United States Patent

[11] 3,590,241

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[21] Appl. No. **741,379**
[22] Filed **July 1, 1968**
[45] Patented **June 29, 1971**
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[54] **LIGHTING FIXTURE**
6 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** **240/147,** 248/343
[51] **Int. Cl.** **F21v 17/00**
[50] **Field of Search** ..... 240/147, 78 H; 248/343

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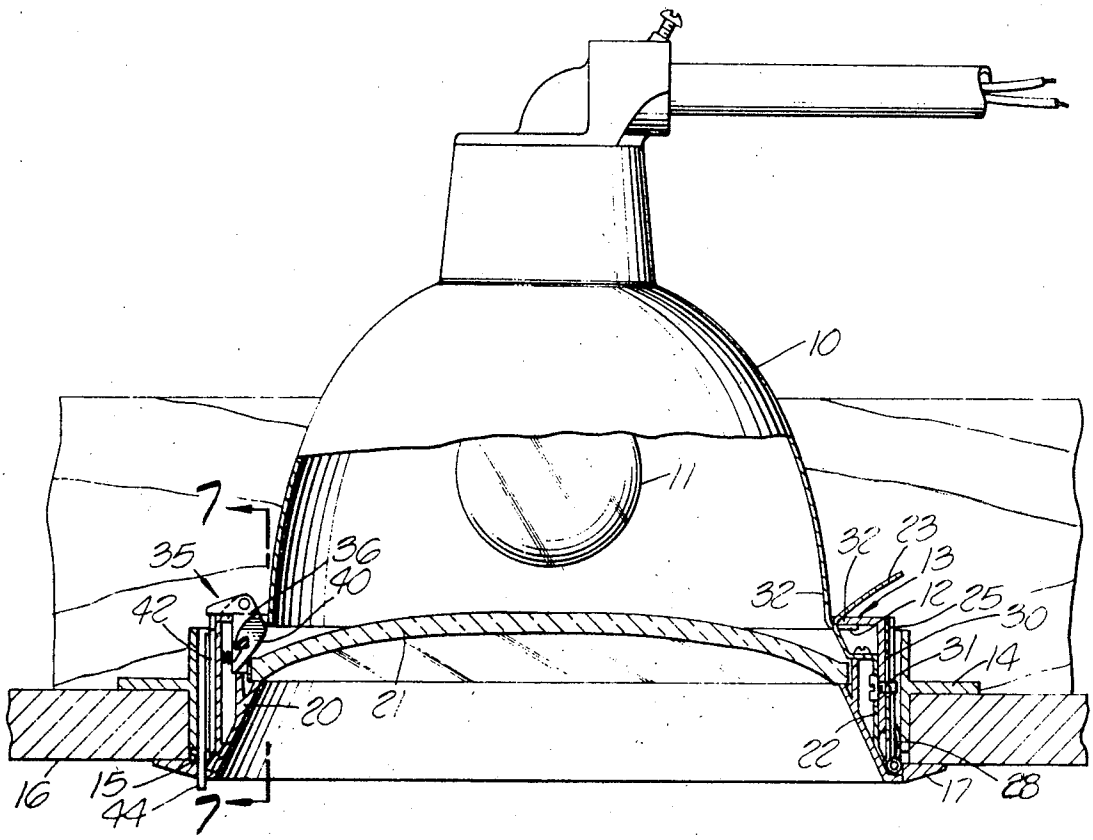
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ABSTRACT: A circular recessed lighting fixture in which the faceplate is hingedly mounted on a vertically movable member which is received in the fixture framework. When the faceplate is unlatched, the member moves downward in the framework to permit downward movement of the faceplate before pivotal movement of the faceplate about the hinge begins. A camming surface is provided for moving the vertically movable member back into the framework when the faceplate is pivoted back toward the horizontal position. A latch is provided which can be operated either by forcing the diffuser upward in the faceplate or by depressing a lever independent of the faceplate.



