Jan. 10, 1967 S. L. BALDWIN 3,297,865

LUMINAIRE LATCHING DEVICE

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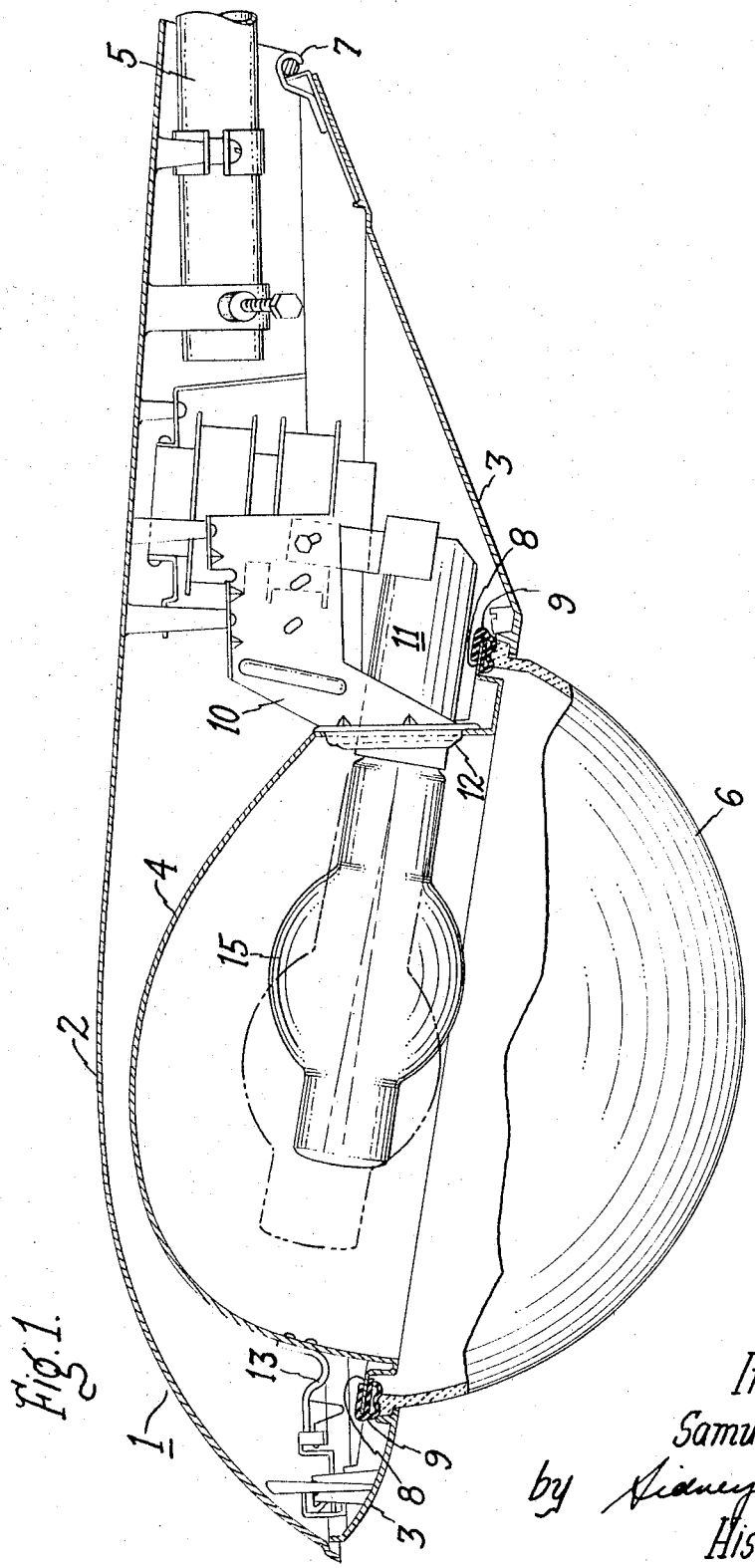


Fig. 1.

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Fig. 2.

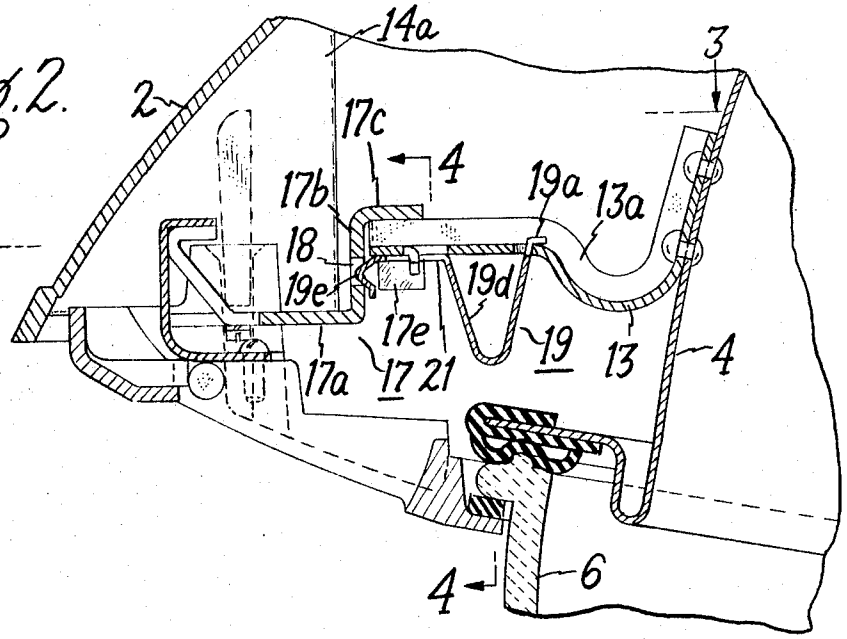
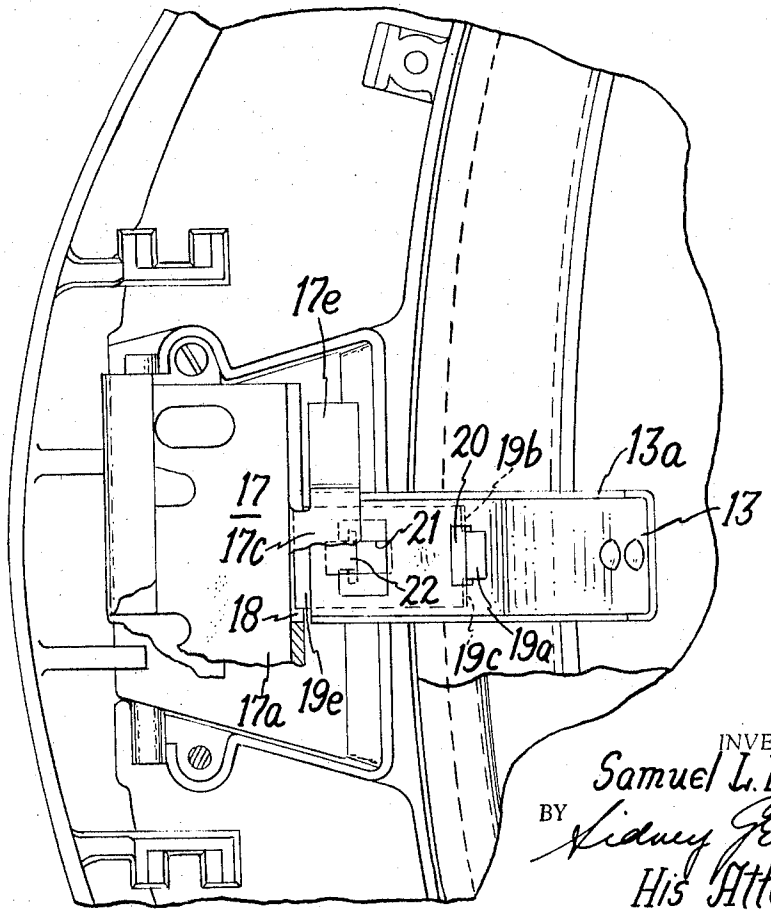


Fig. 3.



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Fig. 4.

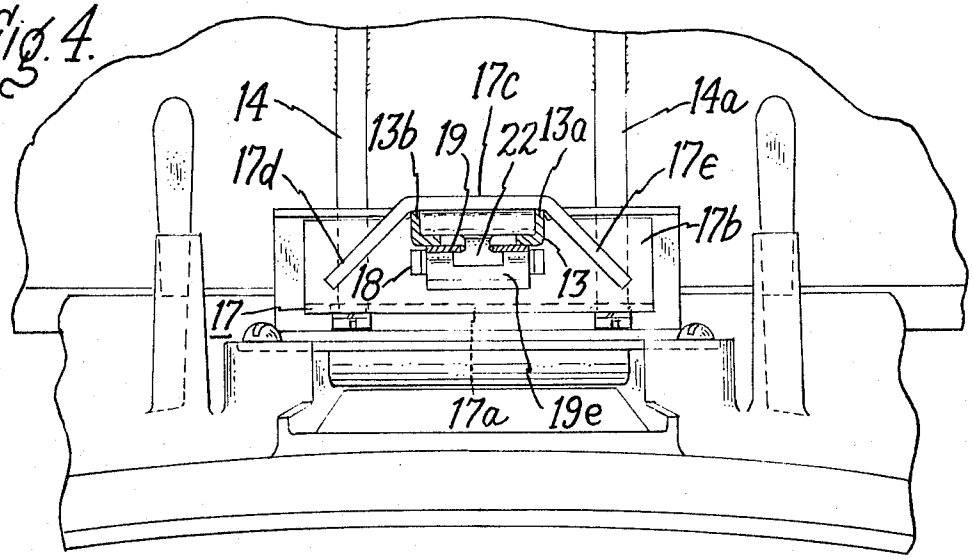
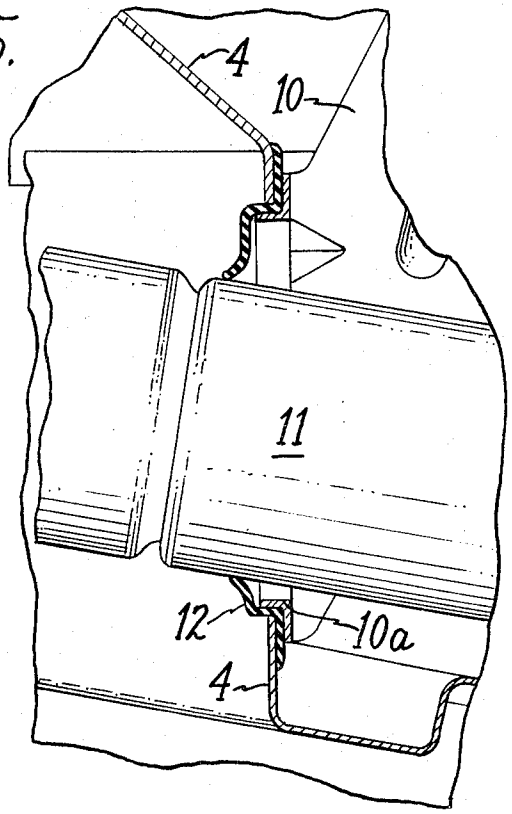


Fig. 5.



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LUMINAIRE LATCHING DEVICE

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Filed July 7, 1964, Ser. No. 380,827
7 Claims. (Cl. 240—147)

The present invention relates to lighting fixtures and more particularly concerns a latching device for reflectors in street lighting luminaires or the like.

Known street lighting luminaires conventionally comprise an upper housing in which a reflector, often of elongated or ovate shape, is nested. The reflector is frequently removably supported in the housing at its rear end and a latch device is usually provided at its front end to detachably secure it to the housing. However, the known front latching devices for the reflector have had certain drawbacks, in that they did not hold the reflector with sufficient firmness, or did not properly position the reflector with respect to the other parts of the luminaire, especially after long use, or were not readily operable to permit quick assembly and disassembly of the reflector.

It is an object of the invention to provide a latching device, particularly for use with reflectors of lighting fixtures, which is simple in construction and operation and which firmly and reliably holds the reflector in assembly in the lighting fixture.

It is another object of the invention to provide a latching device of the above type which is of rugged construction, which permits ready attachment of the reflector in its supporting housing while assuring accurate and positive positioning therein, and which is nevertheless readily separable to enable quick removal of the reflector from the housing.

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 a preferred embodiment relates to a luminaire comprising a housing having an opening, an elongated reflector in the housing facing the opening and being detachably supported at its rear end in the housing, and co-acting latch means at the front ends of the housing and reflector for positioning and retaining the reflector in predetermined relation to the housing upon its assembly therein, the latch means comprising an arm member projecting outwardly from the reflector, and latch stop means fixed to the housing having a seating portion for receiving and confining the arm member in a predetermined position, the latch means including detent means for readily detachably holding the arm member in seated position against the latch stop means.

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

FIGURE 1 is a side view of a luminaire, partly in section, embodying the latch device of the invention;

FIGURE 2 is an enlarged side view of the front end of the luminaire showing details of the reflector latch device;

FIGURE 3 is a plan view, partly broken away, of the front luminaire portion shown in FIGURE 2 taken along the line 3—3;

FIGURE 4 is a sectional view of the front luminaire portion shown in FIGURE 2 taken along the line 4—4; and

FIGURE 5 is an enlarged side view, partly in section, of a portion of the luminaire interior showing the rear support for the reflector.

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

Bottom housing 3 is provided at its rearmost end with a hinge 7 of suitable construction to provide for its pivoting about the rear end of top housing 2 when it is swung downwardly to expose the reflector 3 and the interior compartment of top housing 2 to the rear thereof. At its front end bottom housing 3 is detachably secured to top housing 2 by any suitable latching means.

Reflector 4 is formed with a flange 8 extending around the periphery of its opening and a resilient gasket 9 is provided around flange 8 as shown to form a weatherproof seal between it and the refractor 6 when bottom housing 3 is in its closed position.

In a luminaire arrangement in which the front reflector latch of the present invention is particularly suitable for use, as shown in detail in FIGURE 5, the reflector 4 has an aperture in its rear wall permitting it to be slipped over and supported by a flange 10*a* extending about an opening in lampholder support bracket 10 through which projects lampholder 11 carrying lamp 15, the arrangement preferably including an annular gasket 12 between reflector 4 and flange 10*a*. Bracket 10 also serves as a rear abutment for reflector 4 in properly positioning the latter in the housing. This luminaire arrangement is more fully disclosed in co-pending application Serial No. 380,826, filed July 7, 1964, in the name of A. M. Bjontegard, and assigned to the same assignee as the present invention. However, the latching device of the invention is suitable for use with reflectors in luminaires in which the rear end of the reflector is readily detachably supported by other means, as shown, for example, in U.S. Patent 3,065,338.

In accordance with the embodiment of the invention shown in the drawings, a rigid arm 13, in the form, for example, of a metal strip having marginal flanges 13*a*, 13*b* as reinforcing means, is fixedly secured at one end to the front of reflector 4 so as to project forwardly therefrom. Fixed to bosses 14, 14*a* projecting downwardly from the inner front surface of housing 2 opposite reflector arm 13, as seen in FIGURE 4, is a latch plate 17 having a base portion 17*a* adjustably secured to bosses 14, 14*a*, a riser portion 17*b* formed with a horizontal slot 18 therein, and a horizontal top portion 17*c* serving as a stop for the outer end of reflector arm 13. As seen in FIGURE 4, stop portion 17*c* is formed with integral wing portions 17*d* and 17*e* inclined downwardly therefrom at angles of about 45°. The dimension of stop portion 17*c* between wings 17*d* and 17*e* corresponds substantially to the width of arm 13, as shown. The marginal flanges 13*a*, 13*b* at the free end of arm 13 serve as bearings to engage stop portion 17*c*. As is evident, when upward movement of reflector arm 13 is stopped by stop portion 17*c*, arm 13 is centered transversely thereon by virtue of the angled wing portions 17*d*, 17*e* confining flanges 13*a*, 13*b*. The length of arm 13 is preferably dimensioned so that the free end edge thereof is only slightly spaced from riser portion 17*b* when the rear end of reflector 4 is properly seated on its support as previously described. Should the reflector rear end not be properly seated, contact of the front edge of arm 13 with riser portion 17*b* as it rides upwardly thereon will effect such proper seating. As a result the reflector is firmly and positively positioned in respect to both

its longitudinal and lateral axes. To detachably hold arm 13 in its seat on stop plate 17*c*, a strip-shaped spring member 19 in a roughly V-shaped form (see FIGURE 2) is movably secured to arm 13 and coacts with slot 18 of latch plate 17 for resiliently latching arm 13 in place. In the particular construction shown, (see FIGURE 3) spring 19 has a narrow end portion 19*a* extending upwardly through slot 20 in arm 13 and is bent over the adjacent surface of the latter, such that coupled with the bearing of shoulders 19*b*, 19*c* of the spring on the underside of arm 13, spring end 19*a* is fixedly secured to arm 13. On the other side of the V-shaped portion 19*d*, the spring is formed with a slot 21 which coacts with a T-shaped projection 22 punched downwardly from arm 13, such that the under-surfaces of the spring 19 adjacent slot 21 slidably ride on the arms of T-projection 22, as best seen in FIGURE 4.

The free end 19*e* of spring 19 is provided with a transverse bent portion so that it serves as a detent or catch which enters slot 18 of latch plate 17 when arm 13 is fully seated on the latch plate portion 17*c*. The arms of V-shaped spring portion 19*d* are normally biased away from each other, so that they operate to resiliently urge detent portion 19*e* into engagement with slot 18 and thereby detachably lock arm 13, and thus reflector 4, in operative position. To remove reflector 4, the V-portion 19*d* of the spring is compressed, releasing detent portion 19*e* from the slot, and the front end of reflector 4 can then be moved downwardly and detached from housing 2.

There is thus provided by the invention a latching device which serves to positively align the luminaire reflector in both longitudinal and lateral relation to the housing when the reflector is moved to its operative position and to firmly hold it in that position, while still permitting ready detachment of the reflector from the housing.

Although the invention has been described with reference to its use for luminaire reflectors, it will be evident that the latching device may well be employed for positioning and holding various types of closures and other devices not involving luminaires where the benefits of the invention are sought and are applicable.

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

1. A luminaire comprising, in combination, a housing having an opening, a reflector in said housing facing said opening, said reflector being detachably supported at one side by said housing, and co-acting latch means on said housing and said reflector at another side of said reflector for positioning and retaining said reflector in predetermined fixed relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting from one of said reflector and said housing and latch positioning means fixed to the other of said reflector and said housing having a seating portion with spaced flanges diverging therefrom for receiving said arm member and positioning said arm member and said latch positioning means in predetermined fixed relation relative to each other, said latch means including detent means for readily detachably holding said arm member and said latch positioning means in seated relation with one another.

2. A luminaire comprising, in combination, a housing having an opening, a reflector in said housing facing said opening, said reflector being detachably supported at one side by said housing, and co-acting latch means on said housing and said reflector at another side of said reflector for positioning and retaining said reflector in predetermined fixed relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting outwardly from said reflector and latch stop means fixed to said housing having a seating portion with spaced flanges diverging therefrom for receiving and confining said arm member in a predetermined fixed position, said latch means including detent means for readily detachably holding said arm member in seated position against said latch stop means.

3. A luminaire comprising, in combination, an elongated housing having an opening, an elongated concave reflector in said housing facing said opening and having front and rear ends, means detachably supporting said elongated reflector at its rear end in said housing, and co-acting latch means on said housing and said reflector at the front end of said reflector for positioning and retaining said reflector in predetermined relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting outwardly from said reflector and having at its free end spaced bearing portions at opposite lateral margins thereof, and latch stop means fixed to said housing and having a seating surface portion for engaging said spaced bearing portions of said arm member and having spaced flanges diverging from the seating surface portion for snugly holding the free end of said arm member against lateral movement thereof when said arm member is seated on said seating surface portion, said latch means including detent means for readily detachably holding said arm member in seated position against said latch stop means.

4. A luminaire comprising, in combination, an elongated housing having an opening, an elongated concave reflector in said housing facing said opening and having front and rear ends, means detachably supporting said elongated reflector at its rear end in said housing, and co-acting latch means on said housing and said reflector at the front end of said reflector for positioning and retaining said reflector in predetermined relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting outwardly from said reflector and having at its free end spaced bearing portions at opposite lateral margins thereof, and latch stop means fixed to said housing and having a seating surface portion for engaging said spaced bearing portions of said arm member and having spaced flanges diverging from the seating surface portion for snugly holding the free end of said arm member against lateral movement thereof when said arm member is seated on said seating surface portion, said latch stop means having a recess therein adjacent said seating surface portion, and yieldable detent means mounted on said arm member and engageable with said recess in said latch stop means for detachably holding said arm member in seated position against said latch stop means.

5. A luminaire comprising, in combination, an elongated housing having an opening, an elongated concave reflector in said housing facing said opening and having front and rear ends, means detachably supporting said elongated reflector at its rear end in said housing, and co-acting latch means on said housing and said reflector at the front end of said reflector for positioning and retaining said reflector in predetermined relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting outwardly from said reflector and having at its free end spaced bearing portions at opposite lateral margins thereof, and latch stop means fixed to said housing and having a seating surface portion for engaging said spaced bearing portions of said arm member and having spaced flanges diverging from the seating surface portion for snugly holding the free end of said arm member against lateral movement thereof when said arm member is seated on said seating surface portion, said latch stop means having a guide surface portion adjacent and at an angle to said seating surface portion and engageable with

the end of said arm member for guiding its entry to said seating surface portion and for properly positioning said reflector against its rear supporting means, said guide surface portion having a recess therein adjacent said seating surface portion, and detent means mounted on said arm member and engageable with said recess in said guide surface portion for detachably holding said arm member in seated position against said seating surface portion.

6. A luminaire comprising, in combination, an elongated housing having an opening, an elongated concave reflector in said housing facing said opening and having front and rear ends, means detachably supporting said elongated reflector at its rear end in said housing, and coacting latch means on said housing and said reflector at the front ends thereof for positioning and retaining said reflector in predetermined relation to said housing upon assembly of said reflector into said housing, said latch means comprising a rigid arm member projecting outwardly from said reflector and having at its free end spaced bearing portions at opposite lateral margins thereof, and latch stop means fixed to said housing and having a seating surface portion for engaging said spaced bearing portions of said arm member and having spaced flanges diverging from the seating surface portion for snugly holding the free end of said arm member against lateral movement thereof when said arm member is seated on said seating surface portion, said latch stop means having a slot therein adjacent said seating surface portion, and yieldable detent means mounted on said arm member and engageable with said recess in said latch stop means for detachably holding said arm member in seated position against said latch stop means, said detent means comprising elongated flat spring means secured at one end to said arm member and having a detent portion at its other end engageable with said slot in said latch stop means, said spring being formed intermediate its ends with a bent portion, said bent portion normally biasing said detent portion outwardly toward a locking position and being manually compressible for retracting the same to a releasing position, whereby said reflector is automatically positioned and locked in predetermined relation with said housing and is readily disassembled by manual release of said detent means.

7. Latching device for positioning and readily detachably holding one member in predetermined relation to another member comprising, in combination, a rigid arm fixed to and projecting from one of said members toward the other member and having at its free end spaced bearing portions at opposite lateral margins thereof, latch positioning means fixed to said other member having a seating surface portion for engaging said spaced bearing portions of said rigid arm and having spaced flanges diverging from said seating surface portion for snugly holding the free end of said rigid arm against lateral movement thereof, and having a recess therein adjacent said seating surface portion, and detent means comprising elongated flat spring means secured at one end to said rigid arm and having a detent portion at its other end engageable with said recess in said latch positioning means, said spring means being formed intermediate its ends with a bent portion, said bent portion normally biasing said detent portion outwardly toward a locking position engageable with said recess and being manually compressible for retracting said detent portion to a releasing position out of said recess, whereby said members are automatically positioned and locked in predetermined relation with one another and are readily separable by manual release of said detent means.

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