Feb. 23, 1965 P. J. CURTIN 3,170,635

LUMINAIRE ASSEMBLY

Filed Aug. 15, 1962 2 Sheets-Sheet 1

Fig. 1

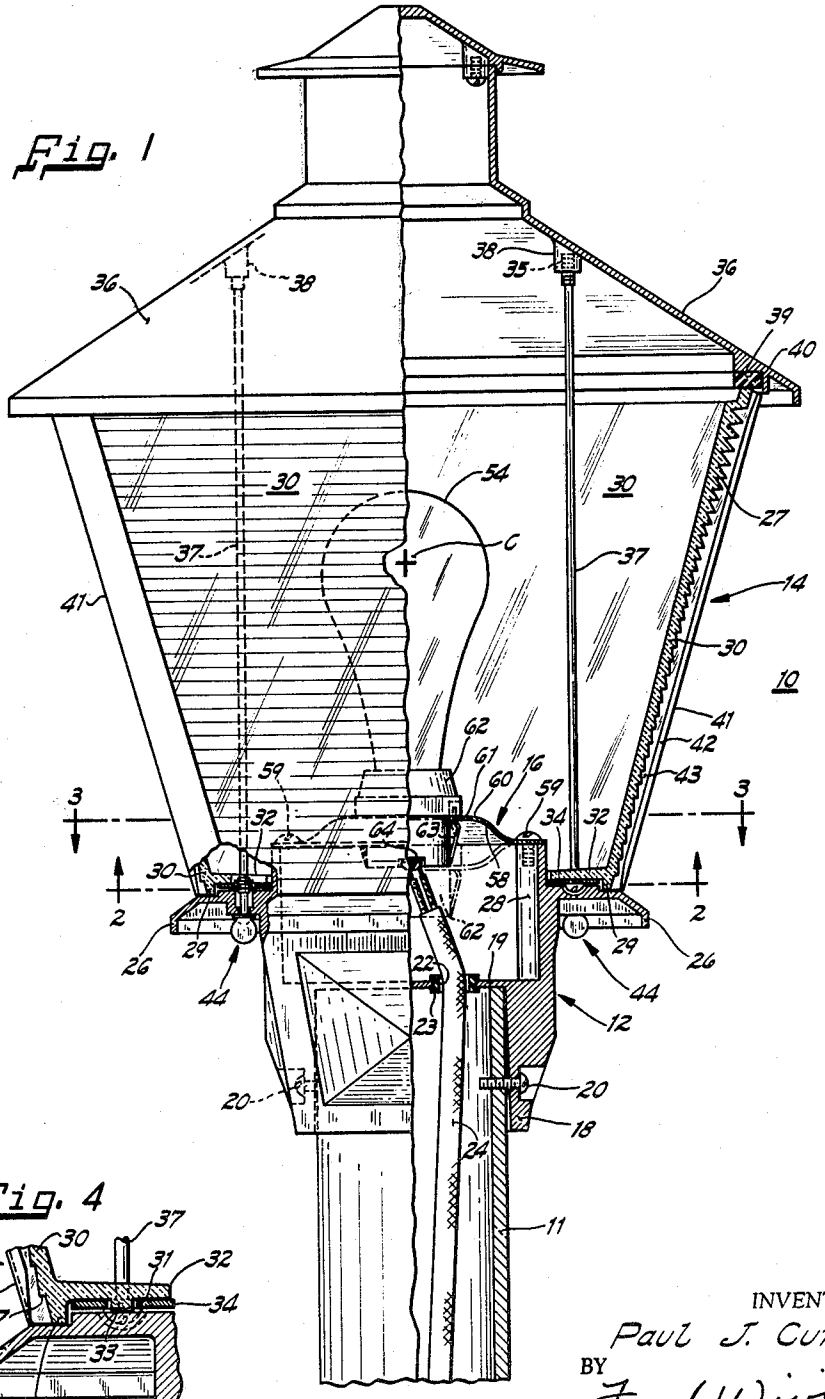


Fig. 4

INVENTOR.
Paul J. Curtin
BY
Fred Wiviott
Attorney

Feb. 23, 1965 P. J. CURTIN 3,170,635

LUMINAIRE ASSEMBLY

Filed Aug. 15, 1962 2 Sheets-Sheet 2

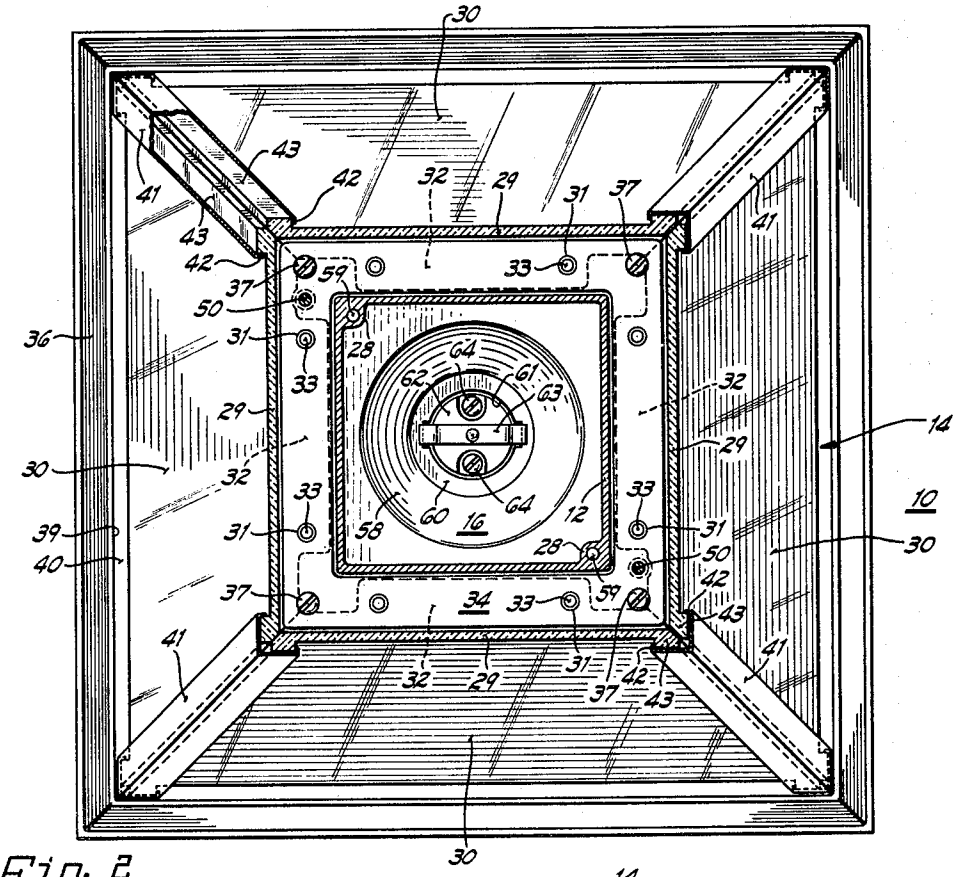


Fig. 2

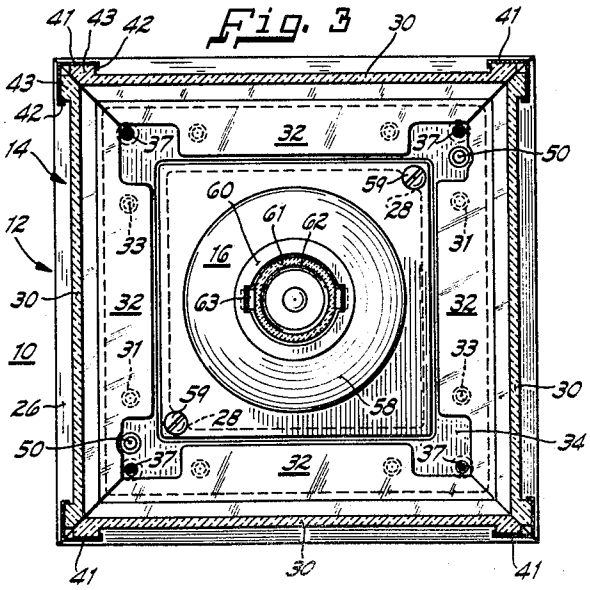


Fig. 3

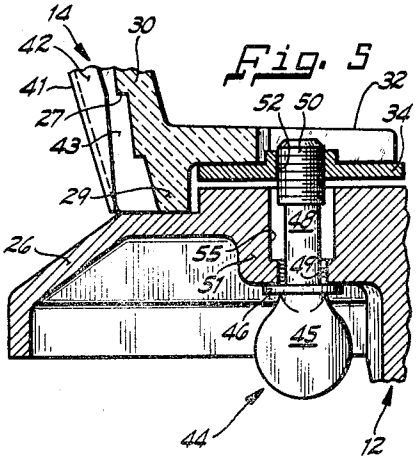


Fig. 5

INVENTOR.
Paul J. Curtin
BY
Fred Wiviott
Attorney

United States Patent Office 3,170,635 Patented Feb. 23, 1965

3,170,635

LUMINAIRE ASSEMBLY

Paul J. Curtin, South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis., a corporation of Delaware

Filed Aug. 15, 1962, Ser. No. 217,082
9 Claims. (Cl. 240—25)

This invention relates to luminaires and more particularly to a luminaire having particular application for residential use.

Many prior art luminaires employed for residential purposes are unsatisfactory because relamping involves substantial and sometimes complicated disassembly introducing the possibility that screws and other small parts will be dropped and lost.

For residential use it has been found preferable to fabricate the light transmitting portions of a luminaire of an acrylic plastic rather than glass to minimize breakage. Such plastic materials, however, suffer from the disadvantage of having a relatively high thermal expansion coefficient which differs substantially from adjacent metallic portions of the device. If free expansion of these plastic members is not permitted they will become permanently distorted thereby destroying the desired optical pattern and, upon contraction, tend to provide a relatively loose assembly.

It is an object of the invention to provide a luminaire optical assembly formed in an integral unit and which may be readily removed from its mounting assembly for ease and speed of relamping.

Another object of the invention is to provide means for holding in assembly the optical components of a luminaire and which provides sealing while allowing free expansion and contraction of parts.

Still another object of the invention is to provide a luminaire having an optical assembly wherein the position of the lamp socket may be quickly and easily adjusted to accommodate various sized lamps without altering the relative positions of the light center and the optical assembly.

A still further object of the invention is to provide a luminaire optical assembly having light modifiers which allows ease of assembly and replacement of parts.

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 of a luminaire according to the instant invention with parts broken away;

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. 1; and

FIGS. 4 and 5 are fragmentary sectional views of the device shown in FIG. 1.

Referring to the drawings in greater detail, FIG. 1 shows a luminaire, designated generally by the reference numeral 10, which is shown to be mounted atop a pole 11 of suitable height and suitably anchored at its lower end.

The luminaire includes a base assembly 12, an optical assembly 14 and a light socket assembly 16. The base assembly 12 secures the luminaire 10 to the pole 11 and supports the optical assembly 14 and the light socket assembly 16 in the proper relative positions.

The base assembly 12 includes a slipfitter 18 integral therewith and which slidably receives the upper end of the pole 11. A wall 19 at the upper end of the slipfitter 18 acts as a stop and separates the interior of the pole 11 from the interior of the luminaire 10. A plurality of self-piercing set screws 20 are spaced around

the slipfitter 18 to rigidly affix the luminaire to the upper end of the pole 11. A grommet 23 disposed in an aperture 22 in the wall 19 allows the passage of conductor 24 from the interior of the pole 11 to the socket assembly 16.

The base assembly 12 also has an upwardly extending, rectangular tubular portion 26 for supporting the socket assembly 16 and an outwardly extending flange 28 for supporting the optical assembly 14.

The optical assembly 14 is shown in FIGS. 2 and 3 to be rectangular in cross section and to be provided with four refractor panels 30 of trapezoidal configuration which flare outwardly from their lower to their upper ends and which have light refracting prisms 27 formed on their outer surfaces. As seen in FIGS. 2 and 3, each of the refractor panels has an inwardly extending flange 32 which is engaged at their lower surfaces by support plate 34 which has a rectangular aperture for receiving the tubular portion 28 of the base 12.

As seen in FIGS. 2, 3, and 4, each of the refractor panel flanges 32 has a pair of locating embossments 33 formed on its lower surface and which are received in corresponding apertures 31 in the support plate 34. This prevents relative movement between the refractor panels 30 and the plate 34. Such relative movement is also prevented by a downwardly extending lip 29 at the lower edge of each panel 30.

