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LUMINAIRE

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7 Claims. (Cl. 240-25)

This invention relates to luminaires and, more particularly, to means for mounting the reflector and refractor in a luminaire having a sealed optical assembly.

One type of luminaire employed for street or area lighting has a sealed optical assembly and an elongate housing which encloses electrical components such as ballasts and capacitors required for operating gaseous discharge lamps. The optical assemblies of such prior art luminaires include a reflector which was mounted in the housing and a refractor mounted on a bottom closure member. When the bottom closure member is in a latched position, the peripheries of the reflector and refractor engage to provide a sealed assembly. In order to achieve the proper mating of the reflector and refractor, it is necessary in such prior art devices to mount the reflector loosely and resiliently within the housing. In addition, such prior art luminaires have a fixed lamp holder which extends through an opening in the reflector and provides a support therefor. Because of the requirement that the reflector be loosely mounted in the housing, sealing between the lamp and the reflector is relatively difficult.

It is an object of the invention to provide a luminaire wherein optical assembly sealing is substantially simplified.

A further object of the invention is to provide new and improved means for mounting a luminaire optical assembly.

Another object of the invention is to provide a luminaire having an open bottomed housing and a hinged bottom closure member wherein the reflector and refractor are resiliently and releasably mounted on the bottom closure member by independent latch spring members.

These and other objects and advantages of the instant invention will become more apparent from the detailed description thereof taken with the accompanying drawings in which:

FIG. 1 is a side elevational view, partly in section, of the luminaire according to the instant invention;

FIG. 2 is a view taken along lines 2-2 of FIG. 1;

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

FIG. 4 is a fragmentary view showing the optical assembly latching means of the luminaire illustrated in FIG. 1.

Referring now to the drawings in greater detail, FIG. 1 shows a mercury vapor-type luminaire 10 which includes an inverted dished housing 11 having an elongate portion 12 integrally formed on one side for enclosing means (not shown) which permits attachment of the luminaire to a vertically extending pole (not shown). An apertured support 16 is integrally formed on the upper end of the housing 12 for supporting a photocontrol device 18.

A bottom closure member 17 is provided for the housing 11 and has an upper peripheral edge coextensive with the bottom opening of said housing. The closure member 17 is supported at one end beneath the housing portion 12 by a hinge 19 to permit pivotal movement toward an open position. A quick release latch assembly 20 is provided at the opposite end of the closure member 17 for securing it in its unpivoted position.

The luminaire also includes an optical assembly 13 having an inverted, dished reflector 14 for reflecting light rays in a generally downward direction as viewed in FIG. 1 and a cooperating bowl-shaped refractor 15 for modifying the downwardly directed light rays into the desired light

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pattern. The optical assembly 13 is mounted on the bottom closure member 17 in a manner to be more fully described hereinbelow. A lamp holder 21 is suitably mounted on the reflector 14 and extends through the opening 22 in the upper end thereof, for supporting a lamp 24 within the optical assembly 13.

In order to de-energize the electrical components of the luminaire 10, such as the lamp 24 and a ballast 25, when the bottom closure portion 17 is open, connection to these components is made through terminal blocks 26 and 27 mounted on the housing 11 and the bottom closure member 17, respectively, and disconnect contacts 28 carried by said terminal blocks. Thus, when the bottom closure member 17 is open, the movable portion of disconnect contacts 28 carried by the terminal block 27 disengage corresponding fixed contacts on terminal block 26 so that there is no risk of exposure to electrically live parts when the luminaire is being serviced.

As seen in FIGS. 1, 2 and 4, the refractor 15 is an inverted bowl-shaped member having an outwardly extending flange 30 formed circumferentially around its upper peripheral edge and a rib 35 formed below the flange 30 and generally parallel thereto. The lower surface 31 of the flange 30 engages the margin of a circular opening 33 formed in the bottom closure member 17. In addition, the lower peripheral rim 34 of the reflector 14 is substantially coextensive with the flange 30 on the refractor 15 and is shaped to cooperate with the refractor and reflector mounting assembly as will be described hereinbelow.

The refractor and reflector mounting assemblies 36 are disposed at the opposite sides of the optical assembly 13 and each includes elongate, shaped, flat reflector and refractor latch springs 37 and 38, respectively. Each of springs 37 and 38 is affixed at one end to the bottom closure member 17 by a screw 40 and each extends inwardly toward the optical assembly 13.