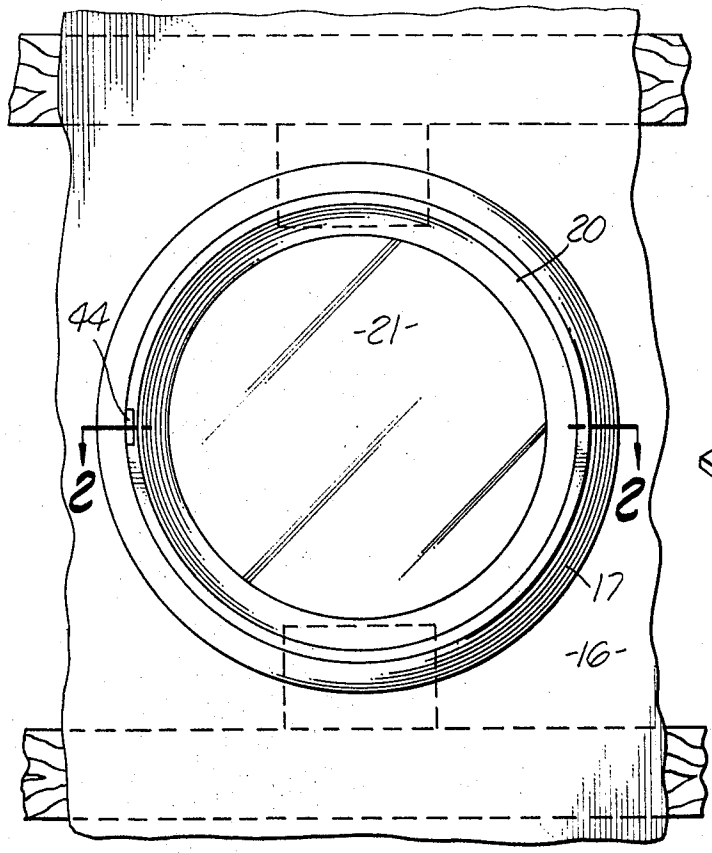


FIG. 1.

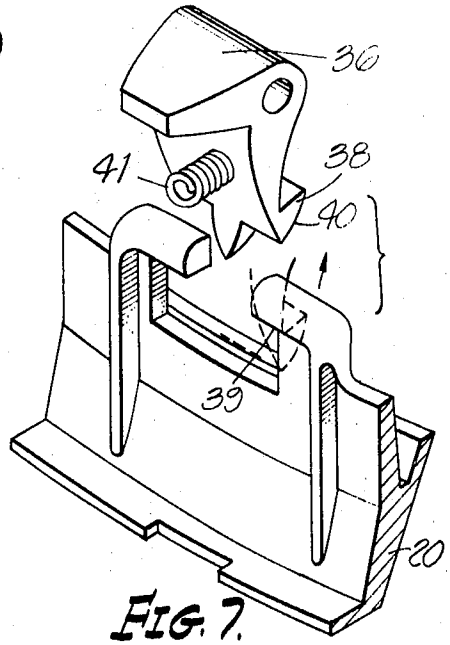


FIG. 7.

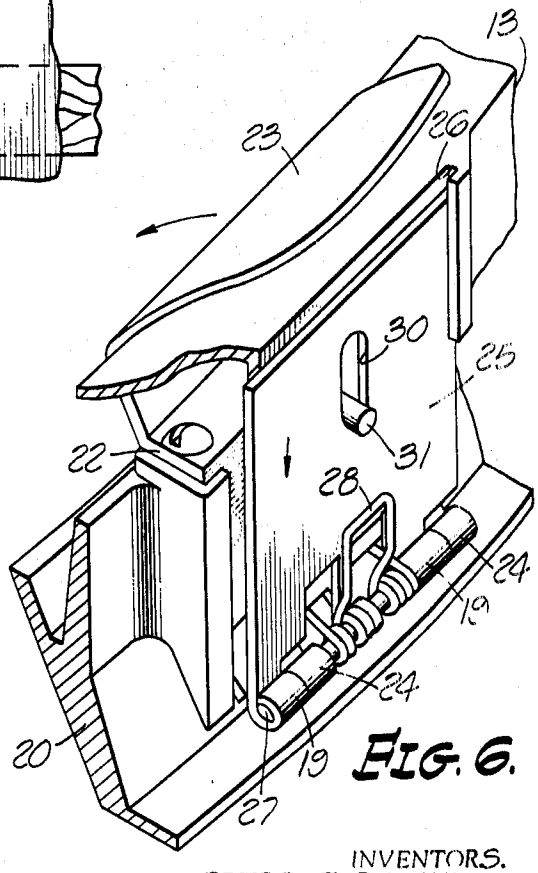


FIG. 6.

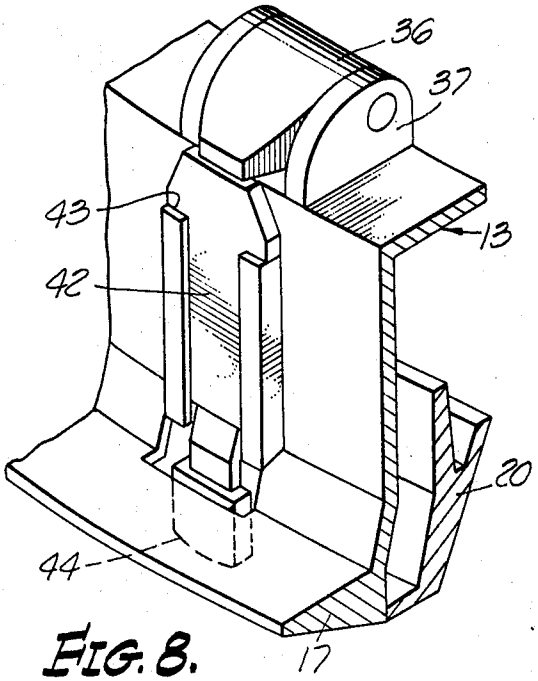
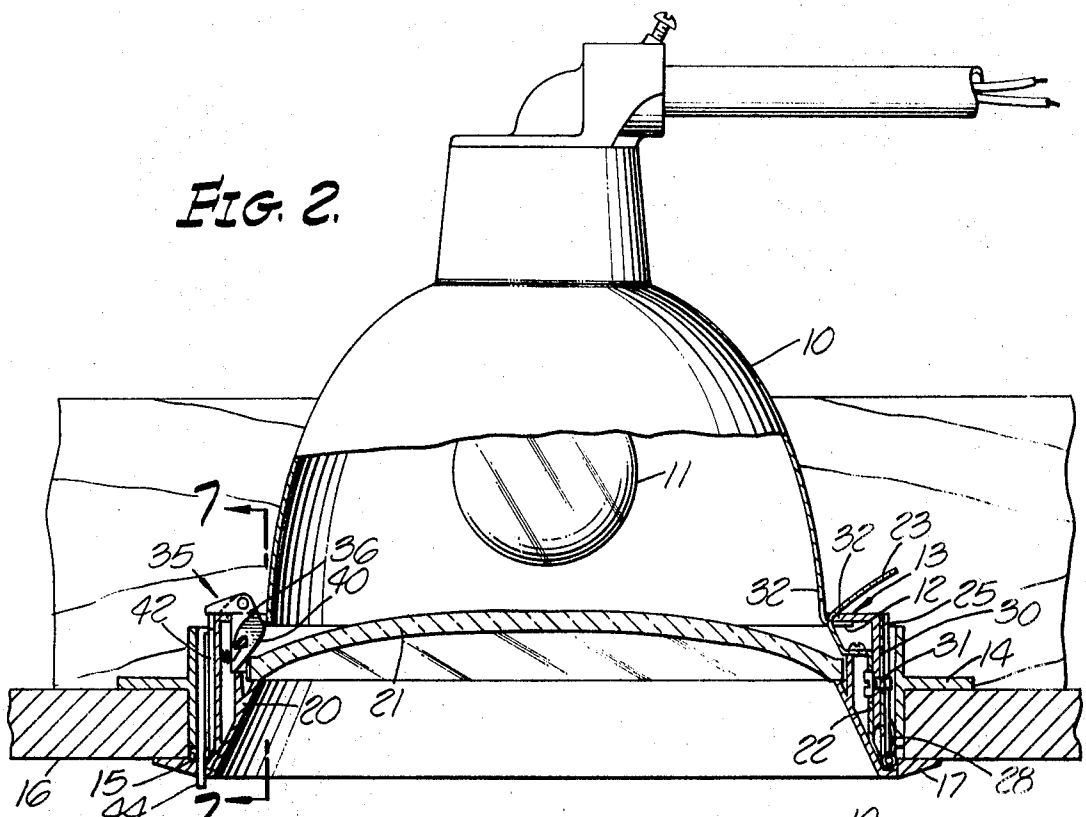


FIG. 8.

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FIG. 2.



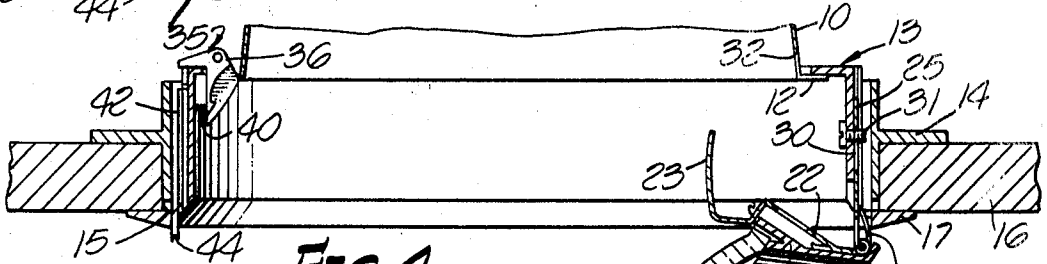
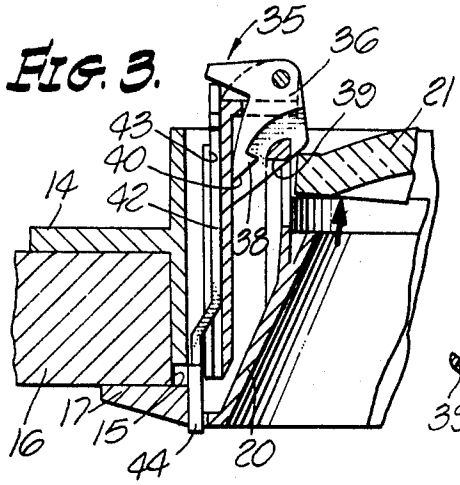
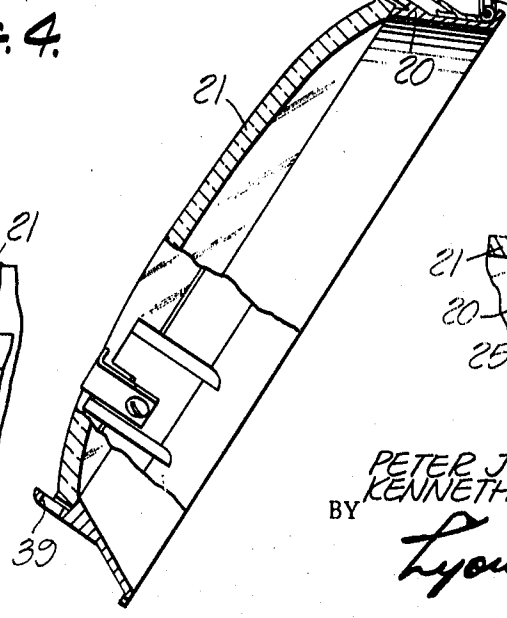


FIG. 4.

FIG. 3.





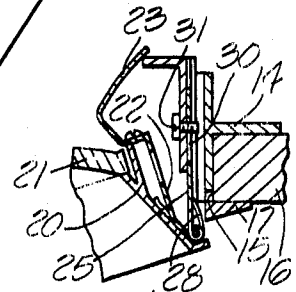


FIG. 5.

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LIGHTING FIXTURE

BACKGROUND OF THE INVENTION

In many recessed lighting fixtures, the faceplate is hingedly mounted to the framework positioned in the ceiling so that easy access is provided to the lamp inside the fixture. For aesthetic reasons, the hinge is preferably hidden from view by the faceplate. Conventionally, a latch is provided which is actuated by exerting an upward force on the diffuser mounted in the faceplate. While no problems are presented with such a structure in a square or rectangular lighting fixture, various problems do arise with a circular fixture. If the fixture is provided with more than one hinged point, pivoting of the faceplate is prevented by the interference of the fixture framework with the portion of the faceplate that must move in the upward direction when the faceplate pivots around the hinges. A space may be provided in the framework for receiving this portion of the faceplate but this breaks up the symmetrical appearance of the fixture and this solution is consequently rejected on aesthetic grounds. Another solution to the problem would be to provide a single pivot point. However, this is impractical because such a single pivot point cannot be provided with sufficient rigidity or durability. A more generally accepted solution is the provision of the faceplate with a flat portion, that is, so that its configuration is not a perfect circle, and the placing of the hinges along this flat portion. However, such a lamp being nonsymmetrical is not aesthetically pleasing and is not acceptable to a large number of potential customers such as architects and interior designers. As a result, circular fixtures are not used in many instances where their use would be desired if a structurally and aesthetically satisfactory fixture could be provided.

SUMMARY OF THE INVENTION

According to the present invention, the above difficulties are circumvented and a circular lighting fixture having a hidden hinge is provided. This is accomplished by hingedly mounting the faceplate to a member which is vertically slidably movable in the fixture framework. When the latch holding the faceplate in place is released, the weight of the faceplate pulls the sliding member downwardly, thus letting the faceplate clear the framework and permitting it to pivot around the hinge without interference from the framework. A camming surface is attached to the fixture side of the faceplate so that when the faceplate is moved back to a horizontal position, it and the sliding member are caused to move vertically back into the framework until the latch again engages. A latch is also provided that can be actuated by movement of the diffuser in the faceplate or, alternatively, by depression of a lever that is independent of the framework. While normally it will be desired to release the latch by moving the diffuser, in those situations where a seal must be maintained between the faceplate and the diffuser, the external lever can be used to release the latch.

It is therefore an object of the present invention to provide a circular recessed lighting fixture having a hinged faceplate in which the hinge is invisible from the exterior of the fixture.

Other objects and advantages of the present invention will become more apparent upon reference to the accompanying description and drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a bottom plan view of the lighting fixture of the present invention;

FIG. 2 is a cross-sectional view taken along lines 2–2 of FIG. 1;

FIG. 3 is an enlarged detail view, partly in section, showing the latch mechanism of the present invention;

FIG. 4 is a view, partly in section, showing the faceplate of the fixture of the present invention in the open position;

FIG. 5 is a sectional detail showing the camming action of the faceplate of the present invention;

FIG. 6 is an enlarged detail view of the hinge mechanism of the present invention;

FIG. 7 is an exploded perspective view of a portion of the latch mechanism of the present invention; and

FIG. 8 is an enlarged detail view of the latch mechanism of the present invention.

DESCRIPTION OF THE INVENTION

As shown in the drawings, the lighting fixture of the present invention comprises a vessel **10** of conventional design for receiving a lamp **11** and having a flange **12** which is welded, bolted or otherwise attached to a frame **13** which is in turn bolted or otherwise attached to a framework **14** which is mounted in an opening **15** in a ceiling or the like **16**. The framework **14** serves to support the fixture in position after the frame **13** has been attached thereto. The frame **13** is provided with a flange **17** which serves as the external trim of the fixture. As can be seen in FIG. **1**, this trim is continuous and circular and no hinge is visible.

A faceplate **20** which supports a diffuser **21** is mounted to the fixture in the following manner. A plate **22** is bolted or otherwise fastened to the faceplate **20** and is provided at one end with a tongue **23** and at the other end with hinge barrels **24**. A plate **25** slidably mounted in a slot or keyway **26** formed in the frame **13** is provided with hinge barrels **19**, the hinge barrels **19** of the plate **25** and the hinge barrels **24** of the plate **22** being mounted on a pin **27** so that a hinged connection is formed between the plate **22** and the plate **25**. A spring **28** is provided to urge the plates **22** and **25** together. The plate **25** is provided with a slot **30** which cooperates with a pin **31** mounted on the frame **13** to guide and restrict movement of the plate **25** in the slot **26**. Since the plate **22** is attached to the faceplate **20** and the plate **25** is attached to the frame **13**, it can be seen that a hinged connection between the faceplate and frame is established. A slot **32** is provided in the flange **12** of the vessel **10** to permit passage therethrough of the tongue **23** of the plate **22**.

In order to hold the faceplate **20** in the closed position, that is, the position shown in FIG. **2**, a latch mechanism generally indicated at **35** is provided. The latch mechanism may be of the conventional type or may be of the type illustrated. As shown in the several figures, a generally L-shaped latch **36** is pivotally mounted on a bracket **37** formed on the upper wall of the frame **13**. The latch **36** is provided with one leg having a hook portion **38** which cooperates with an opening **39** formed in a portion of the faceplate **20**. A coil spring **41** is seated in the latch **36** and bears against the wall of the frame **13** to normally hold the hook portion **38** of the latch **36** in the opening **39** of the faceplate **20** to hold the faceplate **20** in the closed or upward position. The hook portion **38** of the latch **36** is provided with a camming surface **40** which when engaged by upward movement of the diffuser **21** causes the latch **36** to rotate in the clockwise direction against the force of the spring **40** until the hook member **38** has moved out of the opening **39** permitting the faceplate **20** to move downwardly.

In many instances, it is necessary that a seal be established between the faceplate **20** and the diffuser **21**, for example, where the fixture must be protected against moisture. In such a case, it is not possible to actuate the latch **36** by movement of the diffuser **21**. For this reason, an actuator **42** is slidably mounted in a slot or keyway **43** formed on the outer surface of the frame **13**. The actuator **42** is provided with a projection **44** which extends through a slot formed in the faceplate **20** and which renders the actuator **42** accessible from the outside of the fixture. When pushed upwardly the actuator **42** engages the other leg of the latch **36** causing it to pivot in the clockwise direction and release the faceplate **20**. It should be understood that in the normal installation only one means for actuating the latch **36** will be provided. In other words, if no seal is necessary the latch **36** will be actuated solely by movement of the diffuser **21** and the actuator **42** will not be provided. If, on the other hand, a seal is required, the actuator **42** will be provided. While normally the two actuating means will not be

simultaneously employed, the construction of a fixture in this manner permits an identical fixture to be used in either of two applications and thus greatly reduces overall manufacturing costs.

The operation of the hinge system of the present invention will now be described. When the latch **36** is disengaged, the weight of the faceplate **20** will pull the faceplate downwardly, downward movement of the faceplate **20** in turn causing the sliding member **25** to slide downwardly until the top of the slot **30** engages the pin **31**. At this point, the hinge is located below the flange **17** and there is sufficient room for pivotal movement of the faceplate **20** around the hinge without interference from the flange **17**. The spring **28** is not powerful enough to prevent this pivoting movement but does serve to reduce the jarring effect of the pivotal movement. The open position of the fixture is shown in FIG. **4**. After the fixture has been serviced, an upward force is exerted on the faceplate **20** or diffuser **21** causing it to rotate in the clockwise direction around the hinge. As the faceplate approaches the horizontal, the tongue **23** of the plate **22** enters the slot **32** and bears against the edge of the frame **13**. The resulting camming action causes the sliding member **25** to move upwardly in the slot **26** with the result that the faceplate **20** moves with it until the latch **36** again engages.

From the foregoing description it can be seen that a recessed lighting fixture has been provided which is circular and symmetrical and in which the hinge is hidden from view. This is accomplished by permitting the hinge to move in a vertical direction so as to clear the faceplate of the remainder of the fixture. It should of course be understood that the present invention is also useful in lighting fixtures other than those of circular design. A latching mechanism has also been provided which permits the use of the same basic mechanism whether the latch is to be actuated by movement of the diffuser or by movement of a separate actuator.

The invention may be embodied in other specific forms not departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What we claim is:

1. A lighting fixture comprising a frame, a faceplate, and means mounting said faceplate to said frame, said means including a member coupled to said frame and vertically slidable in a keyway formed in said frame and wherein means are provided for limiting the vertical travel of said member, hinge means coupling said member with said faceplate, said faceplate being movable about said hinge means between an upward closed position and a downward open position, and cam means on said faceplate for causing said member to move upwardly toward a closed position in said keyway when said faceplate is moved upwardly toward its closed position.

2. The lighting fixture of claim **1** wherein said cam means bears against said frame when said faceplate is moved upwardly toward its closed position.

3. A lighting fixture adapted for recessed mounting in a ceiling comprising a frame; means for mounting said frame in said ceiling; a faceplate; means for mounting said faceplate to said frame, said means including a member vertically slidable in a keyway formed in said frame and being provided with means for limiting the vertical travel of said member, said member being hingedly coupled to said faceplate, said faceplate being movable about said hinge means between an upward closed position and a downward open position; cam means on said faceplate for causing said member to move in an upward direction in said keyway when said faceplate is moved upwardly toward its closed position, and latch means on said frame for maintaining said faceplate adjacent said frame and generally coplanar with said ceiling, disengagement of said latch means permitting downward movement of said member and hinged movement of said faceplate.

4. The lighting fixture of claim **3** wherein said faceplate is provided with a diffuser, said diffuser being movable relative to said faceplate, upward movement of said diffuser at a time when said faceplate is adjacent said frame causing said latch means to disengage.

5. A lighting fixture adapted for recessed mounting in a ceiling comprising a frame; means for mounting said frame in said ceiling; a faceplate; means for mounting said faceplate to said frame, said means including a member vertically slidable in a keyway formed in said frame and being provided with means for limiting the vertical travel of said member, said member being hingedly coupled to said faceplate, said faceplate being movable about said coupling between an upward position and a downward position; cam means comprising a tongue mounted on said faceplate, a slot in said frame for receiving said tongue, pivotal movement of said faceplate to its upward position causing said tongue to enter said slot, bear against said frame and move said member upwardly in said keyway; and latch means on said frame for maintaining said faceplate adjacent said frame and generally coplanar with said ceiling, disengagement of said latch means permitting downward movement of said member and hinged movement of said faceplate.

6. A lighting fixture adapted for recessed mounting in a ceiling comprising a frame; means for mounting said frame in said ceiling; a faceplate having a diffuser, said diffuser being movable relative to said faceplate; means for hingedly mounting said faceplate to said frame; and latch means for maintaining said faceplate adjacent said frame and generally coplanar with said ceiling, said latch means comprising a bracket mounted on said frame, a generally L-shaped latch member pivotally mounted on said bracket and engageable with said faceplate, one leg of said latch member being generally horizontal and extending beyond said frame and the other leg of said latch member being generally vertical and terminating in a camming surface engaged by said diffuser upon upward movement thereof to disengage said latch member from said faceplate, said frame having a keyway formed thereon, an actuator coupled to said frame and being vertically slidable in said keyway, said actuator upon upward movement thereof engaging said one leg of said latch member to disengage said latch member from said faceplate.