A hood 36 overlays the upper ends of the panels 30 and is attached to the refractor support plate 34 by a plurality of elongate retaining screws 37 which extend vertically through the optical assembly 14. The heads of screws 37 abut the under surface of the support plate 34 and their upper ends are threaded for engagement in tapped holes 35 formed in embossments 38 formed in the under surface of the hood 36. A rim 39 is formed adjacent the lower edge of the hood 36 for receiving a gasket 40. The retaining screws 37 bottom in the tapped holes 35 to slightly compress the gasket 40 and thereby provide a seal at the upper end of the refractor panels 30. In addition, the gasket 40 allows substantial vertical expansion and contraction of the refractor panels 30 to maintain the seal and without introducing undue stresses in said panels.

As seen in FIGS. 2 and 3, the refractor flanges 32 are reduced at each side so that they will not be engaged by the retaining screws 37. In this manner the support plate 34 can evenly distribute the stresses of the retaining screws 37 over the entire area of the refractor flanges 32.

Each of the refractor panels 30 has a support rib 43 formed along each of its lateral sides for co-operation with the corresponding ribs on the adjacent panels. A V-in-cross-section refractor clip 41, having a pair of inwardly extending lips 42, engages each mating pair of ribs 43 to secure the refractor panels 30 in a unitary assembly. The refractor clips 41 resiliently urge the lateral sides of adjacent panels 30 into engagement to seal the corners of the optical assembly 14 and yet allows substantial lateral expansion of the refractor panels 30. In this manner the luminaire according to the instant invention provides an optical assembly in which the refractor panels are firmly held but in which substantial expansion and contraction is possible.

A pair of thumb screw assemblies 44 are provided at one pair of diagonally opposite corners of the assembly. Each of the thumb screw assemblies, which are shown with greater particularity in FIG. 5 includes a thumb screw 45 having a threaded upper end 46 for engaging a tapped hole 48 in the refractor support panel 34. The thumb screw 45 has an annular collar 46 which engages the under surface of the refractor support flange 26 extending laterally from the base 12. The thumb screw 45

also includes a neck 48 extending upwardly through an aperture 49 formed in flange 26 and a threaded head portion 50 at its upper end which is threadably engageable with a tapped hole 52 in the refractor support plate 34. When the thumb screw assemblies 44 are each in the position shown in FIG. 4, with the collar 46 engaging the under surface of the flange 26 and the head 50 at the upper limit of its travel in the hole 52, the optical assembly 14 will be rigidly mounted on the base 12.

When it is desired to remove the optical assembly 14 from the base 12 for replacement of the lamp 54 or the like, the thumb screw 45 is turned until the head 50 becomes disengaged from the hole 52 whereupon it is free to fall into a recess 55 formed in the shoulder 51 above the aperture 49. Because the diameter of the head 50 is larger than that of the aperture 49, complete removal of the thumb screw 45 is prevented. When each of the thumb screws have been released in this manner the entire optical assembly 14 may be removed from the base 12. As a result, the optical assembly may be removed in a relatively easy manner and without the use of tools. In addition, the possibility that screws and like attaching devices will be dropped and lost is eliminated because the thumb screws 45 are not removable from the base 12.

The socket assembly 16 includes a socket plate 58 which is attached to the upper end of the tubular section 28 by mounting screws 59. The central portion 60 of the socket plate 58 is embossed and has a central aperture 61 for receiving the socket 62 which is held therein by means of a spring clip 63. A suitable terminal 64 is provided in the lower end of the socket 62 for connection to the conductor 24.

In FIG. 1 the embossment 60 on the socket support plate 58 is shown by full lines to be in a raised position so that the light socket 62 is relatively elevated. The socket support plate 58 is however, reversible as shown by dotted lines in FIG. 1 so that the embossment extends downwardly. When the socket 62 is mounted on the support plate 58 when the latter is in its dotted position the socket 62 will be in a depressed position as shown by dotted lines in FIG. 1. This allows the use of various sized lamps 54 while insuring that the effective center C of the light source will have the same position relative to the optical assembly 14. For example, if a 100 watt lamp is employed the socket 62 will be in its elevated position while the use of a 150 watt lamp requires a depressed light socket to insure that the effective center C of both lamps will be in identical positions.

