

United States Patent

Franklin et al.

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[54] **LUMINAIRE REFLECTOR AND
LAMPHOLDER MOUNTING**

[72] Inventors: **John S. Franklin; William C. Pursley**, both of Hendersonville, N.C.

[73] Assignee: **General Electric Company**

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[52] U.S. Cl. **240/25, 240/44.2, 240/147**

[51] Int. Cl. **F21s 1/10**

[58] Field of Search..... **240/25, 44.2, 147**

[56] **References Cited**

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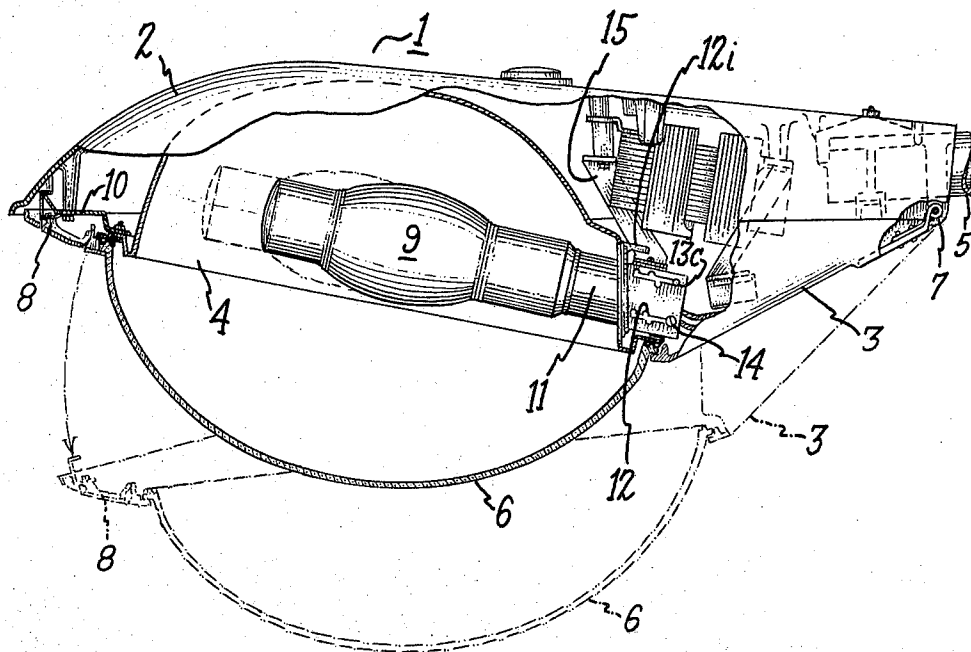
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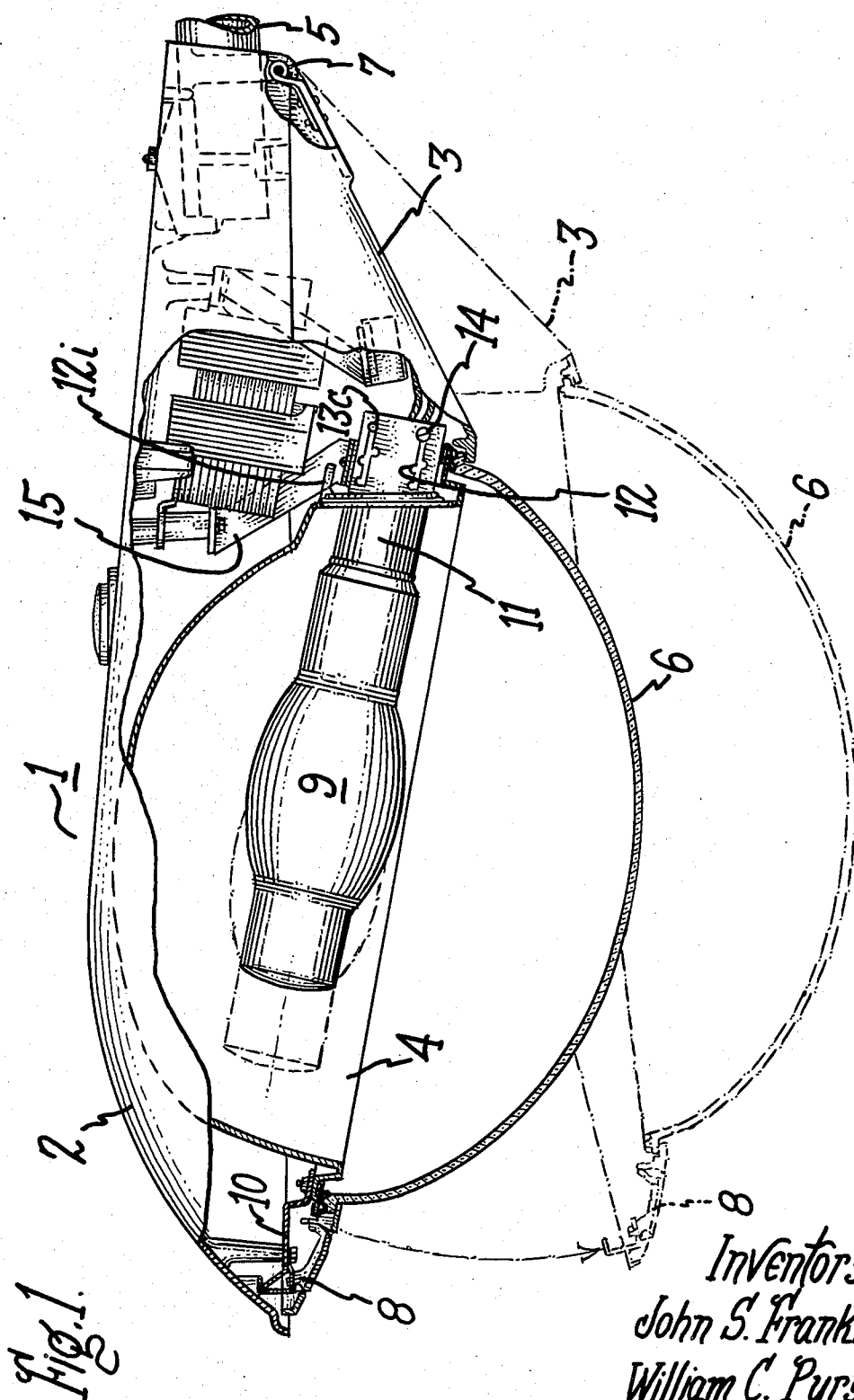
Primary Examiner—Samuel S. Matthews
Assistant Examiner—Monroe H. Hayes
Attorney—Sidney Greenberg et al.