As seen in FIG. 4, the reflector latch spring 37 includes a generally laterally extending first arm 42 having an aperture 43 for embracing a boss 44 formed on the bottom closure member 17 and into which the screw 40 is threaded. In addition, reflector latch spring 37 includes a central arcuate portion 46 which is resiliently urged downwardly into engagement with a similar arcuate section 47 formed in the reflector rim 34 and adjacent its outer edge. In this manner, the reflector rim 34 is resiliently urged against the upper surface of the refractor flange 30 and is held in position by the engagement between the spring portion 46 and the arcuate section 47 in the reflector rim 34.

A second, generally angular arm 48 of the reflector latch spring 37 extends upwardly and outwardly from the central portion 46 to terminate at its upper end in a finger engaging tip 50. It can be seen that by forcing the tip 50 of the latch spring 37 toward the left as seen in FIG. 4, the first arm 42 will flex upwardly to move the central portion 46 out of engagement with the reflector rim 34 so that the reflector can be lifted away from the refractor 15. In a similar manner, when the reflector 14 is to be replaced against the refractor 15, the tip 50 of the reflector latch spring 37 is moved outwardly so that the first arm 42 flexes upwardly to allow the reflector 14 to be replaced whereupon the tip 50 is released so that the central portion 46 can re-engage the reflector rim 37 to latch the latter in position.

The refractor latch spring 38 similarly includes a laterally extending first arm 52 having an aperture 53 for embracing the boss 44. In addition, latch spring 38 includes a generally V-shaped central portion 54 whose point 55 engages the upper edge of the rib 35 to urge the refractor 15 downwardly and the lower surface 31 of its flange 30 against the bottom closure member 17. A downwardly extending lower tip 57 on the latch spring 38

3 permits the point 55 of the central portion 54 to be pivoted away from the rib 35 so that the refractor can be moved upwardly and out of the opening 33 in the bottom closure member 17 after the reflector 14 has first been removed. When it is desired to return the refractor 15 5 to its latched position, it is inserted through the opening 33 and forced downwardly so that the tip 55 on the latch spring 38 slides over the rib 35 and then snaps into its latched position shown in FIG. 4.

From the foregoing it will be appreciated that the reflector and refractor latching assembly 36 provides 10 positive latching of the reflector and refractor in position on the lower closure member 17 and allows their rapid removal without the need for tools. In addition, the reflector and refractor are each individually latched so 15 that the reflector 14 can be removed while the refractor 15 remains latched in position.

While only a single embodiment of the invention has been shown and described, it is not intended to be limited thereby but only by the scope of the appended claims. 20

I claim:

1. A luminaire comprising an inverted dished housing having a bottom opening, a closure member hingedly mounted on said housing and having a peripheral edge substantially coextensive with the bottom opening of said housing, means for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, engagement means formed in said refractor and below said peripheral flange, first latch spring means affixed to said closure member adjacent said aperture and being releasably engageable with said engagement means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, second latch spring means mounted on said closure member and engaging the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said latch spring means having a portion spaced from said refractor and reflector and operative upon movement outwardly therefrom to unlatch its respective latch spring means from said refractor and reflector. 25

2. A luminaire comprising an inverted dished housing having a bottom opening, means for supporting said luminaire in a generally horizontal position, a closure member hingedly mounted on said housing and having a peripheral edge coextensive with the bottom opening of said housing, releasable latch means for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, rib means formed in said refractor and below said peripheral flange and being disposed generally parallel thereto, first latch spring means affixed to said closure member and adjacent said aperture and being releasably engageable with said rib means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, said reflector having an aperture formed therein, lamp holding means affixed to said reflector and extending through said aperture for supporting a lamp within said refractor, second latch spring means mounted on said closure member and engaging the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said latch spring means having a portion spaced from said refractor and reflector and operative upon movement outwardly therefrom to unlatch its respective latch spring means from said refractor and reflector. 30

3. A luminaire comprising an inverted dished housing having a bottom opening, a closure member hingedly mounted on said housing and having a peripheral edge coextensive with the bottom opening of said housing, means for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, engagement means formed in said refractor and below said peripheral flange, a first plurality of flat, elongate, shaped spring latch members affixed to said closure member adjacent said aperture and having a first portion extending inwardly toward said refractor to releasably engage said engagement means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, a second plurality of flat, elongate, shaped latch spring members affixed to said closure member and having a first portion extending inwardly toward said reflector to engage the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said first and second plurality of latch spring members having a second portion operable upon movement outwardly of said luminaire to respectively release said refractor and reflector. 35

