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LATCH DEVICE

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7 Claims

ABSTRACT OF THE DISCLOSURE

Latch suitable for detachably connecting parts of a luminaire comprises a U-shaped base adapted to be secured to one of the parts, a pivot lever having a first pair of oppositely projecting integral pivot pins detachably inserted into bearing apertures in the yieldably spreadable arms of the U-shaped base, and a curved U-shaped spring having looped ends engaging another pair of integral pins on the lever and having a bight portion for latching on a hook or the like on the other part of the luminaire when the lever is turned about its pivot pins.

It is an object of the invention to provide an improved latch device which is simple in construction, has a minimum of parts, is economical to manufacture, and can be readily assembled and disassembled without tools.

A particular object of the invention is to provide a latch device of the above type which is suitable for use in luminaires for detachably connecting parts, such as a reflector to a supporting housing or the like.

Other objects and advantages will become apparent from the following description and the appended claims.

With the above objects in view, the present invention relates to a latch device comprising, in combination, a base member adapted to be fixed to a part to be latched to another part, the base member having spaced parallel arms formed with opposite bearing portions aligned on an axis, a lever member having at one end an operating portion and at its other end a first pair of oppositely projecting pivot pins respectively removably fitting into the bearing portions of the base member for mounting the lever member on the base member for pivotal movement about the pivot axis, the lever member having a second pair of oppositely projecting pins spaced from the first pair of pins, and a U-shaped spring member formed with loops at its free ends and attached to the lever member with its looped ends respectively fitting over and turnable on the second pair of pins and having a bight portion adapted to engage hook means or the like on the other part for latching the parts together, whereby the spring member is movable into latched and unlatched position upon turning of the lever member about the first axis in snap-over-center movements.

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

FIGURE 1 is a view of a portion of a luminaire having parts detachably connected together by latch devices constructed in accordance with the invention;

FIGURE 2 is a perspective view of an embodiment of the latch device of the invention shown in operative assembly;

FIGURE 3 is a front elevational view of the latch device;

FIGURE 4 is a side elevational view of the latch device showing the part thereof in latching and unlatching position; and

FIGURE 5 is an exploded view in perspective of the latch device.

Referring now to the drawing, and particularly to FIGURE 1, there is shown a luminaire comprising a hood

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1 having a support member or slipfitter 2 projecting laterally therefrom and a pair of hook portions 1a on opposite sides. Reflector 5 having a refractor 6 secured thereto is detachably mounted on hood 1 by latch devices 7, 7' constructed in accordance with the invention, latch 7 being shown in released position while latch 7' is shown in closed (latched) position.

As shown in the exploded view of FIGURE 5, latch 7 is constituted essentially of three parts, namely, U-shaped base member 8, operating lever 9, and U-shaped spring 10. Base member 8 is constituted essentially by a metal strip bent into U-shape so as to be formed with a bottom web 8a and upstanding spaced arms 8b, 8c. Web 8 has a pair of apertures therein for receiving rivets or the like (not shown) for fixedly securing it to the outer surface of reflector 5. In the illustrated embodiment, a base plate 11 (see FIGURE 1) is placed on the underside of reflector 5 below base member 8 and riveted or otherwise secured to the latter with the reflector wall therebetween. In those cases where the reflector or other support wall is sufficiently thick, plate 11 may be dispensed with. Arms 8b, 8c are formed near their upper ends with opposite apertured bearing portions 8d aligned along an axis, e.g., by forming extruded apertures in the arms, as shown.

Bottom web 8a of base member 8 may advantageously be bowed upwardly so that prior to being riveted it normally has a convex curvature from front to rear, whereby after being riveted in place web 8a flattens out, thus drawing arms 8b, 8c closer together for firmly embracing pins 9b of the operating lever therebetween when these parts are assembled.

Operating latch lever 9 is integrally formed at one end with a finger operating portion 9a and at its other end with a pair of oppositely projecting pins 9b which fit into corresponding apertures 8d in base member 8. As seen in FIGURE 3, the distance between the outer ends of pins 9b is somewhat greater than the overall distance between bearing portions 8d of base member 8 in the normal position of arms 8b, 8c, so that lever 9 is held in positive assembly between the arms of base member 8 while being pivotable about the axis of pins 9b and bearing portions 8d. Arms 8b and 8c are sufficiently yieldable, however, to permit being spread apart in order to insert pins 9b in apertures 8d for assembly, or to remove the pins therefrom for disassembly.

Lever 9 is further integrally formed with another set of pins 9c which oppositely project therefrom along an axis parallel to the axis of pins 9b but spaced below the latter, i.e., arranged on lever 9 between pins 9b and finger portion 9a. As seen in FIGURE 3, the distance between the outer ends of pins 9c is slightly less than the distance between the inner surfaces of the arms of base member 8, so that pins 9c do not interfere with the turning of lever 9 within base member 8.

Latch spring 10, preferably made of stainless steel in wirelike form, is bent into U-shape so as to have a hook-engaging upper bight portion 10a connecting parallel arms 10b, the latter being coiled at their free ends to form loops or eyelets 10c. Spring 10 is assembled on lever 9 with its eyelets 10c respectively fitting over pins 9c and with arms 10b extending upwardly therefrom along the front side of pivot pins 9b. As shown, spring 10 is curved along its length and in the assembled arrangement it curves about the pivot axis of lever 9.

In assembling the latch device, the ends of spring 10 are spread apart sufficiently to insert loops 10c over pins 9c, and lever 9 is then inserted between arms 8b, 8c of base member 8 while spreading the latter arms sufficiently to permit pins 9b to be inserted into journals 8d, in which they are then rotatably seated when the arms 8b, 8c are allowed to return to normal spacing. As will be understood

base member 8 has previously been fixed to the apparatus on which it is to be used. As seen from FIGURE 3, the thickness of wire spring 10 is greater than the spacing between pins 9c and the adjacent surfaces of base member 8, so as to avoid the possibility of eyelets 10c slipping off the pins in the assembled device.

In the operation of the latch device, finger piece 9a is raised, bight portion 10a of spring 10 is placed in engagement with hook 1a, and finger piece 9a is then turned downwardly so as to snap over center to thereby firmly resiliently engage spring 10 with hook 1a, thus placing the parts in the latched position shown by solid lines in FIGURE 4. To unlatch the parts, finger piece 9a is raised so as to turn lever 9 about its pivot axis to snap on the other side of center, thus permitting spring 10 to be released from hook 1a and the parts to be placed in the unlatched position shown by interrupted lines in FIGURE 4.

There is thus provided by the invention a latch device of simple and economical construction having few parts, which is easy to operate and reliable in function, and which requires no tools to assemble and disassemble. Although the invention has been described as applied to a luminaire for latching parts thereof together, it will be evident that it is applicable to a wide variety of other uses and purposes.

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. Accordingly, therefore, I wish to have it understood that I intend herein to cover all such modifications as fall within the true spirit and scope of my invention.

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

1. Latch device comprising, in combination, a base member adapted to be fixed to one of two parts to be detachably connected to each other, said base member having spaced substantially parallel arms being yieldably spreadable and formed with opposite bearing portions aligned on an axis, a lever member having at one end an operating portion and at its other end a first pair of oppositely projecting pivot pins detachably engaged and held by said yieldable bearing portions of said base member for mounting said lever member on said base member for turning about said axis, said lever member having a second pair of oppositely projecting pins spaced from said first pair of pins, said second pair of pins being between said arms of said base member with the ends thereof spaced slightly inwardly from said arms, and a generally U-shaped spring member having free end portions turnably

engaging said second pair of pins and a bight portion adapted to releasably engage hook means or the like on the other of said parts, said spring member being movable into latched and unlatched position upon turning of said lever member about said first axis in snap-over-center movements.

2. A device as defined in claim 1, said bearing portions comprising apertures formed in said arms, said first pair of pins fitting into and extending through said apertures for turning therein.

3. A device as defined in claim 2, said free end portions of said spring member curving back on themselves for forming loops respectively fitting over and turnable on said second pair of pins.

4. A device as defined in claim 3, said operating portion and said pairs of pins of said lever member being integrally formed therewith.

5. A device as defined in claim 4, said spring member being in the form of an arc curving about said axis in its latched position.

6. A device as defined in claim 5, the thickness of said free end portions of said spring member being greater than the spacing between the ends of said second pair of pins and said arms of said base member so that said loops fitting on said second pair of pins are prevented from slipping off the same.

7. A device as defined in claim 2, said base member being formed of a metal strip having a generally U-shape including a web portion connecting said arms projecting therefrom, said web portion having means for fixedly securing the same to said one part.

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