Oct. 10, 1961 R. C. LESSNER ET AL 3,004,147

LIGHTING FIXTURE CLOSURE MEANS

Filed Aug. 11, 1960 2 Sheets-Sheet 1

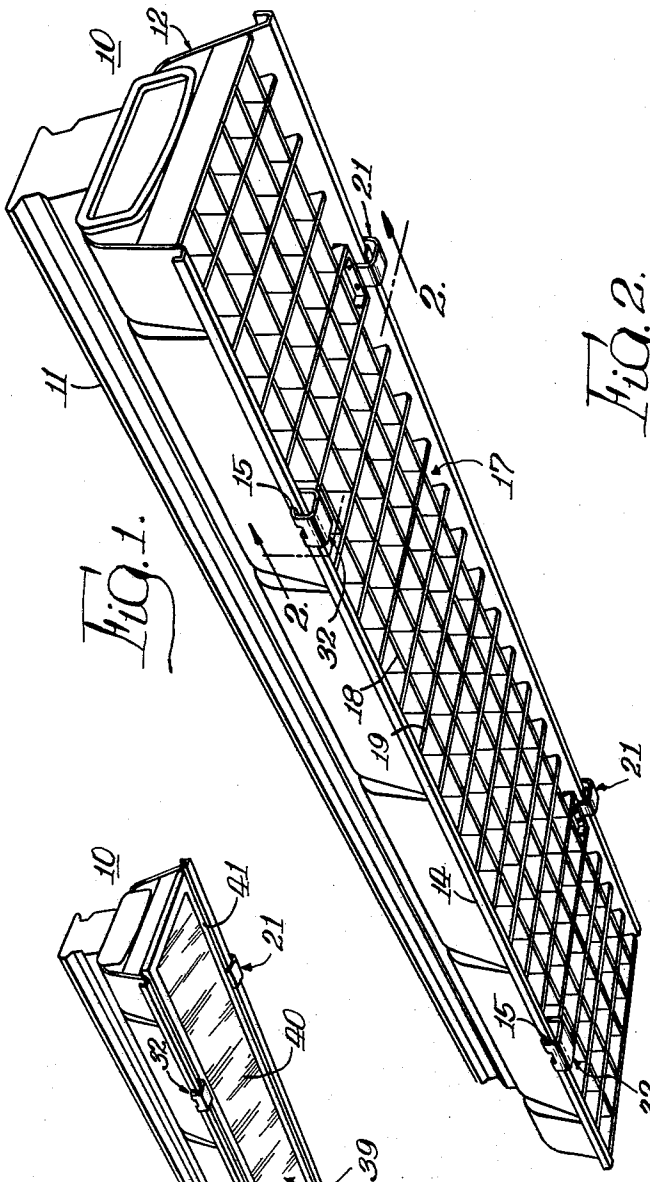

Fig. 1.