4. A luminaire comprising an inverted dished housing having a bottom opening, a closure member hingedly mounted on said housing and having a peripheral edge coextensive with the bottom opening thereof, means for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, engagement means formed in said refractor and below said peripheral flange, a first plurality of flat, elongate, shaped spring latch members affixed adjacent one end to said closure member adjacent said aperture and having a first portion extending inwardly toward said refractor to releasably engage said engagement means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having a bottom peripheral flange coextensive with said refractor flange, a second plurality of flat, elongate, shaped latch spring members affixed at one end on said closure member and having a first portion extending inwardly toward said reflector to engage the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said first and second plurality of latch spring members having a second portion spaced from said refractor and said reflector, respectively, movement of the second portion of each of said first and second plurality of latch spring members away from said refractor and reflector, respectively, being operative to move said latch spring members away from said engagement means and from said refractor flange to permit movement of said reflector and refractor away from said closure member. 40

5. A luminaire comprising an inverted dished housing having a bottom opening, a closure member hingedly mounted on said housing and having a peripheral edge coextensive with the bottom opening thereof, means for securing said closure member to said housing in a closed position, an aperture formed in said closure member, a bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, rib means formed in said refractor and below said peripheral flange, a first plurality of latch spring members affixed to said closure member and adjacent said aperture and being releasably engageable with said rib means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, 45

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said reflector having an aperture formed therein, lamp holding means affixed to said reflector and extending through said aperture for supporting a lamp within said refractor, a second plurality of latch spring members mounted on said closure member and engaging the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said first and second plurality of latch spring members each having a free end respectively spaced from said refractor and said reflector, movement of the free end of said first and second plurality of latch spring members away from said refractor and reflector, respectively, being operative to move said latch spring members away from said rib means and from said reflector flange to permit movement of said reflector and refractor away from said closure member.

6. A luminaire comprising an inverted dished housing having a bottom opening, means disposed at one end of said housing for supporting said luminaire in a generally horizontal position, a closure member hingedly mounted adjacent said one end of said housing and having a peripheral edge coextensive with the bottom opening of said housing, releasable latch means adjacent the other end of said housing for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a symmetrical bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, rib means formed in said refractor below said peripheral flange and being disposed generally parallel thereto, a first plurality of latch springs affixed to said closure member adjacent said aperture and each having a first tip releasably engageable with said rib means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted symmetrical dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, said reflector having an aperture in the upper end thereof, lamp holding means affixed to said reflector and extending through said aperture for supporting a lamp generally vertically within said refractor and along the symmetrical axis thereof, a second plurality of latch springs mounted on said closure member and each having a second tip engaging the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, said first and second plurality of latch springs each having a free end respectively spaced from said refractor and said reflector, movement of the free ends of each of said first and second plurality of latch springs outwardly of said refractor and reflector being operative to unlatch said refractor and reflector to permit movement thereof away from said closure member.

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7. A luminaire comprising an inverted dished housing having a bottom opening, means disposed at one end of said housing for supporting said luminaire in a generally horizontal position, a closure member hingedly mounted adjacent said one end of said housing and having a peripheral edge coextensive with the bottom opening of said housing, releasable latch means adjacent the other end of said housing for securing said closure member in a closed position relative to said housing, an aperture formed in said closure member, a symmetrical bowl-shaped refractor having an outwardly extending peripheral flange engaging the margin of said aperture, rib means formed in said refractor below said peripheral flange and being disposed generally parallel thereto, a first plurality of flat, elongate, shaped latch springs affixed at one end to said closure member and adjacent said aperture and each having a first portion extending inwardly toward said refractor to releasably engage said rib means to resiliently urge said refractor flange downwardly into engagement with the margin of said aperture, an inverted dished reflector having an outwardly extending bottom peripheral flange coextensive with said refractor flange, said reflector having an aperture formed therein, lamp holding means affixed to said reflector and extending through said aperture for supporting a lamp within said reflector, a second plurality of flat, elongate, shaped latch springs affixed at one end on said closure member and each having a first portion extending inwardly toward said reflector to engage the upper surface of said reflector flange to urge said reflector flange into resilient engagement with said refractor flange, each of said first and second plurality of latch springs having a second portion spaced from said refractor and said reflector respectively, movement of the second portion of each of said first and second plurality of latch springs away from said refractor and reflector being operative to move said latch springs away from said rib means and from said reflector flange to permit movement of said refractor and reflector away from said closure member.

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