[57] **ABSTRACT**

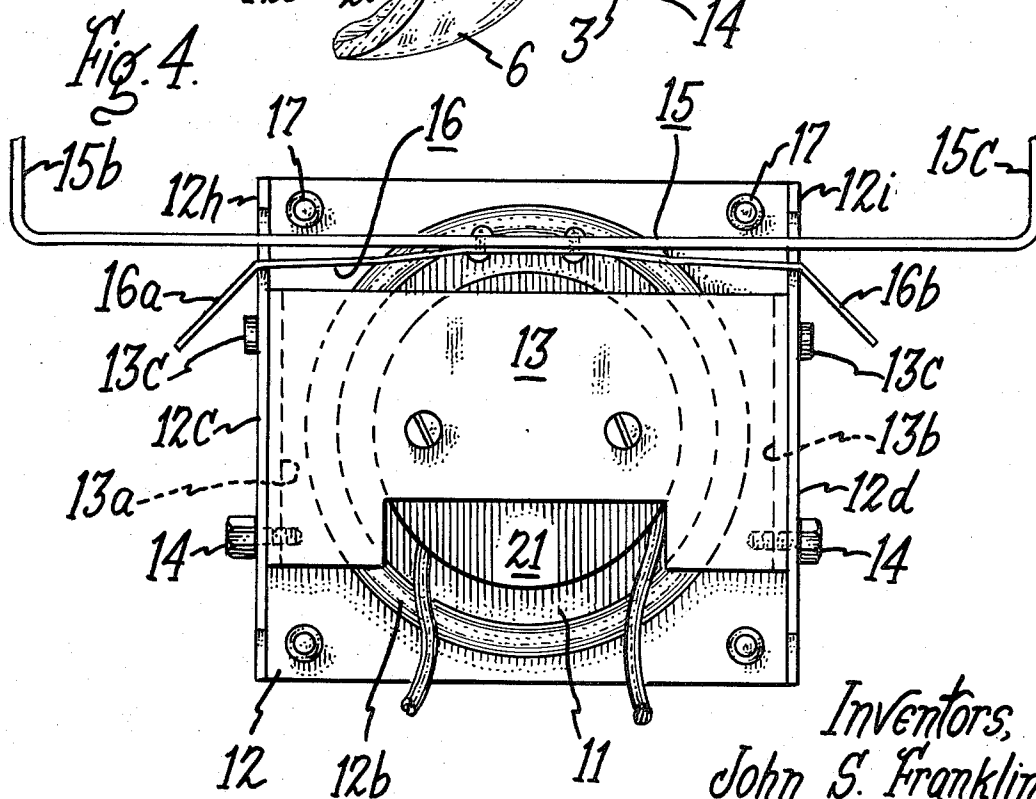
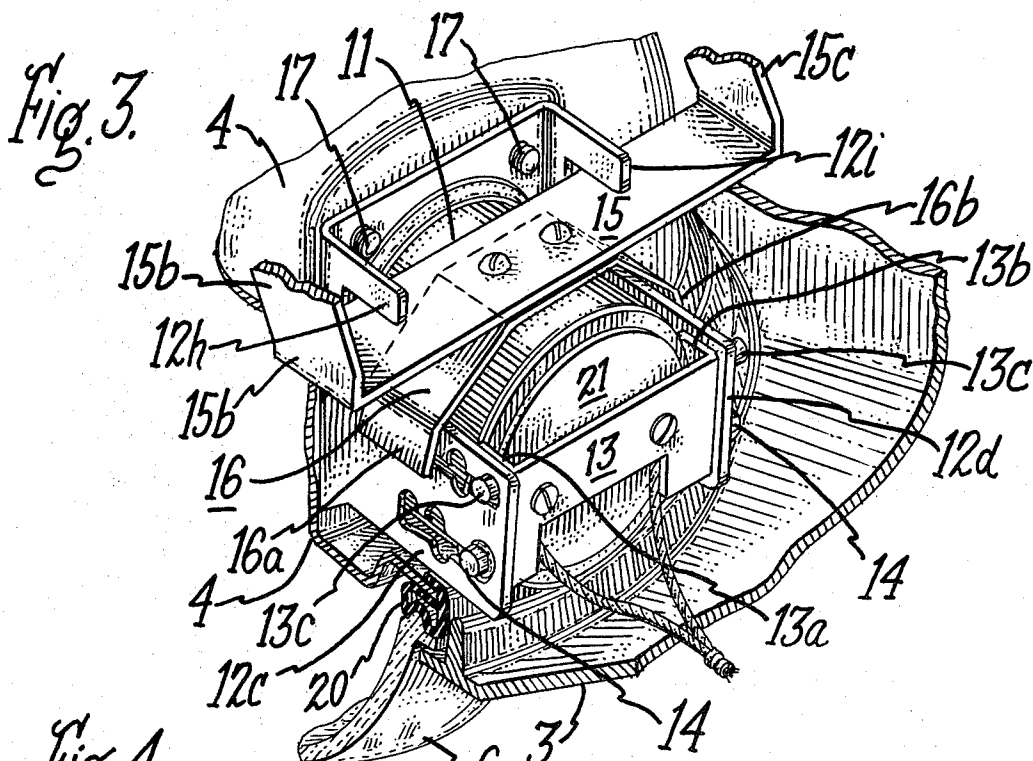
Luminaire includes an assembly of a reflector and lamp socket holder which provides for a tight seal between the reflector and a refractor when the refractor is moved into closed position against the reflector, while maintaining a fixed relationship between the lamp and the reflector. The front end of the reflector is fixedly secured to the luminaire housing, and at the rear end of the reflector the lamp socket extending through an opening in the reflector is adjustably secured to a socket holder fixed to the reflector. A leaf spring attached to a fixed support urges the socket holder downwardly for maintaining the reflector rim gasket in firm engagement with the mating refractor rim in the closed position. Tabs on the socket bracket projecting over the fixed support serve to prevent the reflector from falling out of the housing when the refractor is dropped to open position.