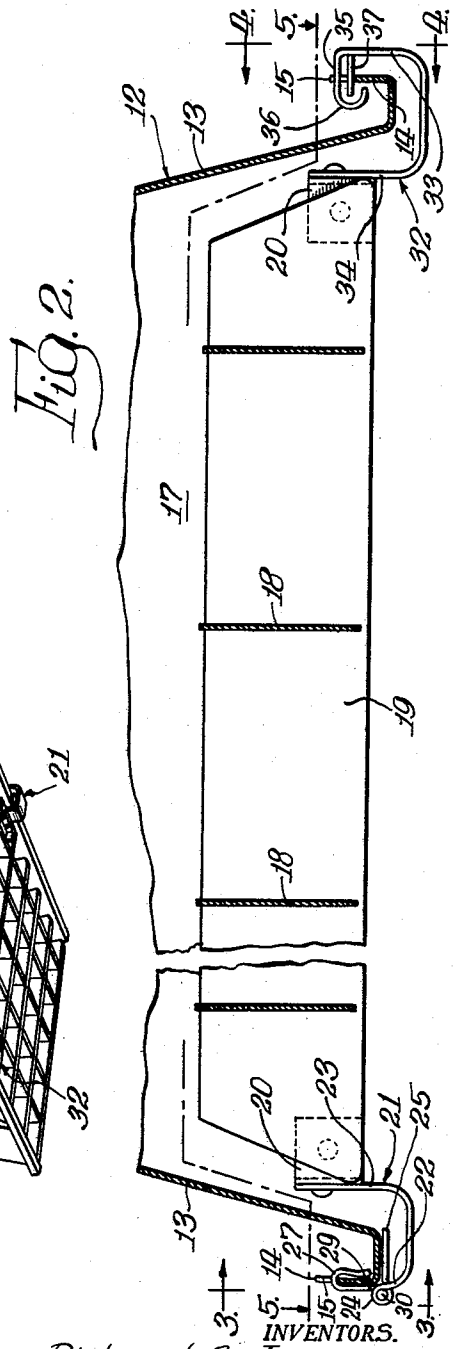

Fig. 2.

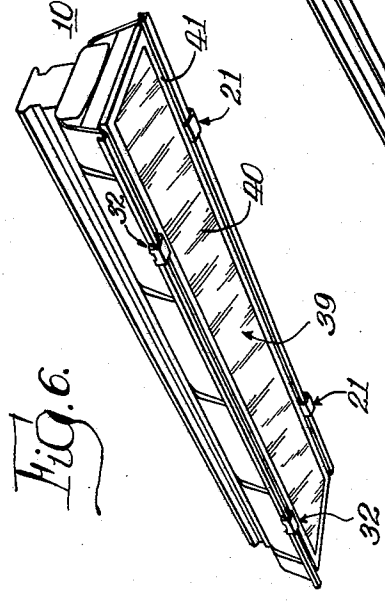

Fig. 6.

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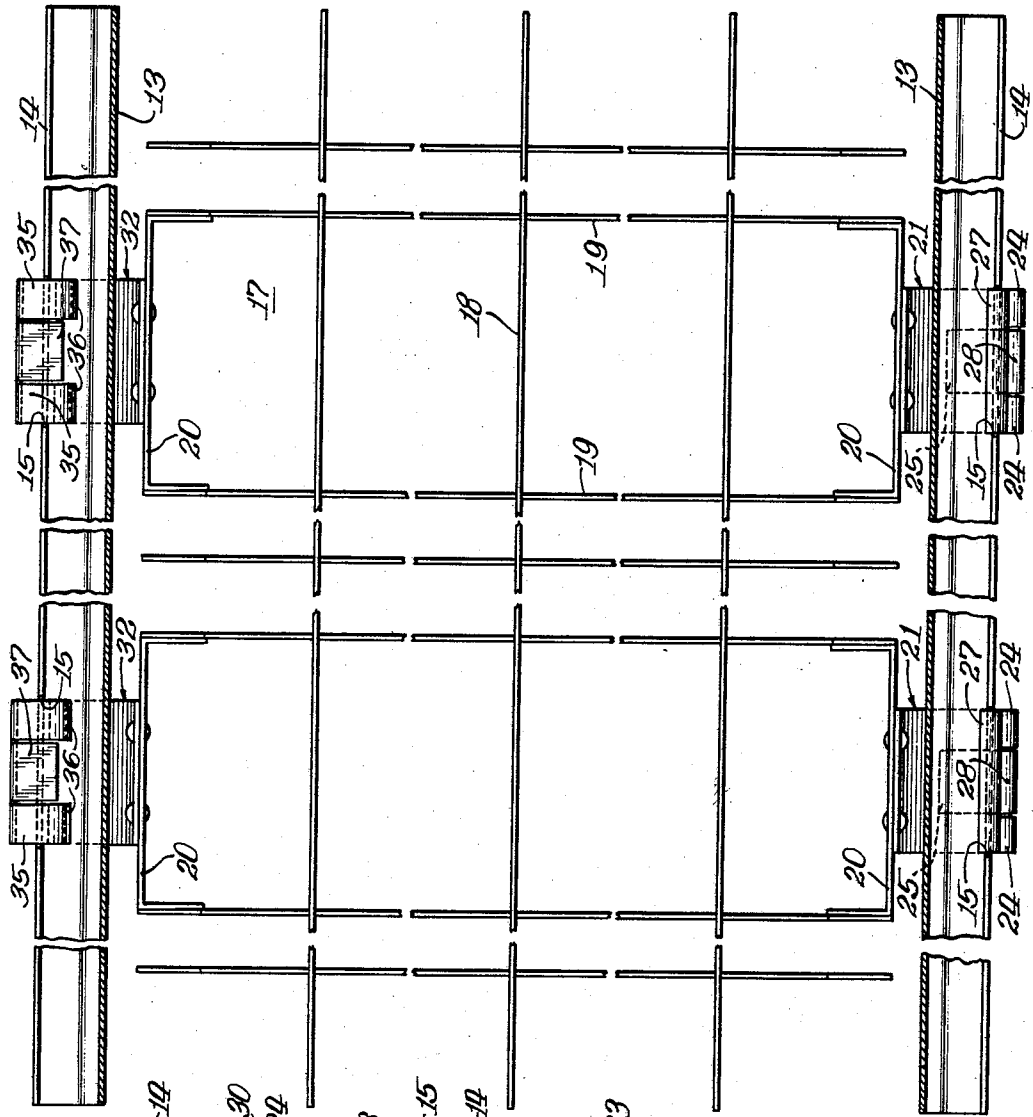