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

I claim:

1. A luminaire comprising a base assembly for attachment to supporting structure and an optical assembly, said base assembly including lamp holding means extending generally upward from said base assembly, said optical assembly including light modifying means and a hood, a support plate engaging said base and having an aperture disposed in surrounding relation to said lamp holding means, said light modifying means extending generally upwardly from said base portion and being engaged at its lower end by said support plate, elongate fastening means extending between said support plate and said hood for releasably holding said light modifying means and said hood in a unitary assembly, and second releasable fastening means independent of said elongate fastening means and extending between said support plate and said base assembly so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly to expose said lamp holding means.

2. A luminaire comprising a base for attachment to supporting structure and an optical assembly mountable on said base assembly, lamp holding means secured to said base and extending generally upwardly from a central portion thereof, said optical assembly including a plurality of identical light modifying members and a hood, a support plate engaging said base and having an aperture disposed in surrounding relation to said lamp holding means, each of said members extending generally upwardly in side-by-side abutment from said base and being engaged at its lower end by said support plate, means for resiliently joining said members at their abutting edges and including attachment rib means integral with said edges and spring clip means engaging adjacent attachment rib means for urging said abutting edges into resilient engagement, elongate fastening means extending between said support plate and said hood for releasably holding said members and said hood in a unitary assembly, and releasable fastening means independent of said elongate fastening means and extending between said support plate and said base assembly so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly to expose said lamp holding means.

3. A luminaire comprising a base assembly for attachment to supporting structure, and an optical assembly, said base assembly including lamp holding means extending generally upward therefrom and a laterally extending flange, said optical assembly including light modifying means, and a hood, a support plate engaging said base and having a central aperture disposed in surrounding relation to said lamp holding means, said light modifying means extending generally upwardly from said base portion and being engaged at its lower end by said support plate, first fastening means extending between said support plate and said hood for releasably holding said light modifying means and said hood in a unitary assembly, fastening means accessible from the exterior of said luminaire, second fastening means independent of said first fastening means and engaging the lower surface of said flange and having an end portion threadably engaging said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly, and retaining means for preventing removal of said fastening means from said base assembly to expose said lamp holding means.

4. A luminaire comprising a base for attachment to supporting structure, an optical assembly, said base assembly including light socket support means extending upwardly therefrom, said optical assembly including a refractor and a hood, a refractor support plate engaging said base assembly and having a central aperture disposed in surrounding relation to said light socket support means, said refractor extending generally upwardly from said base portion and being engaged at its lower end by said support plate, elongate fastening means extending between said support plate and said hood for releasably holding said refractor and said hood in a unitary assembly, and thumb screw means independent of said elongate fastening means and having a head portion accessible externally of said luminaire and engageable with said base assembly, said thumb screw means also having an end portion within said luminaire and threadably engaging said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly to expose said light socket support means, and retaining means for preventing removal of said end portion from said luminaire.

5. A luminaire comprising a base for attachment to supporting structure, an optical assembly securable to said base, lamp holding means extending upwardly from said base, said optical assembly including a plurality of light modifying panels and a hood, a panel support plate engaging said base and having an aperture disposed in surrounding relation to said lamp holding means, each of said panels extending generally upwardly from said base portion and being engaged at its lower end by said support plate, each of said panels having an attachment rib integral with each of its lateral sides and extending outwardly

of said luminaire, elongate clip means substantially co-extensive with adjacent laternal sides and engaging the attachment ribs thereof to resiliently urge said adjacent lateral sides into engagement and to maintain such engagement upon expansion and contraction of said panels, and elongate fastening means releasably engaging said support plate and said hood for holding said refractor panels and said hood in a unitary assembly, and second attachment means independent of said elongate fastening means for releasably securing said plate to said base so that said optical assembly may be removed from said base in a unitary assembly to expose said lamp holding means.

6. A luminaire comprising a base assembly for attachment to supporting structure and an optical assembly, said base assembly including light socket support means, said optical assembly including a hood and a plurality of panels having prismatic light refracting means formed thereon, a panel support plate engaging said base and having a central aperture disposed in surrounding relation to said light socket support means, each of said panels extending generally upwardly from said base portion and being engaged at its lower end by said support plate, each of said refractor panels having an attachment rib integral with each of its lateral sides and extending outwardly of said luminaire and opposed to the attachment rib on the adjacent panel, elongate spring clip means substantially coextensive with adjacent lateral sides of said panels and each having a pair of inwardly extending end portions engaging the opposed attachment ribs to resiliently urge said adjacent lateral sides into engagement and to maintain such engagement upon expansion and contraction of said panels, elongate fastening means releasably engaging said support plate and said hood for holding said refractor panels and said hood in a unitary assembly, compressable sealing means disposed between said hood and the upper end of said panels to seal said optical assembly against longitudinal expansion and contraction of said panels, and releasable fastening means independent of said elongate fastening means and engaging said base assembly and said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly to expose said light socket support means.