10 Claims, 6 Drawing Figures

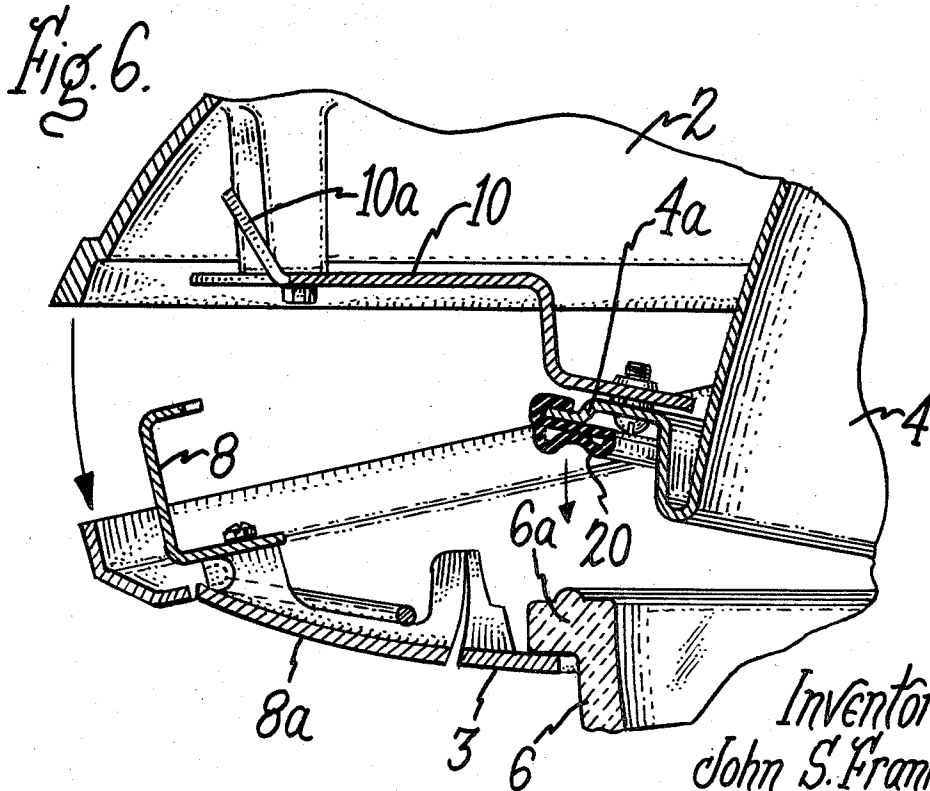
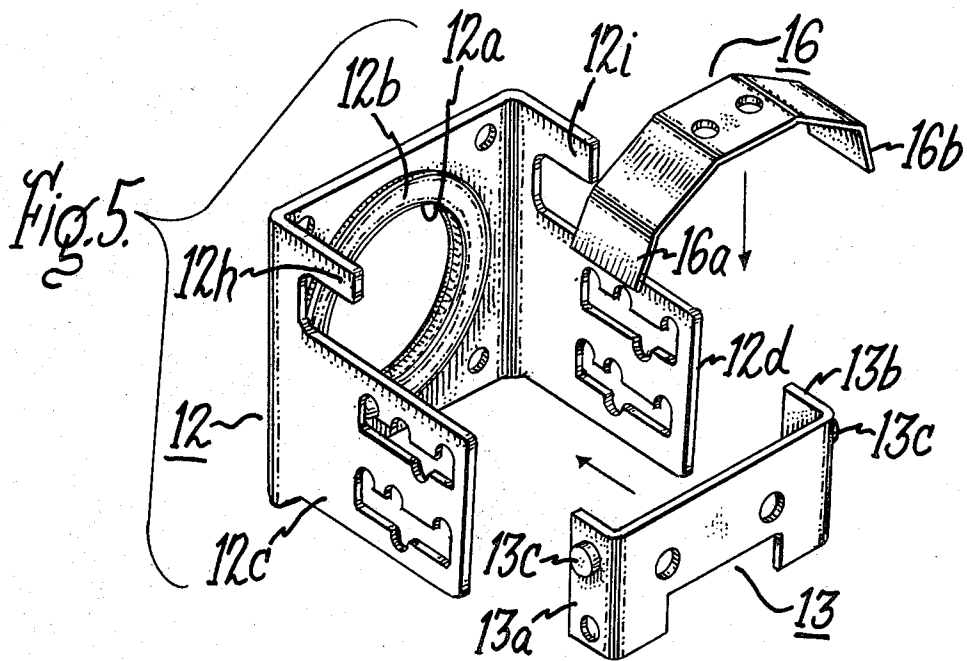




