Feb. 24, 1942. H. J. FLAHERTY 2,274,404

LATCH FOR LUMINAIRES

Filed Dec. 15, 1939

Fig. 1.

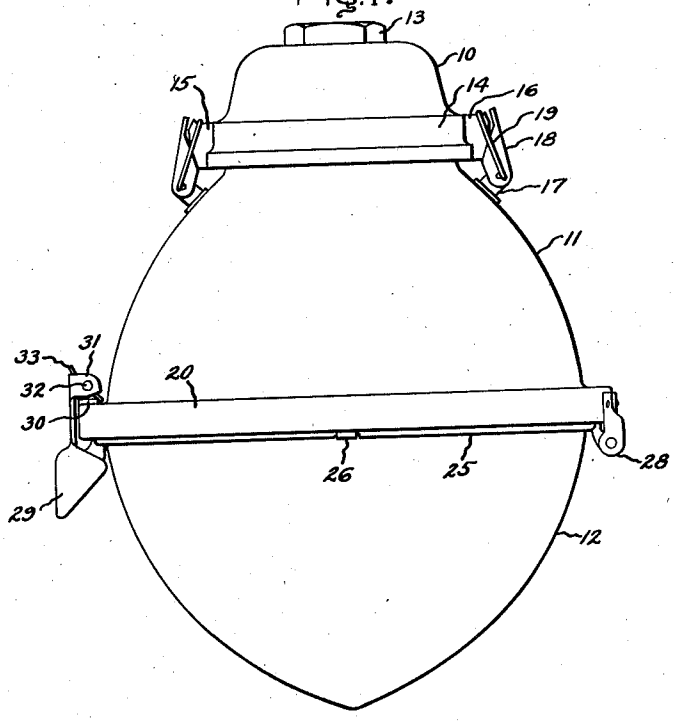


Fig. 2.

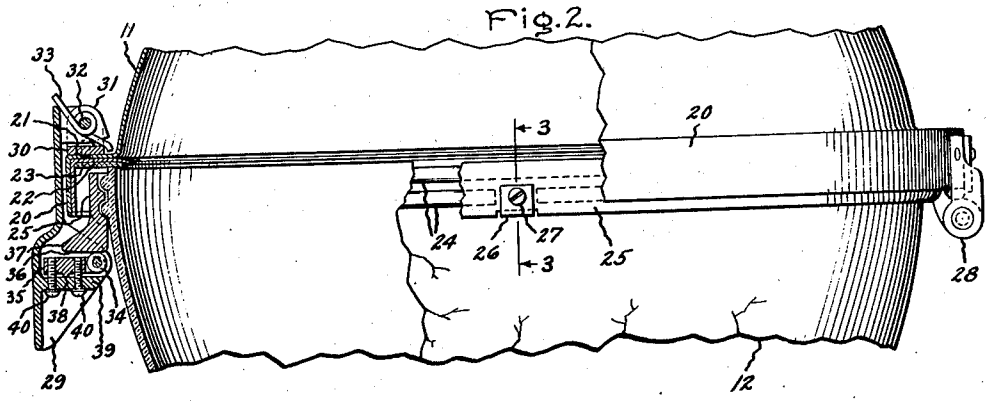
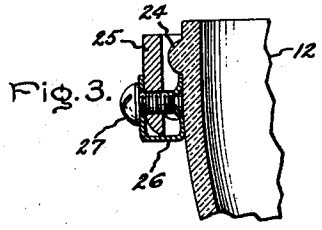


Fig. 3.



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LATCH FOR LUMINAIRES

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5 Claims. (Cl. 292—239)

My invention relates to luminaires, and more particularly to an improved latch for latching a globe to the luminaire housing.

One object of my invention is to provide an improved latch which can readily be adjusted to maintain a dust-proof relationship between a globe and a housing.

For a better understanding of my invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

In the accompanying drawing, Fig. 1 is a front elevation of a luminaire equipped with a latch built in accordance with my invention; Fig 2 is an enlarged sectional view of the luminaire of Fig. 1 and of my improved latch; and Fig. 3 is an enlarged sectional view looking in the direction of the arrows along line 3—3 in Fig. 2.

Referring to the drawing in detail, Fig. 1 illustrates a luminaire comprising a cap 10, a reflector or reflector housing 11, and a globe 12. The cap 10 is a conventional metal cap, being provided with a hexagonal sleeve 13 whereby the cap may be attached to a suitable pipe support, and being provided with a suitable collar 14 from which project ears 15 and 16 and within which a suitable seat (not shown) is arranged to receive the upper end of the reflector housing 11.

The reflector 11 is provided with a suitable flange (not shown) at its upper end adapted to fit into the collar 14 of the cap 10, and is provided with latches to connect the housing to the cap. Each latch, preferably two are used, comprises a lug 17 attached to the surface of the reflector 11, a latching lever 18 pivoted on this lug 17, and a ring 19 pivoted on the latching member. The ring 19, which is preferably a resilient wire ring, is pivoted on the latching lever on an axis spaced from the pivotal axis of the latching lever. The two pivot axes are so spaced that when the latching lever is moved outwardly, that is, normal to the reflector surface, the ring 19 is lifted toward the ear on the cap and may be looped over the upper surface of the ear 15 or 16. Subsequent reverse rotation of the lever 18 about its pivot will pull the ring downwardly, thereby establishing a tight connection between the housing and the cap. The resiliency of the ring 19 will maintain this tight connection. The reflector housing 11 is in the present instance, a single sheet metal conoid, the inner surface of which is finished to constitute a reflector. It is provided at its lower end with a collar 20 which is of a larger diameter than the lower edge of the reflecting surface, and is joined to the lower edge of the reflector by a radial flange 21. The collar 20 and the flange 21 are reinforced by a ring 22, and a gasket 23 is provided between the ring 22 and the upper edge of the globe 12.

The globe 12 is provided near its upper edge with two parallel beads 24 and is mounted in a ring 25 having grooves on its inner surface corresponding to the beads 24 on the globe surface. In the case of prismatic globes, it is desirable to establish and maintain a predetermined relationship between the ring 25 and the globe. For this purpose, the lower bead 24 is broken and a clip 26 is provided on the ring to fit into this break in the bead 24 to prevent a relative rotation between the globe and the ring. The clip 26 (see Fig. 3) comprises a U-shaped sheet metal member having a screw 27 projecting through one side thereof and through the ring 25 to hold the clip on the ring. The end of the screw 27 is pivoted in the inner arm of the clip and is arranged to move this arm against the globe into the break in the bead 24. The clip 26 is made of a width equal to the break, or gap, in the bead 24, and thereby effectively prevents a rotation of the globe 12 from this predetermined position in the ring 25.

The ring 25 is hinged to the reflector collar 20 by a suitable hinge 28 and it is latched to the reflector 11 at a point diametrically opposite from this hinge 28 by a latch built in accordance with my invention. This latch comprises a substantially rigid latching lever 29 hinged upon a hinge lug 30 attached to the flange 21 of the reflector housing 11. The latching lever 29 is provided at its upper end with ears 31, projecting from the lever parallel to each other, which are pivoted upon a pin 32 projecting through the lug 30 and the ears 31. A spring 33 is wound on the pin 32 having its ends braced against the lug 30 and the latching lever 29 to apply a constant force tending to swing the latching lever toward the collar 20 and, therefore, to its closed or latching position. The latching lever is so pivoted that it may be moved outwardly, against the force of the spring 33, to a position substantially vertical to the collar 20. In its closed or latching position it is parallel to the collar 20 and slightly spaced therefrom. When under the influence of the spring 33 alone, the latching lever swings slightly to the right of its latching position to its end position in contact with the collar 20 which forms a stop to limit the turning movement of the latching lever.

The latching lever 29 is provided at its lower end with a latching element, consisting of an adjustable plate 35 having attached to its end a roller 34. In the closed position of the latching lever the roller 34 engages the arcuate surface 36 of a lug 37 on the globe supporting ring 25 to force the globe into contact with the gasket 23. For the purpose of overcoming manufacturing and other inaccuracies, the roller 34 is, in accordance with my invention, adjustable relatively to the pivot axis of the lever 29. This adjustability is obtained in a simple manner by providing a knife edge mounting of the roller supporting plate 35. This knife edge mounting is obtained by providing a ridge, or bead, 38 on the underside of the plate 35 whereby the plate surface is raised from the surface of a supporting web 39 in the lower end of the latching lever 29. On each side of the bead 38, and equally spaced therefrom, a screw 40 is provided. The screws 40 project through holes in the web 39 into threaded holes in the roller supporting plate 35. A simple adjustment of the two screws 40 pivot the plate 35 upon its knife edge support and thereby move the roller 34 relatively to the pivot pin 32; thereby adjusting the radial distance between these two axes. This adjustment is made such that when the latching lever 29 is in its ultimate closed position, the roller 34 forces the ring upwardly until the upper edge of the globe contacts the gasket 23 and establishes a dust-tight joint. The adjustment may be initially made in the factory, and is made individually for each unit. A readjustment may be readily made, however, in the field by an attendant with a minimum of difficulty.

The function of the roller 34 on the end of the plate 35 is to roll along the surface 36 of the lug 37 with a minimum of friction, the force moving it along this surface being the torque exerted by the spring 33 acting upon the lever 29. In actual service, the luminaire is serviced from the ground by means of a single stick having thereon a lamp holding means. It is customary for the service man to unlatch the globe with the aid of this stick by merely prying the latching lever away from the globe and permitting the globe to swing free on its hinge. The lamp is then renewed and the operator merely swings the globe to its closed position. During this closing operation, the upper edge of the ring 25 first engages the sloping side of the tapered end of the lever 29 and forces the lever outwardly from the globe to guide the latching lug toward the web 39. The web 39, upon which the roller supporting plate 35 is mounted, extends to a point just beyond the axis of the roller and its end surface is preferably in the plane of the latching lever side. As the globe swings upwardly, therefore, the edge of the ring slides along the side of the latch lever to move the lever outwardly and to guide the lug 37 toward the web 39. The lug 37 first engages the end surface of this web 39, further moves the lever outwardly while the web surface slides over the lug, and is thereby guided to the roller surface. The force imparted to the globe must be sufficient to overcome the friction of the globe ring and of the lug against the lower end of the latch and to move the end of the lug beyond the end surface of the web 39 to a point above the axis of the roller 34. When it does overcome this friction and the lug moves to engage the roller 34 at a point above the axis of the roller 34, the torque exerted by the spring 33 is sufficient to move the roller along the under surface 36 of the lug and to force the globe into contact with the reflector gasket. In its ultimate latching position the axis of the roller 34 is to the right of the vertical plane of the latching lever axis and to the right of the vertical center of the arcuate surface 36. The weight of the globe acting upon the roller, therefore, creates a horizontal component of force which forces the latching lever toward the globe and helps to maintain it in latching position.

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

1. In a latching mechanism the combination of a latching lever, a latching element pivotally mounted upon said latching lever, and means for adjusting said latching element upon said latching lever thereby to regulate the distance between said latching element and the pivotal axis of said latching lever.

2. In a latch for latching together two hinged members, the combination of a latching lever pivoted upon one of said members, a latching element adjustably mounted upon said latching lever and provided with a roller at one end thereof, a latching lug having an arcuate latching surface adapted to cooperate with said roller, and means for adjusting said element to regulate the distance between the axis of said roller and the pivotal axis of said lever to effect a tight closure between said members.

3. In a latching mechanism for a luminaire provided with a housing, a globe and a supporting ring for said globe hinged to said housing, the combination of a latching lug attached to said ring, a substantially rigid latching lever pivoted upon said housing opposite said lug, a latching element pivoted upon said lever and provided with a roller, means for adjusting said element about its pivot to regulate the distance between the axis of said roller and the axis of said lever pivot to effect a tight closure between said ring and said housing member when said roller is in engagement with said lug in its ultimate latching position.

4. In a latching mechanism, the combination of a substantially rigid latching lever, a latching element pivotally mounted upon said latching lever and provided with a roller attached to one end thereof, and means for adjusting said latching element about its pivot to regulate the distance between the said roller and the pivotal axis of said latching lever.

5. Means for latching together two hinged members comprising a latching lever hinged at one end on one of said members and provided with a latching web, a lug fixed on the other member and having an arcuate latching surface on the side remote from the hinged end of said latching lever, said latching lever being adapted to move on its pivot to position a surface of the latching web in opposed spaced relation to said arcuate latching surface, and a latching element adjustably mounted on said web and provided with a roller adapted to engage said arcuate surface to bring the two members firmly together.

HAROLD J. FLAHERTY.