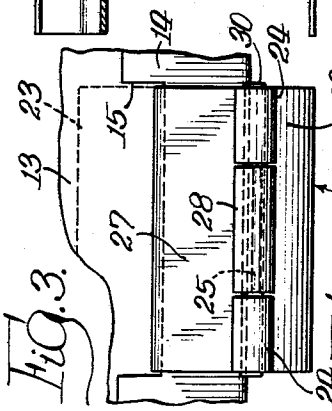

FIG. 3.

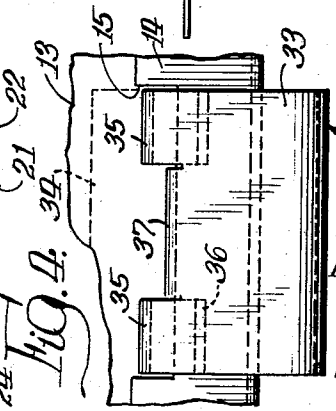

FIG. 4.

FIG. 5.

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LIGHTING FIXTURE CLOSURE MEANS

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7 Claims. (Cl. 240—147)

This invention relates to closure means, and has to do more particularly with closure means for lighting fixtures comprising a downwardly opening reflector shell or analogous structure. Lighting fixtures employing fluorescent tubes as the light medium and in which the tubes are mounted in a downwardly opening housing or reflector shell are extensively used. It is desirable that the tubes be protected, in industrial installations, by a closure member at the lower portion of the reflector shell. It is also desirable, in other installations, that means be provided for substantially uniformly diffusing the light, such means also providing a protective closure for the lower portion of the reflector. Our invention is directed to closure means for light fixtures of the type referred to. It is an object of our invention to provide a closure member of the character mentioned which may readily be applied to the reflector shell when the fixture is installed in position for use, such closure means being comparatively inexpensive and readily mounted on and detached from the reflector shell as conditions may require. It is also an important object of our invention to provide a closure member which may readily be reversed, i.e., hinged to either side of the reflector shell, to suit conditions. A further object of our invention is to provide means effectively guarding against detachment of the closure member from the reflector shell when the closure member is in its closed position, while permitting ready detachment of the closure member from the shell, if desired, when it is in its fully opened position. A further important feature of our invention resides in the provision of means on the reflector shell cooperating with hinge and latch members of the closure member effectively restraining the latter against movement lengthwise of the reflector shell relative thereto. Further objects and advantages of our invention will appear from the detail description.

