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3,342,986

LUMINAIRE HOUSING HAVING A READILY ACCESSIBLE INTERIOR
WITH ELECTRICAL COMPONENTS MOUNTED THEREIN

Filed Oct. 23, 1965

2 Sheets-Sheet 1

Fig. 1

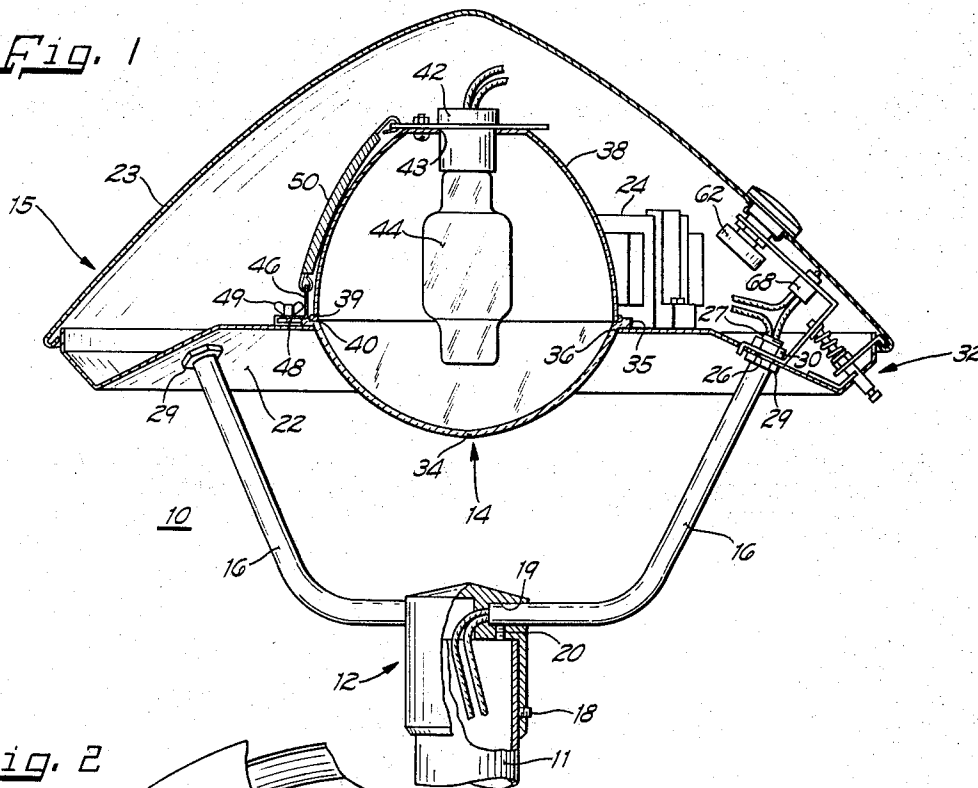
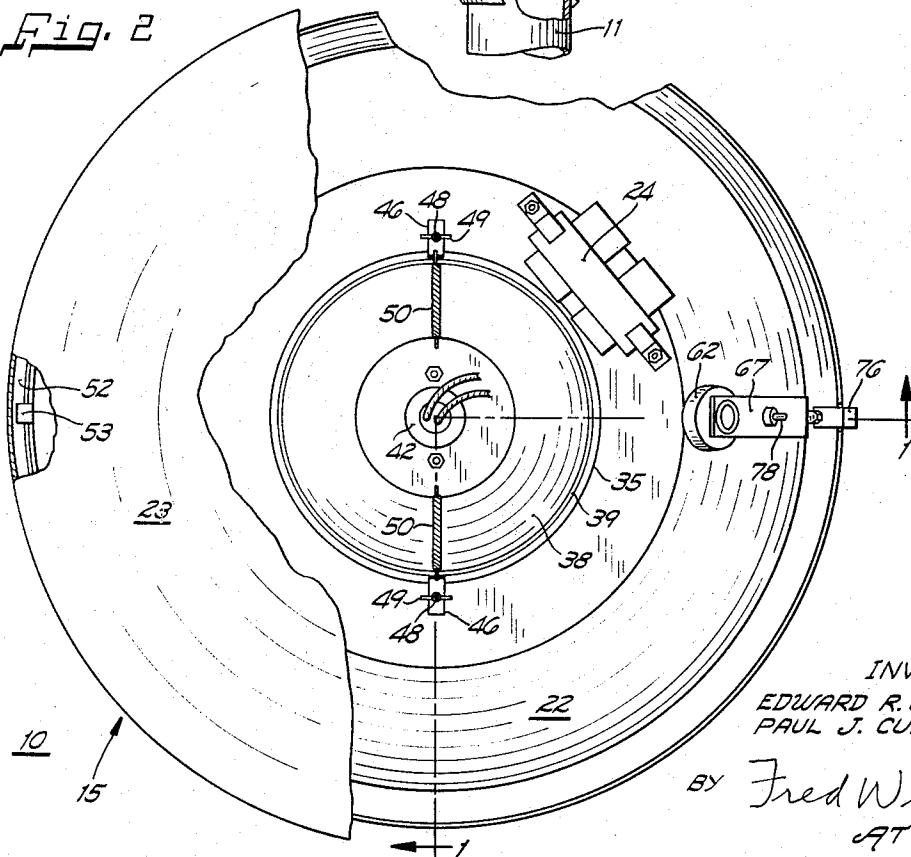


Fig. 2



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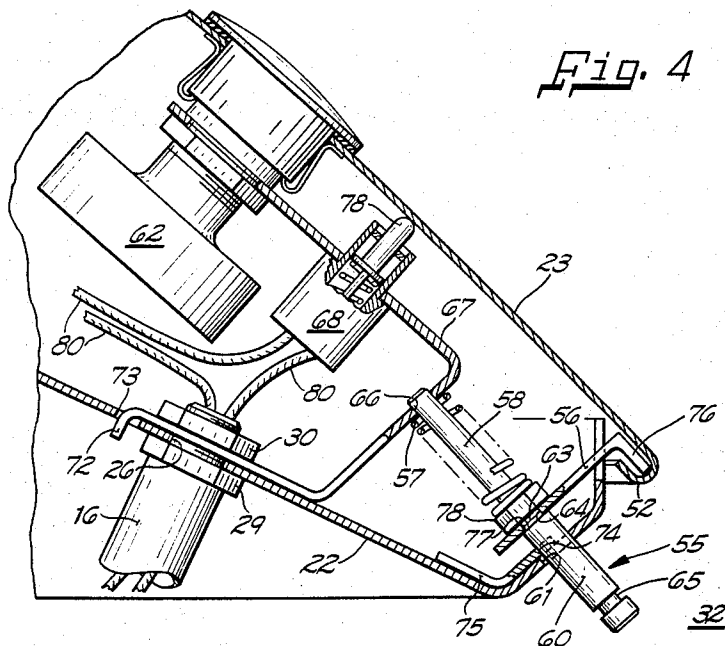