7. A luminaire comprising a base assembly for attachment to supporting structure and an optical assembly, said base assembly including light socket support means, said optical assembly including a hood and a plurality of refractor panels having light modifying means formed thereon, a panel support plate engaging said base assembly and having an aperture disposed in surrounding relation to said light socket support means, each of said refractor panels extending generaly upwardly from said base portion and having an inwardly extending flange at its lower end which is engaged by said support plate, each of said refractor panels having an attachment rib integral with each of its lateral sides and extending outwardly of said luminaire, elongate clip means substantially co-extensive with adjacent lateral sides and engaging the attachment ribs thereof to resiliently urge said adjacent lateral sides into engagement and to maintain such engagement upon expansion and contraction of said panels, first fastening means releasably engaging said support plate and said hood for holding said refractor panels and said hood in a unitary assembly, said flange and said support plate having engageable locating means for maintaining the lower ends of said panels in correct alignment relative to said plate, and second fastening means independent of said first fastening means and engaging said base assembly and said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary asesmbly to expose said light socket support means.

8. A luminaire comprising a base assembly for attachment to supporting structure and an optical assembly, said base assembly including light socket support means and a laterally extending flange, said optical assembly including a hood and a plurality of panels having prismatic light refracting means formed thereon, a panel support plate engaging said base assembly and having an aperture disposed in surrounding relation to said light socket support means, each of said panels extending generally upwardly from said base portion and being engaged at its lower end by said support plate, each of said refractor panels having an attachment rib integral with each of its lateral sides, said panels being disposed in surrounding relation to said light socket support means and with their lateral edges in abutting side-by-side relation, elongate clip means substantially coextensive with adjacent lateral sides and engaging the attachment ribs thereof, elongate fastening means releasably engaging said support plate and said hood for holding said refractor panels and said hood in a unitary assembly, and second fastening means independent of said elongate fastening means and engaging the lower surface of said flange and having an end portion threadably engaging said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly, and retaining means for preventing removal of said fastening means from said base assembly.

9. A luminaire comprising a base assembly for attachment to supporting structure and an optical assembly, said base assembly including reversible light socket support means and a laterally extending flange, said optical assembly including a hood and a plurality of panels having prismatic light refracting means formed thereon, a panel support plate engaging said base assembly and having an aperture disposed in surrounding relation to said light socket support means, each of said panels extending generally upwardly from said base portion and having a laterally extending flange at its lower end which is engaged by said support plate, each of said refractor panels having an attachment rib integral with each of its lateral sides, said panels being disposed in surrounding relation to said light socket support means with the lateral sides of adjacent panels in abutment, elongate clip means substantially coextensive with adjacent lateral sides and engaging the attachment ribs thereon to urge said lateral sides into resilient high pressure engagement, elongate fastening means releasably engaging said support plate and said hood for holding said refractor panels and said hood in a unitary assembly, said light socket support means including attachment means for releasably engaging said base and lying in a first plane and light socket engaging means lying in a second plane spaced from said first plane, whereby reversal of said light socket support means will vary the distance between said socket and said light refracting means, and second fastening means independent of said elongate fastening means and engaging the lower surface of said flange and having an end portion threadably engaging said support plate so that said optical assembly can be releasably mounted on and removed from said base as a unitary assembly, and retaining means for preventing removal of said fastening means from said base assembly.

References Cited in the file of this patent

UNITED STATES PATENTS

1,545,711	Townsend	July 14, 1925
1,657,256	Halvorson	Jan. 24, 1928
1,791,674	King	Feb. 10, 1931
2,014,191	Stock	Sept. 10, 1935
2,870,362	Arnold et al.	Jan. 20, 1959
2,894,693	Howarth	July 14, 1959

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,170,635 February 23, 196

Paul J. Curtin

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 52, for "generaly" read -- generally --; line 65, before "engageable" insert -- coacting --.

Signed and sealed this 3rd day of August 1965.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents