

Jan. 27, 1970

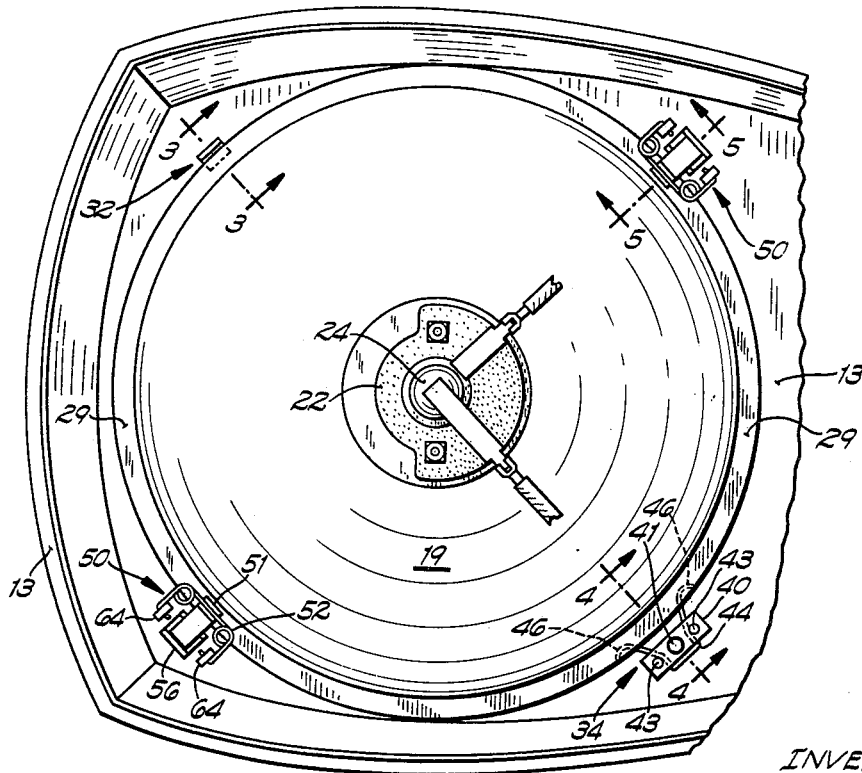
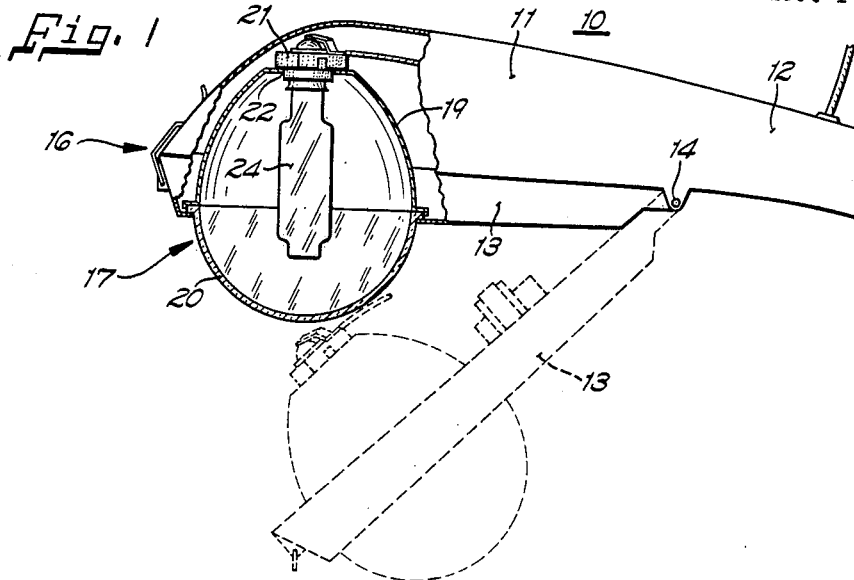
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3,492,473

LUMINAIRE REFRACTOR LATCH

Filed May 4, 1967

2 Sheets-Sheet 1



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Fig. 3

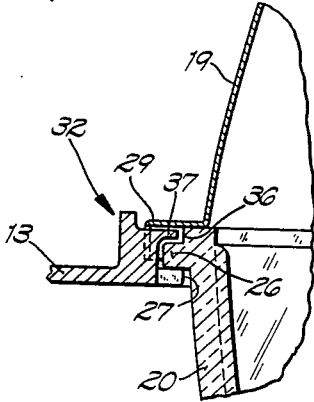


Fig. 4

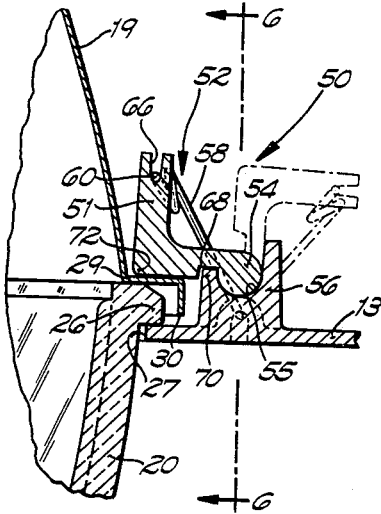
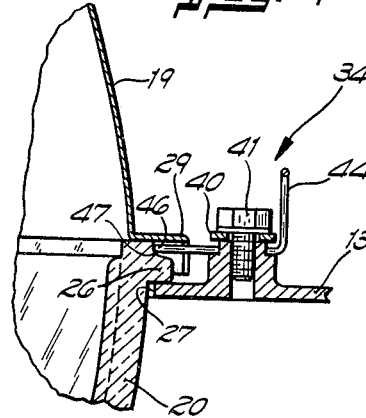


Fig. 5

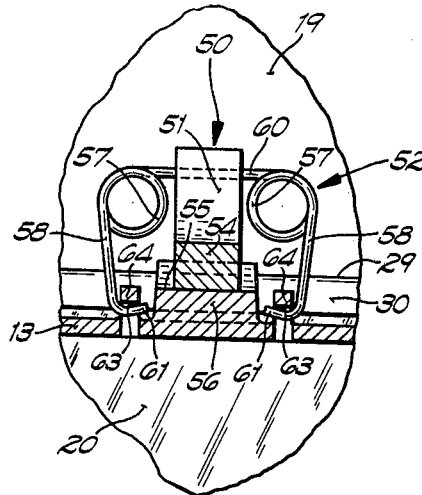


Fig. 6

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LUMINAIRE REFRACTOR LATCH

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10 Claims

ABSTRACT OF THE DISCLOSURE

A luminaire having a hollow open-bottomed housing and a bottom closure member latchable in a closed position relative to the housing. A reflector and refractor, supported by the housing, are provided with cooperative flanges for providing a sealed optical assembly. An overcenter latch assembly is provided for holding the flanges in a sealed relation and for securing the reflector to the closure member. The overcenter latch assembly includes an overcenter spring and a latch member having two positions. The first overcenter position holds the flanges in sealing position. The second overcenter position allows the reflector to be removed from the bottom of the closure member.

BACKGROUND OF THE INVENTION

One type of luminaire employed for street and area lighting has a sealed optical assembly and an elongated housing which encloses electrical components such as ballasts and capacitors required for operating gaseous discharge type lamps. The optical assemblies of such prior art luminaries include a reflector and a refractor which are mounted on one of the housing or bottom closure members. When the luminaire is in its operative position, latch spring members are provided to hold the peripheries of the reflector and refractor in an engaged position to provide a sealed optical assembly. In order to permit rapid servicing, however, the latch spring members are generally constructed and arranged to be easily disengageable without the use of tools and tend to be of the elongate flat or leaf type. Because of their configuration, such spring latches are generally highly resilient so that the reflector and refractor tend to vibrate under heavy wind or traffic conditions and thereby become damaged.

BRIEF DESCRIPTION OF THE INVENTION

In general terms the invention comprises a luminaire having an aperture, a refractor having a peripheral edge engaging the margin of the aperture and holding means for securing the refractor in the aperture, a reflector having a bottom peripheral rim coextensive with the refractor edge and overcenter means engageable with the reflector rim for securely holding the reflector and refractor in the aperture.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, with parts broken away, illustrating a luminaire incorporating the instant invention;

FIG. 2 is a fragmentary top plan view of the luminaire shown in FIG. 1, with parts broken away;

FIG. 3 is a view taken along lines 3-3 of FIG. 2;

FIG. 4 is a view taken along lines 4-4 of FIG. 2;

FIG. 5 is a view taken along lines 5-5 of FIG. 2 and illustrates the overcenter latch assembly in its engaged and disengaged positions; and

FIG. 6 is a view taken along lines 6-6 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a gaseous discharge type luminaire 10 which includes an inverted dished housing 11 having an elongate portion 12 integrally formed at one side for enclosing means (not shown) which permits attachment of the luminaire to a vertically extending pole (not shown).

A bottom closure member 13 is provided for the housing 11 and has an upper peripheral edge coextensive with the bottom opening of said housing. The closure member 13 is supported at one end to the housing 12 by a hinge 14 to permit counterclockwise pivotal movement, as viewed in FIG. 1 and from its position shown by full lines to its phantom position. A quick release latch assembly 16 is provided at the opposite end of the closure member 13 for securing it in its unpivoted position. The luminaire also includes an optical assembly 17 having an inverted, generally ovate reflector 19 for reflecting light rays in a generally downward direction, as viewed in FIG. 1, and a cooperating bowl-shaped refractor 20 for further modifying the downwardly directed light rays according to the desired light pattern. The optical assembly 17 is mounted on the latch end of the bottom closure member 13 in a manner to be fully described hereinbelow. A lamp holder 21 is suitably secured to the reflector 19 and extends through an opening 22 in the upper end thereof for supporting a lamp 24 within the optical assembly 17.

As seen particularly in FIGS. 3-5, the refractor 20 is an inverted bowl-shaped member having an outwardly extending flange 26 formed circumferentially around its outer peripheral edge for engaging the margin of a circular opening 27 formed in the bottom closure member 13. The reflector 19 also has an outwardly extending peripheral flange 29 which is substantially coextensive with the flange 26 on the refractor 20 and terminates in its outer end in a downwardly extending rim portion 30.

The refractor flange 26 is resiliently held in engagement with the margin of the opening 27 by a lug assembly 32 formed at one side of the optical assembly 17 and a latch spring assembly 34 disposed at a diametrically opposite side thereof, as seen in FIG. 2.

The lug assembly 32 is shown in FIG. 3 to comprise a generally rectangular recess 36 formed in the upper surface of the flange 26 for receiving an integral, inwardly extending lug 37 which is formed in the bottom closure member 13 adjacent the aperture 27.

The latch spring assembly 34 is shown in FIGS. 2 and 4 to include a flat bar 40 affixed to the closure member 13 adjacent the aperture 27 by means of a bolt 41 which secures the bar 40 in an elevated position against the pair of spaced-apart integral lug members 43 which extend upwardly from the closure member 13. The assembly 34 also includes an elongate, formed wire latch spring 44 having a pair of elongate legs 46 which are disposed between the bolt 41 and the lugs 43. The legs 46 flare outwardly, as seen in FIG. 2, to bear against the lugs 43 and are generally J-shaped for engaging a pair of spaced recesses 47 formed in the upper edge of the refractor flange 26.

When the latch spring 44 is in its positions shown in FIGS. 2 and 4, its legs 46 engage the recesses 47 to resiliently hold the refractor 20 in position. When the spring 44 is moved radially outward of the refractor 20, the ends 46 will disengage from the recesses 47 so that the adjacent edge of the refractor may be moved upwardly and outwardly to disengage the recess 36, at the opposite side of the refractor 20, from the lug 37. The recesses 36 and 47 in the refractor flange 26 not only serve as engageable portions for the lug assembly 32 and the spring latch assembly 34, but also serve as an indexing means so that

the refractor may be positioned in a proper relation relative to the housing 11.

In addition to the lug assembly 32 and the spring latch assembly 34 which resiliently hold the refractor in position, although with some degree of looseness, a pair of overcenter latch assemblies 50 are provided at diametrically opposite sides of the optical assembly 17 and spaced from the lug assembly 32 and the spring latch assembly 34 for securely latching both the reflector 19 as well as the refractor 20 in position. As seen particularly in FIGS. 2, 5 and 6, each of the overcenter latch assemblies 50 includes a generally L-shaped latch member 51 which is pivotally mounted at one end on the bottom closure member 13 and an overcenter spring 52 which is anchored at one end to the bottom closure member 13 and engages the free end of the latch member 51 at its other end.

More specifically, the L-shaped latch member 51 has a generally cylindrical pivot 54 formed at one end for pivotally engaging a semi-cylindrical, upwardly facing surface 55 formed in a pivot base 56 integrally formed on closure member 13. The overcenter spring 52 is generally U-shaped with a bight portion 57 formed at the junction of each arm 58 and a cross portion 60. A finger 61 extends inwardly from the free end of each arm 58 for engaging an aperture 63 formed in each of a pair of integral lugs 64 formed in closure member 13 adjacent the opposite ends of the pivot base 56. The cross portion 60 of spring 52 is disposed in an open-sided slot 66 formed in the free end of the latch member 51. A transverse slot 68 is formed in the latch member 51 adjacent the pivot portion 54 for engaging one side 70 of the pivot base 56 and acts as a stop to limit movement of the latch member 51 toward the reflector flange 29.

When the latch assembly 50 is in its latched position, shown by full lines in FIG. 5, the knee 72 of the latch member 51 will engage the upper surface of the reflector flange 29 to resiliently hold the reflector 19 and the refractor 20 in high pressure engagement with the bottom closure member 13. Because of the heavy spring force exerted by the latch springs 52 of each of the latch assemblies 50, the entire periphery of the reflector 19 is held in tight sealing engagement with the refractor flange 26 and the members are securely held to the bottom closure member 13.

As seen in FIG. 5, the line of action of latch spring 52 acts generally downwardly to resiliently urge the members into high pressure engagement. In addition, this action of spring 52 also tends to rotate the latch member 51 counterclockwise, as viewed in FIG. 5, to thereby rigidly hold it in its latched position and thereby prevent vibratory movement of the reflector 19 and the refractor 20.

When it is desired to release the latch assembly 50, it is gripped at its upper end adjacent the slot 66 and the member 51 is pivoted clockwise, as viewed in FIG. 5, and against the overcenter action of the spring 52. As the member 51 pivots, the spring 52 will move through a substantially vertical position whereupon it will become overcentered in the opposite direction to snap the member 51 to its position shown by phantom lines in FIG. 5.

Relatching of the assembly 50 is accomplished by rotating the latch member 51 counterclockwise in FIG. 5, from its phantom position toward its position shown by full lines. As the spring 52 moves through a vertical position it will become overcentered in the latching direction to snap the member 51 counterclockwise against the side 70 of the pivot base 51 and into the resilient high pressure latching engagement with the reflector rim 19.

It will be appreciated that, because of the overcenter action of the latch assemblies 50, the latch member 51 may be moved into and out of its latched position with relative ease and without the use of tools. In addition, the latch spring 52 provides a positive latching action against

the refractor and reflector to hold them in position and to prevent them from vibrating and becoming damaged.

While only a single embodiment of the invention has been shown and described, and while the invention has been described with respect to a particular luminaire, it is not intended to be limited thereby, but only by the scope of the appended claims.

I claim:

1. A luminaire comprising a housing having an aperture formed therein, a refractor having a peripheral edge engaging the margin of said aperture, an inverted dished reflector having a bottom peripheral rim substantially co-extensive with said refractor edge, and first holding means disposed in said housing for operatively engaging one of said reflector and refractor, said first holding means comprising overcenter latch means having a first overcenter position for resiliently engaging the one of said reflector and refractor for holding the same in said housing and a second overcenter position wherein the one of said reflector and refractor may be removed from said housing, said overcenter latch means moving in an arcuate path between said first overcenter position and said second overcenter position and being in spring tension at all times.

2. The luminaire set forth in claim 1 wherein said housing includes a bottom opening, a bottom closure member hingedly mounted on said housing, releasable latch means for securing said closure member to said housing in a closed position, said aperture being formed in said bottom closure member, said refractor having a peripheral edge engaging the margin of said aperture, and second holding means operatively associated with said bottom closure member, said second holding means being releasably engageable with the other of said reflector and refractor to hold the same in said bottom closure member.

3. The luminaire set forth in claim 2 wherein said second holding means engages said refractor to hold the same in said aperture, said first holding means being operative in its first overcenter position for resiliently engaging said reflector rim for holding the same in high pressure engagement against said refractor rim and in its second overcenter position to permit removal of said reflector rim from engagement with said refractor rim.

4. The luminaire set forth in claim 3 wherein said second holding means comprises resilient means releasably engageable with said refractor for holding the same in said aperture, the spring force of said resilient means being substantially smaller than that of said overcenter spring means.

5. The luminaire set forth in claim 3 wherein a plurality of overcenter latch assemblies are provided in spaced apart relation around said aperture.

6. The luminaire set forth in claim 3 wherein said first holding means comprises a latch member movably mounted on said bottom closure member and overcenter spring means for urging said latch member into a first overcenter position for engaging said reflector rim and a second overcenter position which is out of engagement with said rim, said latch member being movably mounted between said positions.

7. The luminaire set forth in claim 6 wherein said latch member is pivotally mounted at one end thereof on said bottom closure member and said overcenter spring means is connected at one end to said bottom closure member and at its other end to said latch member.

8. The luminaire set forth in claim 7 wherein said latch member is generally L-shaped and has a knee intermediate its ends for engaging said reflector rim and a pair of opposite ends which are respectively pivotally mounted on said bottom closure member and engaged by said overcenter spring means.

9. The luminaire set forth in claim 8 wherein said second holding means comprises resilient means releasably engageable with said refractor for holding the same in said aperture, the spring force of said resilient means

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being substantially smaller than that of said overcenter spring means.

10. The luminaire set forth in claim 9 wherein a plurality of overcenter latch assemblies are provided in spaced apart relation around said aperture.

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