flange, a separate removable ring for engaging the flange of the refractor, a gasket disposed between the reflector and refractor, a biasing hinge member carried by the reflector for engaging said ring and cooperating therewith when the ring is rotated into position on the reflector to effect a biased engagement with the gasket, and a latch disposed generally opposite from said hinge member and carried by the reflector for engaging the ring to cooperate in locking the latter in a position suspended from the reflector, and means for connecting the refractor to the ring.

5. In a luminaire, in combination, an inverted bowl-shaped reflector, a slip fitter for mounting the reflector on a support, the slip fitter comprising a generally inverted U-shaped hood member attached to one side of the reflector at one end, the hood member having its other end adapted to receive the support, said hood member including an integral stop member having means for pivoting the end of the support member and for limiting insertion of the support member into said other end of said hood member and spaced outwardly of said one end of the hood member and the reflector, a cross member connecting the walls of said hood member adjacent said other end of the hood member at a point spaced from the top of the hood member to form an opening for receiving a support, adjusting screws in said cross member and in the top of said hood member for engaging the inserted support member cooperating with the pivoting means for angularly adjusting the slip-fitter with respect to the horizontal, a socket for the source of light mounted in an opening in the reflector which opens into said hood member and terminals carried by the socket for connecting it to the power source and located in the space between said one end of the hood member and said stop member, the socket for receiving the light source being located inside the reflector and the terminals outside to provide easy access for making connections with the hood member covering the terminals.

6. In a luminaire employing a light source at one end, in combination, an inverted ovoid reflector having an opening adjacent one end thereof, a slip-fitter for mounting the luminaire on a support member including an inverted U-shaped hood member attached to the one end of the reflector, a refractor, means connecting and sealing the refractor to the reflector, a socket sealing the opening in the end of the reflector and carrying terminals for connecting the socket to a power source, a portion of the socket for receiving the light source being located inside the reflector and the terminals being located outside the reflector so as to make the terminals readily accessible under the inverted U-shaped hood and still maintain a sealed optical system, a transverse member extending between the side walls of said hood, set screws threaded through the bight portion of the hood and the

transverse member with said screws being in an opposed but offset relationship to one another, an integrally formed stop member located between said transverse member and the portion of the hood attached to the one end of the reflector, said stop member having a shoulder portion and an abutment portion cooperating to provide a pivot point for an end of the supporting member and to limit insertion of the supporting member into the slip-fitter, said set screws being adjustable to provide, in cooperation with said shoulder portion and said abutment portion, for angular adjustment between the slip-fitter and the supporting member.

7. In a luminaire, in combination, an inverted bowl-shaped reflector having a socket for receiving the light source, means for engaging the luminaire to a supporting member, said reflector having an outturned and downwardly extending peripheral ledge, a spring hook-shaped member attached to the reflector ledge, a separate removable ring member having an L-shaped cross section and having a bead on the lower surface at the corner of the L, a U-shaped member attached to an edge of the ring and positioned to be hingedly engaged in said hook-shaped member, a refractor having an outwardly extending peripheral flange, spring clip members for securing the ring to the refractor, each of said clip members being generally U-shaped and having a bottom curved portion overlapping and generally conforming to the bead of the ring and a flat top portion engaging the refractor flange, indents provided on the ring for limiting lateral movement of the clips, and spring latch means located on said reflector at a position generally opposite from said hook-shaped member to secure the reflector and refractor together.

8. In a luminaire employing a light source at one end, in combination, an inverted ovoid reflector having an opening adjacent one end thereof, a socket for receiving the light source disposed in said opening, terminals carried by said socket for connecting the socket to a power source, a portion of the socket for receiving the light source being located inside the reflector and the terminals being located outside the reflector, a slip-fitter for mounting the luminaire on a support member including an inverted U-shaped hood member adjacent to and extending outwardly from said one end of the reflector, the open bottom of said hood member providing ready access to said terminals, a transverse member extending between the side walls of said hood, set screws threaded through the light portion of the hood and the transverse member with said screws being in an opposed but offset relationship to one another, an integrally formed stop member located between said transverse member and the portion of the hood attached to the one end of the reflector, said stop member having a shoulder portion and an abutment portion cooperating to provide a pivot point for an end of the supporting member and to limit insertion of the supporting member into the slip-fitter, said set screws being adjustable to provide, in cooperation with said shoulder portion and said abutment portion, for angular adjustment between the slip-fitter and the supporting member.

9. In a luminaire for street lighting in combination, a reflector having an opening in one end thereof, a generally inverted U-shaped hood member located adjacent said one end of said reflector and extending outwardly therefrom, a socket for a light source mounted in said opening, said socket being located so as to have a light source receiving portion thereof extending inwardly into the reflector, terminals carried by the socket and being located outside of the reflector and under said hood member, a refractor for transmitting light from the reflector, a separate removable ring for suspending the refractor

from the reflector, means for connecting and locking the ring to the refractor, a gasket disposed between the refractor and reflector, cooperating hinge portions mounted on said reflector and said ring for pivotally supporting the ring on the reflector, latch means fastened to said reflector for securing the refractor with the reflector, one of said hinge portions comprising spring means, the other of said hinge portions engaging said spring means under tension for biasing the refractor toward the reflector to effect a pressure contact with the gasket located between the reflector and refractor so as to seal the refractor to the reflector when they are latched together.

10. In a luminaire, in combination, an inverted bowl-shaped reflector having a socket for receiving the light source, means for engaging the luminaire to a supporting member, said reflector having an outturned and downwardly extending peripheral ledge, spring means attached to the reflector ledge, a separate removable ring member having an L-shaped cross section and having a bead on the lower surface adjacent the corner of the L, engaging means attached to an edge of the ring for hingedly engaging said spring means, a refractor having an outwardly extending peripheral flange, spring clip members for securing the ring to the refractor, each of said clip members being generally U-shaped and having a bottom curved portion overlapping and generally conforming to the bead of the ring and a flat top portion engaging the refractor flange, indents provided on the ring for limiting lateral movement of the clips, and resilient latch means located on said reflector at a position generally opposite from said spring means to secure the reflector and refractor together.

11. In a luminaire for street lighting employing a source of light supported at one end, in combination, an inverted bowl-shaped reflector having an opening adjacent one end thereof, a socket for receiving the light source disposed in said opening, terminals carried by said socket for connecting the socket to a power source, a portion of the socket for receiving the light source being located inside the reflector and the terminals being located outside the reflector, a slip-fitter for mounting the luminaire on a support member including an inverted U-shaped hood member adjacent to and extending outwardly from said one end of the reflector, the open bottom of said hood member providing ready access to said terminals, a bowl-shaped refractor having an outturned edge presenting a flange, a separate removable ring member for receiving the outturned flange provided on the refractor and presenting an inwardly extending rim underlying the flange, means for releasably supporting said ring member on the reflector, substantially U-shaped clips for fitting over the ring member and the outturned flange of the refractor, the ring member being of a size to extend beyond the flange when the latter is seated on the rim, and each of said clips having a resilient locking tongue engaging the inner side of the ring member when the clips are fitted in place to prevent withdrawal of the clips and to lock the refractor and ring member together.

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