Fig. 4

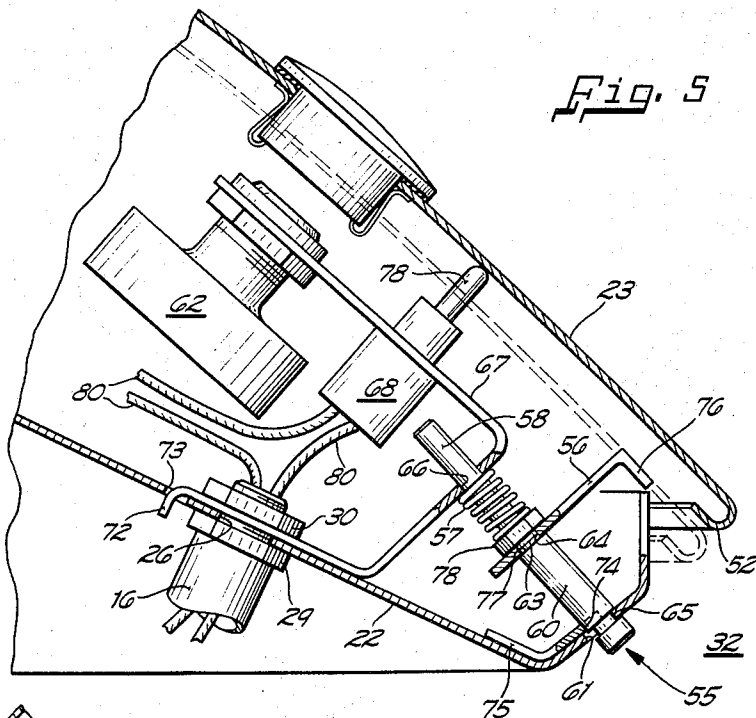


Fig. 5

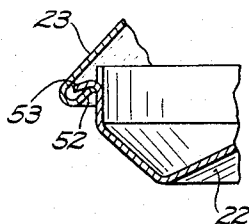


Fig. 3

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LUMINAIRE HOUSING HAVING A READILY ACCESSIBLE INTERIOR WITH ELECTRICAL COMPONENTS MOUNTED THEREIN**Edward R. Jablonski and Paul J. Curtin, South Milwaukee, Wis., assignors to McGraw-Edison Company, Milwaukee, Wis., a corporation of Delaware**

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19 Claims. (Cl. 240—25)

ABSTRACT OF THE DISCLOSURE

A luminaire comprising a diaphragm member mounted in spaced relation above a base by a plurality of upwardly extending arms and an optical assembly mounted in a central aperture on said diaphragm with its longitudinal axis disposed substantially vertically and including a refractor disposed below the diaphragm and a reflector mounted above the refractor. Electrical circuitry components are mounted on the diaphragm and are enclosed by a hood mounted above the diaphragm by means of a quick release attachment assembly, and a switch is interlocked to the hood to disconnect the circuitry components from an energizing circuit when the hood is removed.

Background of the invention

This invention relates to luminaires and more particularly, but not exclusively, to pole top mounted luminaires for street or area lighting purposes.

One type of pole top mounted lighting unit generally includes a base which supports a generally tubular refractor in surrounding relation to the lamp and a reflector or hood which overlays the refractor. If such luminaires are of the gaseous discharge type, the base is enlarged to enclose the internal wiring and ballast transformer. Such lighting units were not entirely satisfactory because their enlarged base portions tended to interfere with light distribution.

Another type of lighting unit consists of a pole top engaging base portion and one or more generally upwardly extending arms which support an optical assembly at their upper ends. Such luminaires also generally include an inverted, generally dished reflector or hood which supports the lamp and refractor and which is secured to the upper end of the arms by means of threaded members. When this type of luminaire has a gaseous discharge lamp, the ballast transformer is generally located in the pole top engaging base portion.

The structure of such prior art luminaires tends to magnify normal maintenance procedures which are normally performed atop the mounting pole.

Another disadvantage of certain prior art luminaires of the type discussed was the fact that their internal circuitry may remain energized even when access doors and hoods were open.

It is an object of the invention to provide a new and improved post top mounted lighting unit.

A further object of the invention is to provide a luminaire wherein access to internal circuitry is facilitated.

Another object of the invention is to provide a luminaire having new and improved means for rapid hood attachment and detachment.

A still further object of the invention is to provide a new and improved lighting unit wherein interlock means disconnects the internal circuitry when the luminaire's hood is removed.

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

FIG. 1 is a side elevation view, partly in section, of a luminaire incorporating the instant invention;

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

FIGS. 3-5 are enlarged fragmentary sectional views of portions of the luminaire illustrated in FIG. 1.