Inventors,
 John S. Franklin,
 William C. Pursley,
 by *Sidney Greenberg*
 Their Attorney.



Inventors,
 John S. Franklin,
 William C. Pursley,
 by *Sidney Greenberg*
 Their Attorney.



Inventors,
John S. Franklin,
William C. Pursley,
by Sidney Greenberg
Their Attorney.

LUMINAIRE REFLECTOR AND LAMPHOLDER MOUNTING

The present invention relates to lighting fixtures and particularly to lamp socket and reflector supports for street lighting luminaires.

It is an object of the invention to provide a luminaire having an effective seal between the refractor and reflector therein while maintaining a fixed relationship between the reflector and lamp mounted therein.

It is another object of the invention to provide a luminaire of the above type in which the lamp may be adjusted to various predetermined positions relative to the reflector.

Still another object of the invention is to provide a luminaire of the above type wherein the reflector is resiliently urged into tight sealing relationship with the refractor when the latter is moved into closed position relative to the reflector.

A further object is to provide a luminaire of the above type wherein the reflector is retained in assembly with the luminaire housing when the refractor is dropped to open position.

Other objects and advantages will become apparent from the following description and the appended claims.

With the above objects in view, the present invention in one of its aspects relates to a luminaire comprising, in combination, an elongated upper housing having a bottom opening, a concave reflector in the housing facing the opening, the reflector being elongated along the elongate axis of the housing and having front and rear ends, a refractor connected to the housing for movement between an upper closed position covering the reflector and in sealing relation therewith and a lower open position away from the reflector, the reflector having an opening at its rear end, a lampholder arranged extending through the reflector opening and adapted to support a lamp within the reflector, holder means fixed to the reflector at the opening thereof for holding the lampholder in predetermined position relative to the reflector, and support means fixed to the luminaire housing and having resilient means engaging the holder means for urging the latter downwardly for yieldably holding the reflector in sealing relation with the refractor when the latter is in closed position.

The invention will be better understood from the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a side elevational view of a luminaire, partly broken away, embodying the present invention;

FIG. 2 is an enlarged fragmentary view in section of the rear end of the reflector and adjacent refractor portion showing the assembly of the lampholder and supporting structure therefor;

FIG. 3 is a rear perspective view of the assembly shown in FIG. 2;

FIG. 4 is a rear elevational view of the lampholder supporting arrangement;

FIG. 5 is an exploded view of parts of the lampholder supporting assembly; and

FIG. 6 is an enlarged sectional view of the front end of the luminaire showing the reflector front support and refractor closure latch.

Referring now to the drawings, and particularly to FIG. 1, there is shown a street lighting luminaire 1 comprising an elongated top housing 2, a bottom housing 3,

a concave reflector 4 contained within the housing parts, and a luminaire support 5, such as a pipe, by means of which luminaire 1 is mounted on a pole or the like in position above a street or roadway.

Reflector 4 is typically ovate in shape and is closed at its bottom opening by a correspondingly shaped transparent refractor 6 which is mounted in an aperture in the front end of bottom housing 3, the latter thus serving as a combined refractor holder and closure for top housing 2.

Bottom housing 3 is provided at its rearmost end with a hinge 7 of suitable construction to enable bottom housing 3 to swing downwardly to open position as shown by the dashed lines in FIG. 1 to expose reflector 4 and the interior compartment of top housing 2 to the rear thereof containing electrical operating components. At the front end, bottom housing 3 is detachably secured to top housing 2 by latch mechanism 8 (see FIG. 6) or other suitable latching means.