In the drawings:

FIGURE 1 is a perspective view of a lighting fixture with closure means embodying our invention applied thereto;

FIGURE 2 is a transverse sectional view, on an enlarged scale and with parts broken away, taken substantially on line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary view, on an enlarged scale, taken substantially on line 3—3 of FIGURE 2;

FIGURE 4 is a fragmentary view, on an enlarged scale, taken substantially on line 4—4 of FIGURE 2;

FIGURE 5 is a sectional view, with parts broken away, taken substantially on line 5—5 of FIGURE 2; and

FIGURE 6 is a perspective view similar to FIGURE 1, but on a reduced scale, showing a modified form of closure means embodying our invention.

We have shown the closure means of our invention as applied to a lighting fixture 10 suitably supported from a channel member 11, in the manner disclosed in our copending application for Lighting Fixture Means and Snap-On Lamp Holder Therefor, filed August 5, 1960, Serial No. 47,639. The lighting fixture 10 is similar to that disclosed in our copending application though it may be of any suitable type. It comprises a downwardly opening reflector shell 12 conveniently, but not necessarily, formed of sheet metal with a white enamel finish. The shell 12 is provided with downwardly and outwardly inclined side

walls 13 the lower portions of which are of substantially U-shape in cross section providing upwardly extending flanges 14 spaced outwardly of the shell 12 at the sides thereof. Each of the flanges 14 is provided with lengthwise notches 15 extending from its upper edge and spaced apart lengthwise of flange 14. In FIGURE 1 we have shown two such notches in one of the flanges 14, it being understood that the other flange 14 is likewise provided with two notches 15. The notches 15 of the flanges 14 are all of the same length and are similarly spaced, so that the notches at one side of the shell 12 are aligned transversely thereof with the notches at the opposite side. It will be understood that the number of notches and the spacing thereof in each of the flanges 14 may be varied as desired, provided the notches are all of the same length with those at one side of the shell 12 aligned with those at the opposite side. Suitable lamps, such as fluorescent tubes, are mounted within the reflector shell 12, as will be understood and as shown in our above identified co-pending application.

It is desirable, particularly in industrial installations, that means be provided for protecting the fluorescent tubes and, to that end, we provide a closure member or louver 17 in the lower portion of shell 12. The louver is formed of a plurality of interengaging metal strips 18 and 19, the strips 18 being disposed perpendicular to strips 19 and forming therewith a lattice work, as is known. Preferably the strips of the louvers are finished in white enamel to provide a neat appearance while assisting in light reflection. U-shaped brackets 20 are suitably secured, conveniently by welding, between the end portions of suitably spaced pairs of strips 19. The brackets 20 at one side of the louver 17 have secured thereto, conveniently by riveting, lower hinge leaves 21 of approximately L-shaped in end view, respectively having at their outer sides comparatively short upwardly extending arms 22. As will be clear from FIGURE 2, the outer arm 22 of each of the lower hinge leaves 21 is quite short relative to the inner arm 23 thereof which is secured to the bracket 20. Arm 22 of hinge leaf 21 is provided, at its upper end, with two horizontally disposed sleeves 24 spaced apart lengthwise thereof, as shown more clearly in FIGURE 3. Arm 22 is further provided, at its upper end, with a tongue 25 extending inwardly therefrom and disposed between the sleeves 24. An upper hinge leaf 27 cooperates with each of the lower hinge leaves 21 and is provided at its lower edge with a sleeve 28 which fits between the sleeves 24 of the lower leaf 21. The upper hinge leaf 27 is of approximately inverted U-shape in cross section and is disposed in one of the notches 15 in the corresponding flange 14, in abutting relation to the ends of such notch, effective for restraining leaf 27 against relative movement lengthwise of that flange. The hinge leaves 21 and 27 preferably are formed of spring steel, leaf 27 hooking over flange 14 at notch 15 thereof and being provided, at the lower end of its inner arm, with two rounded protuberances, one of which is shown at 29, pressed inwardly therefrom for gripping the flange 14. The hinge leaves 21 and 27 are pivotally connected by a pintle pin 30 inserted through the aligned sleeves 24 and 28, as will be understood and as is shown more clearly in FIGURE 3.

The hinges comprising the leaves 21 and 27 are disposed at one side of the closure member or louver 17, as will be understood. Latch members 32 are suitably secured, conveniently by riveting, to the brackets 20 at the other side of the louver 17. Each of the brackets member 32 is of approximately U-shape in cross section, outer arm 33 being somewhat shorter than the inner arm 34 thereof which is secured to bracket 20. Arm 33 of latch member 32 is provided at its upper end with two inwardly extending fingers 35 the inner portion of which is of arcuate cross section to provide a rounded element

or nose 36. Arm 33 is further provided with an inwardly extending tongue 37 disposed between the fingers 35, the latter being disposed to engage in a notch 15 of flange 14 in abutting relation to the ends of such notch, with the tongue 37 engaging over the upper edge of flange 14 between fingers 35. The latch members 32 preferably are formed of spring steel and the outer arms 33 thereof may be deflected upwardly and outwardly for releasing the closure member or louver 17, at the corresponding side thereof, from the reflector shell 12. In the normal closed position of louver 17 the latch members 32 engage with the corresponding flange 14 in the manner explained, and the lower hinge leaves 21 are then so disposed that the tongues 25 thereof underlie the lower portion of the corresponding side wall 13 of shell 12, in proximity, thereto effective for guarding against possibility of upward movement of the hinges to an extent sufficient to disengage the upper hinge leaves 27 from the corresponding flange 14. That assures that the closure member or louver 17 cannot be detached from the reflector shell when it is in its closed position. By deflecting the fingers 35 of the latch members 32 upwardly and outwardly the louver 17 may be released from the corresponding flange 14 and swung downward into open position thereby moving the tongues 25 from beneath the corresponding side wall 13 of shell 12. The upper hinge leaves 27 may then be disengaged from the corresponding flange 14 thereby permitting quick and easy removal of the louver from the reflector shell, if desired. The louver may be as quickly and easily replaced and, if desired, may have its position reversed, by attaching the hinges to the side of the shell opposite to that which they formerly occupied, such quick reversal of the louver being permitted by having the notches 15 of the flanges 14 of the same length and spacing and aligned transversely of the reflector shell as has been previously explained.

In the modified form of our invention shown in FIGURE 6, we provide a closure member 39 comprising a lens or sheet 40 of glass, plastic or other suitable material for diffusing the light, the lens 40 being suitably mounted in a frame 41 of angle construction, the lower hinge leaves 21 being secured to one side of frame 41 and the latch members 32 being secured to the opposite side of frame 41. The construction and operation of the closure means of FIGURE 6 is otherwise the same as that of FIGURES 1 to 5, inclusive, above described in detail, and require no further description here.

It will be understood that changes in detail may be resorted to without departing from the field and scope of our invention, and we intend to include all such variations, as fall within the scope of the appended claims, in this application in which the preferred forms only of our invention have been disclosed.

We claim:

1. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each provided with an attached upwardly extending flange, a closure member for said shell, upper hinge leaves engaging over one of said flanges, lower hinge leaves secured to said closure member at one side thereof and pivoted to said upper hinge leaves, means carried by said lower hinge leaves and in cooperation with the adjacent side wall of said shell restraining said upper hinge leaves against upward movement when said closure member is in closed position while accommodating upward movement of said upper hinge leaves when said closure member is in open position, and means at the other side of said closure member for releasably securing it in closed position.

2. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each of approximately U-shape in cross section at its lower portion providing an upwardly extending flange at each side of

said shell, a closure member for said shell substantially rectangular in plan, upper hinge leaves hooked over one of said flanges but otherwise free therefrom for relative upward movement, lower hinge leaves secured to said closure member at one side thereof and pivoted to said upper hinge leaves, means carried by said lower hinge leaves and in cooperation with the adjacent side wall of said shell restraining said upper hinge leaves against upward movement when said closure member is in closed position while accommodating upward movement of said upper hinge leaves when said closure member is in open position, and means at the other side of said closure member for releasably securing it in closed position.

3. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each of approximately U-shape in cross section at its lower portion providing an upwardly extending flange at each side of said shell, a closure member for said shell substantially rectangular in plan, upper hinge leaves hooked over one of said flanges but otherwise free therefrom for relative upward movement, lower hinge leaves secured to said closure member at one side thereof and pivoted to said upper hinge leaves, abutment members rigid with said lower hinge leaves movable therewith to position underlying and in proximity to said one flange in the closing movement of said closure member and to position clear of said one flange in the opening movement of said closure member, and means at the other side of said closure member cooperating with the other of said flanges for releasably securing said closure member in closed position.

4. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each of outwardly extending approximately U-shape in cross section at its lower portion providing an exterior upwardly extending flange at each side of said shell spaced outwardly thereof, upper hinge leaves hooked over one of said flanges but otherwise free therefrom for relative upward movement, lower hinge leaves fixed to said closure member at one side thereof and pivoted to said upper hinge leaves, tongues fixed to said lower hinge leaves disposed to underlie in proximity thereto the side wall corresponding to said one flange when said closure member is in closed position and to clear said side wall when said closure member is in open position, and means at the other side of said closure member cooperating with the other of said flanges for releasably securing said closure member in closed position.

5. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each provided with an attached upwardly extending flange provided at its upper portion with recesses of equal length spaced apart lengthwise of said flange, the recesses of each flange being of the same length as, and aligned transversely of said shell, with recesses of the other flange, upper hinge leaves hooked over one of said flanges in the recesses thereof and restrained by the latter against relative movement lengthwise of said one flange, said hinge leaves being otherwise free from said one flange for relative upward movement, lower hinge leaves fixed to said closure member at one side thereof and pivoted to said upper hinge leaves, abutment members fixed to said lower hinge leaves movable therewith to position underlying and in proximity to said one flange in the closing movement of said closure member and to position clear of said one flange in the opening movement of said closure member, and means at the other side of said closure member cooperating with the other of said flanges for releasably securing said closure member in closed position, said last named means comprising latch members engageable in said recesses of said other flange

and restrained thereby against relative movement lengthwise of the latter.

6. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each of outwardly extending approximately U-shape in cross section at its lower portion providing an exterior upwardly extending flange at each side of said shell spaced outwardly thereof, each of said flanges being provided at its upper portion with recesses of equal length spaced apart lengthwise thereof, the recesses of each flange being of the same length as, and aligned transversely of said shell with, the recesses of the other flange, upper hinge leaves hooked over one of said flanges in the recesses thereof and restrained by the latter against relative movement lengthwise of said one flange, said hinge leaves being otherwise free from said one flange for relative upward movement, lower hinge leaves fixed to said closure member at one side thereof and pivoted to said upper hinge leaves, abutment members fixed to said lower hinge leaves movable therewith to position underlying and in proximity to said one flange in the closing movement of said closure member and to position clear of said one flange in the opening movement of said closure member, and latch means at the other side of said closure member engageable with the other of said flanges in the notches thereof effective for releasably securing said closure member closed and for restraining it against endwise movement relative to said other of said flanges.

7. In lighting fixture closure means, a downwardly opening reflector shell substantially rectangular in plan and having downwardly extending side walls each of

outwardly extending approximately U-shape in cross section at its lower portion providing an exterior upwardly extending flange at each side of said shell spaced outwardly thereof, each of said flanges being provided at its upper portion with recesses of equal length spaced apart lengthwise thereof, the recesses of each flange being of the same length as, and aligned transversely of said shell with, the recesses of the other flange, upper hinge leaves hooked over one of said flanges in the recesses thereof and restrained by the latter against relative movement lengthwise of said one flange, said hinge leaves being otherwise free from said one flange for relative upward movement, lower hinge leaves of approximately U-form fixed to said closure member at one side thereof and extending therefrom outward and upward to said upper hinge leaves, said lower hinge leaves being pivoted to said upper hinge leaves and provided with tongues rigid therewith underlying the adjacent side wall of said shell in proximity thereto in the closed position of said closure member effective for restraining upward movement of said upper hinge leaves relative to said one flange, said tongues being movable with said lower hinge leaves to position clear of said adjacent side wall in the opening movement of said closure member, and resilient latch members fixed to the other side of said closure member engageable with said other flange in the recesses thereof effective for releasably securing said closure member closed and restraining it against relative movement lengthwise of said other flange.

No references cited.