In general terms, the invention comprises support means for supporting luminaire electrical circuitry components, a hood for the support means, and latch means for securing the hood to the support means and including first means mounted on one of the hood and support means and engageable with the other one thereof, and means resiliently urging the first means in one direction and toward resiliently latching engagement with the other of the hood and support means, and means mounted on the one of the hood and support means for holding the first means out of latching engagement with the other of the hood and support means when the first means is moved in an opposite direction and against the biasing means.

Referring now to the drawings in greater detail, FIG. 1 shows a luminaire, designated by the general reference numeral 10, which is mounted atop a pole 11 of suitable height and suitably anchored at its lower end. The luminaire 10 includes a base assembly 12, an optical assembly 14, a hood assembly 15, and a plurality of support arms 16.

The base 12 telescopingly engages the upper end of pole 11 and is secured thereto by a plurality of set screws 18. In addition, the base 12 has a plurality of radial recesses 19 for receiving the lower ends of the support arms 16 which are secured therein by set screws 20.

The support arms 16 extend generally outwardly and upwardly from the base 12 for supportingly engaging the hood assembly 15 at their upper ends.

The hood assembly 15 includes a lower, generally circular diaphragm 22 and a generally ovate upper hood 23 which is substantially coextensive with the diaphragm 22.

The diaphragm 22, which provides a support for the optical assembly 14 and the ballast transformer 24, has a plurality of spaced apertures 26 for receiving the threaded upper ends 27 of the arms 16. A first threaded lock nut 29 secured to each of the arms 16 forms a bottom support for the diaphragm 22 and a second lock nut 30 on each arm clamps the upper surface thereof. The hood 32 forms a cover for the luminaire 10 and is secured to the diaphragm 22 by means of a latch mechanism 32 which will be discussed in greater detail hereinafter.

The optical assembly 14 includes a generally bowl-shaped refractor 34 having an outwardly extending flange 35 at its upper end for engaging the periphery of a circular opening 36 formed in the diaphragm 22. The optical assembly also includes an inverted, generally ovate reflector 38 having a lower peripheral rim 39 which is substantially coextensive with the flange 35 on the refractor 34 and has a rolled edge for cooperatively engaging annular groove 40 formed adjacent the inner periphery of said flange.

A lamp holder 42 is suitably bolted to the reflector 38 and extends through an opening 43 at the upper end thereof for supporting the lamp 44 in the optical assembly 13.

The flange 35 of the refractor 34 is resiliently held in engagement with the margin of the opening 36 in diaphragm 22 by a pair of generally L-shaped spring members 46 which are mounted at the opposite side of opening 36 as seen in FIGS. 1 and 2. Each of the spring members

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46 is secured at its lower end to the diaphragm 22 by means of a threaded stud 48 and a wing nut 49 and each extends inwardly to engage the upper surface of the flange 35 and then upwardly toward the lamp socket 42. The reflector 38 is resiliently held in engagement with the refractor 34 by a pair of elongate coil springs 50 which are anchored at their lower ends to the springs 46 and at their upper ends to the lamp socket 42.

When it is desired to service the optical assembly 14, the hood 23 is first removed in a manner to be described in greater detail hereinbelow. The upper ends of the elongate coil springs 50 can then be unhooked from the lamp socket 42 whereupon the reflector 38 is easily removable for cleaning or changing of the lamp 44. Removal of the refractor 34 is accomplished by loosening the wing nuts 49 and rotating the lower ends of the springs 46 away from the flange 45 whereupon the refractor 34 is free for upward movement.

As seen in FIG. 2, the outer peripheral rim of the diaphragm 22 extends generally upwardly toward the hood 23 whose lower peripheral rim is rolled inwardly to form an open bead 52. At the side of the diaphragm 22 opposite the latch assembly 32, an integral outwardly extending hood retaining hook 53 is formed for cooperatively engaging the open bead 52 for releasably securing the hood 23 to the diaphragm 22 at one side of the luminaire 10.

The latch 32 comprises a push type latch member 55 which carries a movable hook member 56 which is biased toward engagement with the open bead 52 by a spring 57.

The latch member 55 comprises an elongate rod having a first portion 58 of reduced diameter which is disposed generally inwardly of the diaphragm 22 and a second portion 60 of larger diameter which extends outwardly through a slightly larger diameter opening 61 formed adjacent the periphery of said diaphragm. The reduced diameter portion 58 of member 55 has a threaded section 63 adjacent a shoulder 64 which is formed by its junction with the second portion 60. In addition, an undercut 65 is formed in the member 55 adjacent its outer end.

The first portion 58 of the member 55 is slidably received in an aperture 66 formed in the base portion of a generally U-shaped bracket 67 having a first leg secured to the diaphragm 22 by the lock nut 30 and a second arm extending backwardly toward the luminaire for supporting an interlock switch 68 and a photocontrol 70. The one end of the bracket 67 is bent outwardly to form a lug 72 which is received in a slot 73 formed in the diaphragm 22 to prevent the bracket 67 from rotating on the leg 16.

The second portion 60 of member 55 is slidably supported by the margin of the aperture 61 and an arcuate surface 74 formed on a generally L-shaped bracket 75 affixed to the diaphragm 22 adjacent the opening 61.

The latch 56 is an inverted L-shaped member having its upper end bent outwardly to form a hook 76 and having an aperture 77 intermediate its ends for being received on the reduced portion 58 of member 55 so that it may be held against the shoulder 64 by a nut 78 which is mounted on the threaded portion 63. The spring 57 is disposed around the reduced portion 58 of member 55 and bears against the nut 78 and the base of the bracket 67 to urge the member 55 outwardly of the aperture 61 whereupon the hook 76 is resiliently held in locking engagement with the open bead 52 on the hood 23.

When the latch assembly 32 is in its position shown in FIG. 4, the hood 33 is securely latched to the diaphragm 22 by the engagement between the hook 76 and the open bead 52. When it is desired to remove the hood 23, the member 55 is pushed inwardly until the undercut 65 is opposed the margins of the aperture 61 to compress the spring 57 and move the hook 76 out of latching engagement with bead 52 as seen in FIG. 5. The spring 57 urges the member 55 outwardly and upwardly against the upper margin of the aperture 61 so that the undercut 65 will engage said upper margin to latch the member 55 in this position.

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With the latch assembly 32 latched in the position shown in FIG. 5, the hood 23 may be removed from the diaphragm 22 by disengaging the integral hook 53 from the open bead 52 at the opposite side of the luminaire.

Conversely, when the hood 23 is replaced on the diaphragm 22, the open bead 52 is replaced over the hook 53 whereupon the portion of the hood adjacent the latch assembly 32 will assume position shown by full lines in FIG. 5. In order to relatch the hood 23, its adjacent portion shown in FIG. 5 is forced downwardly to its phantom position which brings it into engagement with the hook 76. As a result, the member 55 is moved downwardly to move the undercut 65 out of engagement with the opening 61. This allows the spring 57 to snap the member 55 outwardly to its position shown in FIG. 4 and thereby to move the hook 76 into latching engagement with the bead 52. The surface 74 on member 75 prevents the undercut 65 from engaging the lower periphery of the aperture 61 when the member 55 is depressed.

It can be seen from the foregoing that the hood 23 may be removed from the luminaire 10 to expose the internal components thereof without the use of tools or the removal of any threaded parts but merely by pushing inwardly on the latch member 55. In addition, the hood 23 may be relatched in its closed position merely by pressing downwardly on one portion thereof.