Reflector 4 is formed with a rim flange 4a extending around the periphery of its opening and a resilient gasket 20 is provided around flange 4a as shown (see FIGS. 2 and 6) to form a weatherproof seal between it and the mating rim 6a of refractor 6 when bottom housing 3 is in its upper closed position. At its front end, reflector 4 is fixedly attached to top housing 2 by arm 10. In the illustrated embodiment arm 10 has an upstanding forward portion 10a serving as a latch plate engageable by spring biased latch 8 which is pivotally secured to lower housing 3 and operated by finger portion 8a.

In accordance with the invention, the rear mounting means for reflector 4 and the associated lampholder support assembly are constructed to ensure a tight sealing engagement between the rear rim portions of reflector 4 and refractor 6, while still providing for a fixed relationship between lamp 9 and reflector 4 in order to produce the desired light distribution from the luminaire. In this construction, reflector 4 has an aperture 4b at its rear end (see FIG. 2) having a diameter somewhat larger than that of lampholder or socket 11 which extends through aperture 4b. Socket 11 threadably holds lamp 9 at its front end from which the lamp extends into reflector 4, as seen in FIG. 1. Socket holder 12, secured by screws 17 or the like to the outer rear surface of reflector 4, has an aperture 12a in its front portion in register with reflector aperture 4b, with an annular crimped portion 12b surrounding aperture 12a and holding sealing gasket 18 securely in place against the rear wall of reflector 4. The inner diameter of gasket 18 is such that the gasket extends inwardly of the rim of aperture 4b so as to be in sealing engagement with the outer surface of socket 11 while still permitting slidable axial adjustment of the socket, as described below. Socket holder 12 is formed with spaced parallel arms 12c, 12d extending rearwardly from its lower front portion along opposite sides of socket 11, each arm having upper and lower elongated guide slots 12e with notches 12f spaced longitudinally in the upper portion of the slots. Secured to the rear face of socket 11 is socket bracket 13, with an intervening insulating sheet 21, the socket bracket 13 having opposite parallel flanges 13a, 13b (see FIG. 5) fitting

between and slidable along arms 12c, 12d of socket holder 12. Screws 14 or the like adjustably secure the opposite arms of socket bracket 13 to socket holder 12 and ride in lower guide slots 12e to enable slidable axial adjustment of socket 11. Riding in upper guide slots 12e are projections 13c, or the like formed in the upper portions of flanges 13a, 13b of socket bracket 13. Notches 12f define selected axial positions in which screws 14 may be received and secured after lamp 9 is axially adjusted to the desired operating position. As will be understood, the axial adjustment of lamp 9 in reflector 4 provides for varying the lateral position of the light beam emanating from the luminaire. Lower notches 12g in the respective lower and upper guide slots 12e of the opposite holder arms are adapted to receive screws 14 and projections 13c respectively for the purpose of enabling lamp 9 to be tilted upwardly so as to reduce the vertical angle of the emanating light beam, where such a result may be desired in a particular installation.

Socket holder 12 is formed with spaced parallel tabs 12h, 12i extending rearwardly from its upper front portion and spaced substantially above the top edges of arms 12c, 12d. Secured to top housing 2 is U-shaped support member 15 arranged with its web portion 15a in the space between socket holder tabs 12h, 12i and socket 11 and with its opposite upstanding arms 15b, 15c fixedly attached by screws or the like to bosses 2a of housing 2 (see FIG. 2). Secured to the underside of support member 15 by rivets or the like is an inverted U-shaped leaf spring 16 arranged with laterally extending arms 16a, 16b bearing on the top of opposite arms 12c, 12d of socket holder 12, as seen best in FIG. 4.

In the closed position of bottom housing 3, as seen in FIG. 2, the rim 6a of refractor 6 is pressed against gasket 20 mounted on reflector rim 4a, while at the same time leaf spring 16 urges socket holder 12 downwardly, thus resiliently pressing reflector 4 into tight sealing engagement with refractor 6. Since socket holder 12 is fixed to reflector 4, lamp 9 secured thereto remains in the same position relative to reflector 4 even though the reflector is free to move vertically somewhat by the action of spring 16 in order to seat firmly against gasket 20. When bottom closure 3 is unlatched and lowered to open position, the rear end of reflector 4 is kept from dropping out of housing 2 by retaining tabs 12h, 12i which drop onto and are held by support member 15.

The arrangement of the guide slots 12e and notches 12f, 12g in socket holder 12 is such that in any adjusted position of socket 11, its axis intersects the plane of annular gasket 18 at its central point in order to avoid forming gaps between gasket 18 and socket 11.

There is thus provided by the present invention an effective gasket seal between the reflector and the refractor in a street lighting luminaire despite the relatively long distance between the rear hinge and the front latch of the bottom closure housing 3, and the possibility of distortion of the latter housing member as a result of imperfections in manufacture. At the same time, a fixed relationship is ensured between the lamp and reflector to achieve stable and reproducible light center locations of the lamp relative to the reflector, along with an effective seal between the lamp holder and the reflector.

While the present invention has been described with reference to particular embodiments thereof, it will be understood that numerous modifications may be made by those skilled in the art without actually departing from the scope of the invention. Therefore, the appended claims are intended to cover all such equivalent variations as come within the true spirit and scope of the invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A luminaire comprising, in combination, an elongated upper housing having a bottom opening, a concave reflector in said housing facing said opening, said reflector being elongated along the elongate axis of said housing and having front and rear ends, a refractor connected to said housing for movement between an upper closed position covering said reflector and in sealing relation therewith and a lower open position away from said reflector, said reflector having an opening at its rear end, a lampholder arranged extending through said reflector opening and adapted to support a lamp within said reflector, holder means fixed to said reflector at said opening thereof for holding said lampholder in predetermined fixed position relative to said reflector, and support means fixed to said luminaire housing and having resilient means engaging said holder means for urging the latter downwardly for yieldably holding said reflector in sealing relation with said refractor when the latter is in said closed position.

2. A luminaire as defined in claim 1, including a resilient gasket arranged between said reflector and said refractor.

3. A luminaire as defined in claim 2, said holder means comprising rearwardly projecting arm means arranged below said support means and engagable by said resilient means, and bracket means fixed to said lampholder and adjustably secured to said projecting arm means for adjustment of said lampholder along said housing axis.

4. A luminaire as defined in claim 3, said holder means having rearwardly projecting retaining means arranged above said support means and adapted to contact the same upon downward movement of said refractor to open position for retaining the rear end of said reflector within said housing upon such movement.

5. A luminaire as defined in claim 3, said resilient means comprising a leaf spring secured to said support means and yieldably engagable with said arm means of said holder means.

6. A luminaire as defined in claim 5, said arm means comprising a pair of spaced arms projecting rearwardly along said lampholder, each arm formed with slot means extending along said lampholder, said bracket means having laterally projecting means movable in said slot means and attachable therein in selected adjusted positions.

7. A luminaire as defined in claim 6, said spaced arms of said holder means extending along opposite sides of said lampholder, said leaf spring having opposite lateral portions respectively engagable with the tops of said spaced arms for urging the same downwardly.

8. A luminaire as defined in claim 1, said upper housing having a forward portion containing said reflector and a rear compartment rearward of said

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reflector, an elongated bottom housing holding said refractor and hingedly secured at its rear end to the rear end of said upper housing for movement between open and closed positions relative thereto, latch means at the front end of said bottom housing for detachably holding the same in closed position on said upper housing, and means fixedly attaching said reflector at its front end to said upper housing.

9. A luminaire as defined in claim 8, said reflector and said refractor having mating rim portions, and a resilient gasket mounted on and extending around one

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of said rim portions and adapted to be compressed between said mating rim portions in closed position of said refractor, said resilient means of said support means constantly urging the rear end of said reflector into sealing relationship with said refractor in said closed position.

10. A luminaire as defined in claim 9, and retaining means on said holder means co-acting with said support means for retaining said reflector in said upper housing in the open position of said refractor.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,705,301 Dated December 5, 1972

Inventor(s) J. S. Franklin and W. C. Pursley

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 4, line 36, "mans" should be - means -

Col. 4, line 65, "supper" should be - upper -

Signed and sealed this 29th day of May 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents