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Peterson

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[54] **LIGHTING FIXTURE**

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[73] Assignee: **General Electric Company**, Pittsfield, Mass.

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[52] **U.S. Cl.** ..... **240/147**, 240/78 CF, 240/78 LD

[51] **Int. Cl.** **F21v 17/00**

[58] **Field of Search**. 240/147, 78 CF, 78 H, 78 LD, 240/78 LK

[56] **References Cited**

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Primary Examiner—Monroe H. Hayes

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[57] **ABSTRACT**

Rectangular lighting fixture with open bottom has a closure frame which interfits with the bottom of the fixture in a manner to prevent visible light leaks around the frame and is detachably connected to the fixture by coil springs to facilitate detachment of the closure.

6 Claims, 7 Drawing Figures

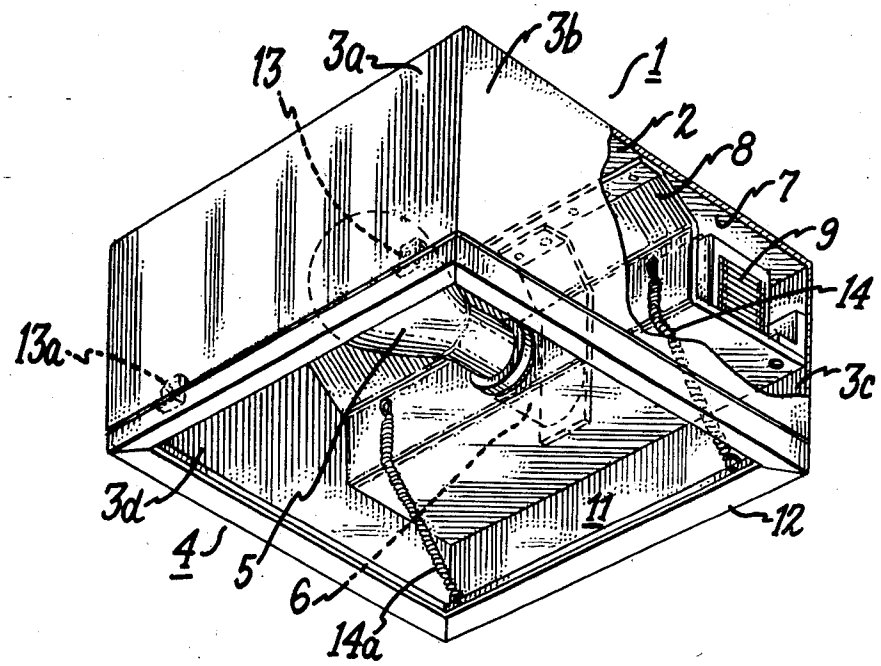


Fig. 1.

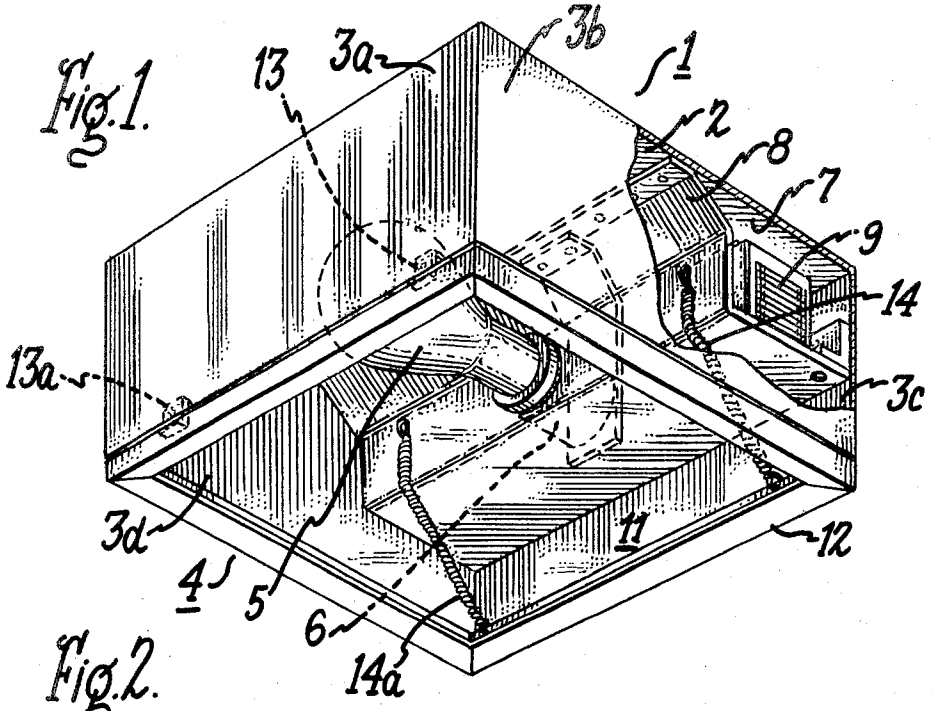


Fig. 2.

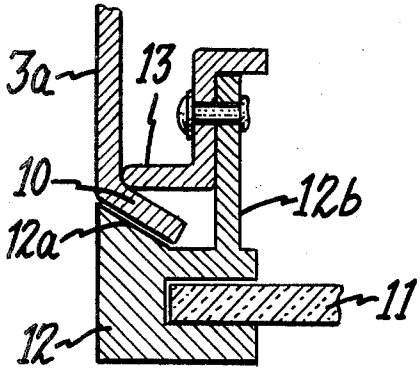


Fig. 3.

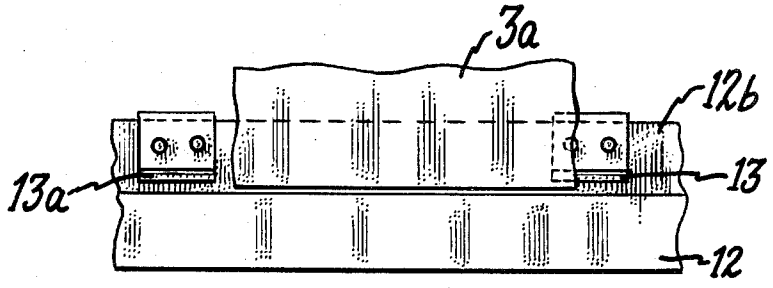


Fig. 4.

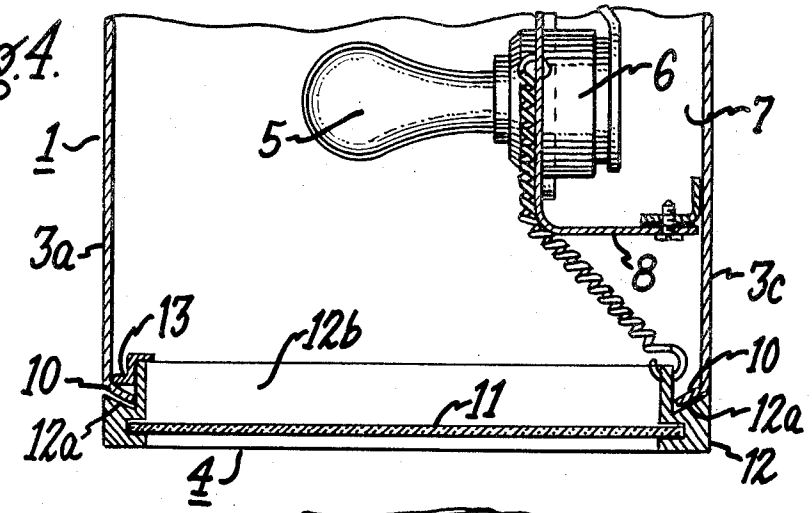


Fig. 5.

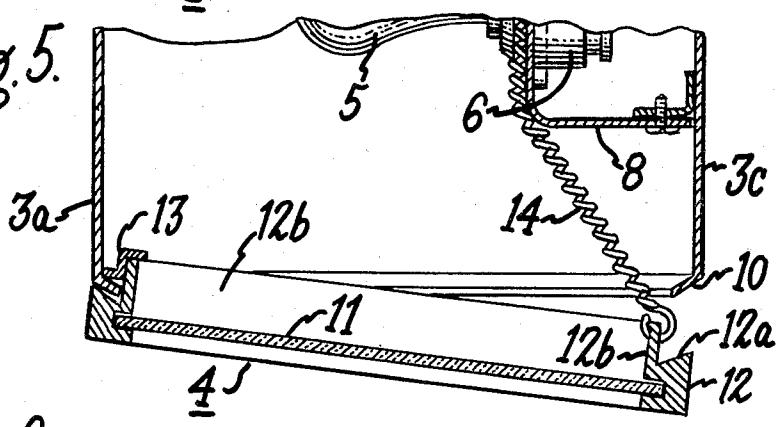


Fig. 6.

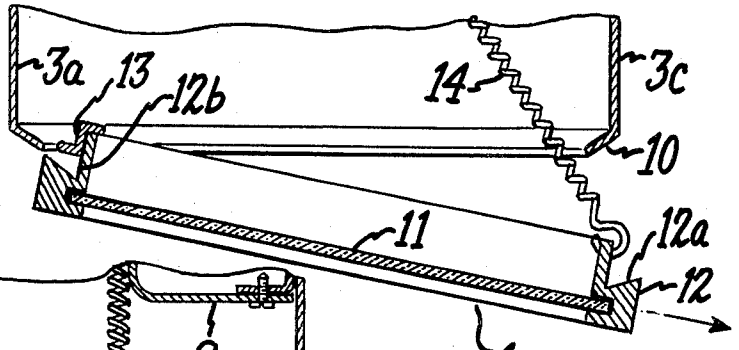
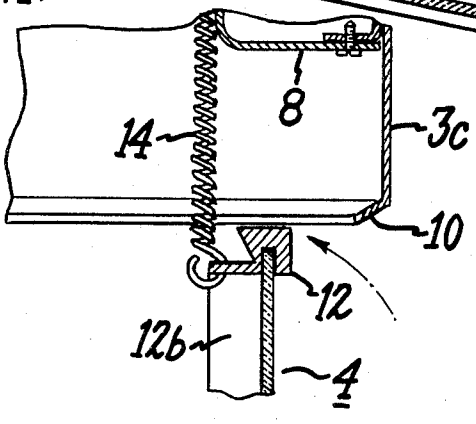


Fig. 7.



LIGHTING FIXTURE

The present invention relates to lighting fixtures and particularly to luminaires having an improved closure arrangement.

It is an object of the invention to provide a luminaire having a detachable closure which prevents visible light leaks around the closure frame.

Another object of the invention is to provide a luminaire of the above type wherein the closure is readily removable from the luminaire opening while remaining hingedly attached to the luminaire.

Still another object of the invention is to provide a luminaire closure device of the above type which has good appearance, is readily constructed with a minimum number of parts, permits liberal machining tolerances, and does not unduly block the luminaire opening.

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

With the above objects in view, the invention in one of its aspects relates to a luminaire comprising, in combination, a housing having side walls and a bottom rim defining an opening having an axis, lampholder means for mounting a light source within the housing so that light rays from the source emanate through the bottom opening, the bottom rim projecting inwardly and downwardly at an oblique angle relative to the axis, and closure means removably covering the bottom opening in closed position, the closure means comprising a light transmitting panel and a frame surrounding the panel, the frame having an upper surface formed at an angle corresponding to the oblique angle of the bottom rim and being in closely adjacent, substantially parallel relation to the bottom rim in the closed position of the closure means, whereby any light leakage between the frame and the bottom rim is directed upwardly.

In a preferred embodiment of the invention, resilient holding means comprising elongated springs are attached to the frame at one side thereof and projecting means are arranged on the opposite side of the frame engagable with the bottom rim for retaining the closure means on the housing.

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

FIG. **1** is a perspective view of a luminaire in which the invention is embodied;

FIG. **2** is an enlarged detail view in cross-section of the joint between the luminaire housing and the closure frame;

FIG. **3** is a fragmentary view in elevation of the front side of the joint as shown in FIG. **2**; and

FIGS. **4 - 7** are views in section of the luminaire showing successive steps in the removal of the closure from the luminaire housing.

Referring now to the drawings, and particularly to FIG. **1**, there is shown a luminaire embodying the invention which is of the type adapted to be mounted on the ceiling of a room to be illuminated. The luminaire comprises a square housing **1**, which may be made of sheet steel, having a top wall **2** and four side walls **3***a*,*b*,*c*,*d* defining at the bottom of the housing a square opening covered by a closure **4** having a light transmitting panel **11**. Within housing **1** is lamp **5**, such as a mercury vapor lamp, removably held in socket **6** which

is suitably secured to the housing. The rear portion of socket **6** projects into a ballast compartment **7** defined by a partition or shield **8** and the top and side walls of the housing. Mounted within compartment **7** are electrical ballast components **9** to which lamp **5** is electrically connected in accordance with known practice.

Known luminaires of such ceiling mounted type have had the disadvantage that light leaking out of the fixture between the closure frame and the bottom of the housing was visible to observers in the vicinity of the luminaire and thus detracted from the appearance of the unit. While it is possible to substantially prevent such light leakage by making the parts with narrow tolerances or by the use of light sealing gaskets, such approaches have not been satisfactory because of increased manufacturing problems and cost entailed therein.

In accordance with the present invention, the problem of visible light leakage is overcome in a simple and economical manner by novel construction of the closure parts, while making the closure readily detachable from the luminaire housing.

As seen in FIG. **4**, the bottom rim or lip **10** of housing **1** projects inwardly and downwardly at an oblique angle, e.g., about 45°, with respect to the central axis of the bottom opening. Light transmitting closure panel **11**, such as a transparent glass or plastic sheet, is held at its periphery within a frame **12** made, for example, of aluminum or other suitable material, and formed on all sides thereof with an upper surface **12***a* at its outer margin which extends at a corresponding oblique angle inwardly and downwardly from its periphery, so as to be in closely adjacent, substantially parallel relation to the angled bottom rim **10** of the housing when closure **4** is in closed position. Frame **12** is formed inwardly of upper surface **12***a* with an upwardly projecting flange **12***b* extending around the frame and arranged so that it nests within angled rim **10** of the housing when closure **4** is in closed position, as shown in FIG. **4**.

Projecting outwardly from frame flange **12***b* at one side (front side) of the closure are a pair of spaced ledges **13**, **13***a* which define with surface **12***a* of frame **12** a space into which angled rim **10** may be received (see FIGS. **2** and **3**) so that frame **12** is retained in closed position on that side by the engagement of ledges **13**, **13***a* with angled rim **10**. While ledges **13**, **13***a* are shown as separate members which are riveted to frame flange **12***b*, it will be understood that the ledges may be formed integral with the frame, if desired. Other forms of such projections may be employed, as, for example, a single continuous ledge instead of a plurality of ledge members as shown, or a plurality of projecting screws or studs instead of flat ledges as in the illustrated embodiment.

On the opposite (rear) side of closure **4**, a pair of elongated coil springs **14**, **14***a* yieldably hold closure **4** in closed position, being attached at their lower ends to frame flange **12***b* at laterally spaced points and at their upper ends to shield **8** on opposite sides of socket **6** (see FIGS. **1** and **4**). As seen in FIG. **4**, the arrangement is such that in the closed position, frame **12** nests within the bottom opening of housing **1** with angled surfaces **12***a* thereof in interfitting relation with bottom rim **10** around all sides of the latter. By virtue of the position of coil springs **14**, **14***a*, wherein the upper portions of the springs are secured to shield **8** forwardly of the attachment of the springs to the rear side of frame **12**,

springs **14, 14***a* serve to urge frame **12** toward the front side **3***a* of the luminaire housing and thus assure that ledges **13, 13***a* are retained in engagement with angled rim **10** to keep closure **4** from dropping down at that side. As long as the frame is in the closed or up position, frame flange **12***b* and housing lip **10** nest in such fashion that ledges **13, 13***a* cannot be dislodged, i.e., the frame can only be dislodged by first being pulled down to the position shown in FIG. **5.**

As a result of the described construction, light rays emanate downwardly from light source **5** through transparent panel **11** of the closure to illuminate the floor area in the vicinity below the luminaire without substantial hindrance, and while some light might leak out between frame **12** and the bottom rim **10** of the housing, such light leak will not be visible to an observer on the floor, even at a distance from the luminaire, since any such light will be directed at an upward angle by virtue of the angular joint between frame **12** and the bottom of housing **1** as described.

To detach closure **4** from the luminaire housing, the rear spring-loaded side of the closure is pulled down while the front side pivots about bottom rim **10** at that side as shown in FIG. **5,** until the rear side of the frame clears the bottom of housing **1.** Closure **4** is then moved to the right, i.e., rearwardly, to disengage ledges **13, 13***a* from angled rim **10** (see FIG. **6**), and the front side of closure **4** is then swung downwardly so that the latter hangs from springs **14, 14***a* vertically below the fixture, as seen in FIG. **7,** leaving the bottom opening of housing **1** uncovered to allow access to the interior of the luminaire for relamping or other maintenance services.

To return closure **4** to closed position, the reverse procedure is used, by raising the front side of frame **12** to the position shown in FIG. **6,** moving it to the left to insert angled rim **10** into the space between ledges **13, 13***a* and frame surface **12***a*, and then allowing spring **14, 14***a* to draw the end of closure **4** into closed position with frame flange **12***b* nested within housing rim **10.**

Although the luminaire described and shown is of square configuration, it will be understood that luminaires of round or other form may also embody the closure device of the invention to provide the improved results described.

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 side walls and a bottom rim defining and extending around an opening having an axis, lampholder means for mounting a light source within said housing so that light rays from the light source emanate through said bottom opening, said bottom rim projecting inwardly and downwardly at an oblique angle relative to said axis, and closure means removably covering said bottom opening in closed position, said closure means comprising a light transmitting panel and a frame surrounding said panel, said frame having an upper surface formed at an angle corresponding to said oblique angle of said bottom rim and being in closely adjacent, substantially parallel relation to said bottom rim in the closed position of said closure means, whereby any light leakage between said frame and said bottom rim is directed upwardly.

2. A luminaire as defined in claim **1,** and means releasably holding said closure means in closed position covering said bottom opening.

3. A luminaire as defined in claim **2,** said closure holding means comprising elongated spring means attached to said frame at one side thereof and projecting means at the opposite side of said frame engagable with said bottom rim for retaining said closure means on said housing.

4. A luminaire as defined in claim **3,** said frame having an upwardly projecting flange portion extending around the same, said flange portion nesting within said bottom housing rim in closed position of said closure means.

5. A luminaire as defined in claim **4,** said housing having a partition member arranged inwardly of said side walls thereof, said elongated spring means comprising a pair of spaced expandable coil springs connected at one end to said one side of said frame and at the other end to said partition member, said spring means urging said closure means upwardly and toward said housing at said opposite side of said frame.

6. A luminaire as defined in claim **5,** said projecting means comprising a pair of spaced projections arranged spaced above said upper frame surface at said opposite side, so as to define with said surface an opening therebetween for receiving said bottom rim.

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