The interlock switch 68, which is shown in FIGS. 4 and 5 to be mounted on the bracket 67 adjacent the quick release assembly 32, is of the spring loaded push button type. As those skilled in the art will appreciate, the switch 68 is closed when the button 80 is depressed against an internal biasing spring 81 and is opened when the button 80 is forced outwardly by said biasing spring. The switch 68 is connected in circuit with the luminaire energizing conductors 82 so that the internal components of the luminaire, which are disposed below the hood 23, will be de-energized when the switch 68 is open. When the hood 23 is in its latched, closed position it engages the button 80 as shown in FIG. 4 whereby the switch 68 is held in its closed position. On the other hand when the hood 23 is unlatched and removed from the diaphragm 22, the button 80 is free to move outwardly to its open position whereupon the internal electrical components are de-energized. As a result, when the hood 23 is removed, the internal components may be safely serviced without taking any affirmative action to de-energize the luminaire 10.

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

We claim:

1. In a luminaire having a lamp and an optical assembly surrounding said lamp and electrical circuitry components, the combination of support means for said electrical circuitry components and disposed generally above at least a portion of said optical assembly, a hood for said support means for enclosing said electrical circuitry components, and latch means for securing said hood to said support means and including first means mounted on one of said hood and support means and engageable with the other one thereof, and means resiliently biasing said first means in one direction and toward resiliently latching engagement with the other of said hood and support means, and holding means mounted on said one of said hood and support means for holding said first means out of latching engagement with said other of said hood and support means when said first means is moved in an opposite direction and against said biasing means so that said hood may be removed from said support means.

2. The combination set forth in claim 1 wherein said first means is mounted on said support means and is releasably engageable with said hood.

3. The combination set forth in claim 2 wherein said hood means is movable into engagement with said first

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means upon being replaced on said hood to release said first means from said holding means for movement in said one direction by said biasing means and into latching engagement with said hood.

4. The combination set forth in claim 1 wherein energizing conductor means is disposed beneath said hood for connecting said electrical circuitry components to an electrical energy source, and including interlock switch means mounted on said support means and having actuating means engageable by said hood when the latter is latched to said support means to hold said actuating means in a switch closed position, and means resiliently urging said actuating means toward a switch open position to open said switch means when said hood is removed from said support means.

5. The combination set forth in claim 1 wherein said latch means is disposed adjacent one side of said luminaire and second latch means is mounted on one of said hood and support means and is slidably engageable with the other of said hood and support means for releasably latching said hood to said support means at the other side of said luminaire.

6. The combination set forth in claim 1 wherein said support means includes a diaphragm member, the margins of said hood being at least coextensive with that of said diaphragm member to enclose said components.

7. The combination set forth in claim 6 wherein said first means comprises a first latch member and said hood includes latch receiving means, and including a second latch member movably mounted on said diaphragm member and extending outwardly of said enclosure through an opening formed in said diaphragm member, said first latch member being disposed within said enclosure and mounted on said second latch member, biasing means resiliently urging said first latch member into latching engagement with said latch receiving means, and holding means associated with said diaphragm member for holding said latch members upon movement of said second latch member away from said latch receiving means and against said biasing means to hold said first latch means out of engagement with said latch receiving means.

8. The combination set forth in claim 7 wherein said first means is disposed adjacent one side of said luminaire and second latch means is mounted on one of said hood and support means and being slidably engageable with the other of said hood and support means for releasably latching said hood to said support means at the other side of said luminaire.

9. The combination set forth in claim 8 and including means associated with said hood for engaging said first latch member when said hood is returned to its latched position to release said latch members from said holding means so that said first latch member is moved into engagement with said latch receiving means.

10. The combination set forth in claim 7 wherein energizing conductor means is disposed beneath said hood for connecting said electrical circuitry components to an electrical energy source, and including interlock switch means mounted on said support means and having actuating means engageable by said hood when the latter is latched to said diaphragm member to hold said actuating means in a switch closed position, and means resiliently urging said actuating means toward a switch open position to open said switch means when said hood is removed from said diaphragm member.

11. The combination set forth in claim 1 wherein said optical assembly includes a light transmitting member having an open upper peripheral rim, said support means includes a diaphragm member having an aperture for receiving the upper peripheral rim of said light transmitting member and having an upper surface for supporting said electrical circuitry components, the margins of said hood being at least coextensive with that of said diaphragm to form an enclosure for said components.

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12. The combination set forth in claim 11 wherein said first means is mounted on said diaphragm member and is releasably engageable with said hood.

13. The combination set forth in claim 11 wherein said first means comprises a first latch member and said hood includes latch receiving means, and including a second latch member slidably mounted on said diaphragm member and extending outwardly of said enclosure through an opening formed in said diaphragm, said first latch member being disposed within said enclosure and mounted on said second latch member, biasing means resiliently urging said second latch member outwardly of said enclosure to move said first latch member into latching engagement with said latch receiving means, and holding means associated with said diaphragm member for holding said second latch member upon movement thereof inwardly of said enclosure and against said biasing means to hold said first latch member out of engagement with said latch receiving means.

14. The combination set forth in claim 13 and including means associated with said hood for engaging said first latch member when said hood is returned to its latched position to release said second latch member from said holding means so that said second latch member is moved outwardly of said enclosure by said biasing means and said first latch member is moved into engagement with said latch receiving means.

15. The combination set forth in claim 14 wherein said first means is disposed adjacent one side of said luminaire and second latch means is mounted on one of said hood and support means and being slidably engageable with the other of said hood and support means for releasably latching said hood to said support means at the other side of said luminaire.

16. The combination set forth in claim 15 wherein energizing conductor means is disposed beneath said hood for connecting said electrical circuitry components to an electrical energy source, and including interlock switch means mounted on said diaphragm member and having actuating means engageable by said hood when the latter is latched to said support means to hold said actuating means in a switch closed position, and means resiliently urging said actuating means toward a switch open position to open said switch means when said hood is removed from said support means.

17. In a luminaire, the combination of, a base, a lamp, an optical assembly around said lamp and supported from said base, said optical assembly including a generally bowl-shaped light transmitting member having an open upper end and a reflecting member disposed above said light transmitting member, a diaphragm member having upper and lower surfaces and a central opening for supportingly engaging the upper end of said light transmitting member, elongate support arm means extending from said base for supportingly engaging said diaphragm member with its lower surface facing said base and said light transmitting member spaced from said base, electrical circuitry components for said lamp disposed on the upper surface of said diaphragm member and including a ballast transformer, a hood for said diaphragm member and having an outer periphery substantially coextensive with the outer periphery thereof, quick attachment and detachment means mounted on said diaphragm member for releasably engaging said hood, said quick attachment and detachment means having a first position wherein said hood is engaged for being securely held to said diaphragm member and a second position wherein said hood is disengaged for being removed from said diaphragm member and means for open circuiting said electrical circuitry components when said hood is removed from said diaphragm member and for re-establishing said circuit when said hood is replaced on said diaphragm member.

18. The luminaire set forth in claim 17 wherein energizing conductor means is disposed beneath said hood for connecting said electrical circuitry components to an electrical energy source, and including interlock switch means mounted on said diaphragm member and having actuating means disposed in a switch-closed position when said hood is secured to said diaphragm member and means for moving said actuating means into a switch-open position to open said switch means when said hood is removed from said diaphragm member.

19. The luminaire set forth in claim 18 wherein said luminaire is symmetrical about a vertical axis through said base and said lamp is supported on said reflecting member and extends downwardly therefrom through the

open upper end of said refractor and along said symmetrical axis, said support means comprising a plurality of arms.

References Cited

UNITED STATES PATENTS

2,335,852	12/1943	Frank	240—10.66
3,283,139	11/1966	Harling	240—25

FOREIGN PATENTS

692,369	8/1964	Canada.
378,417	6/1964	Switzerland.

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