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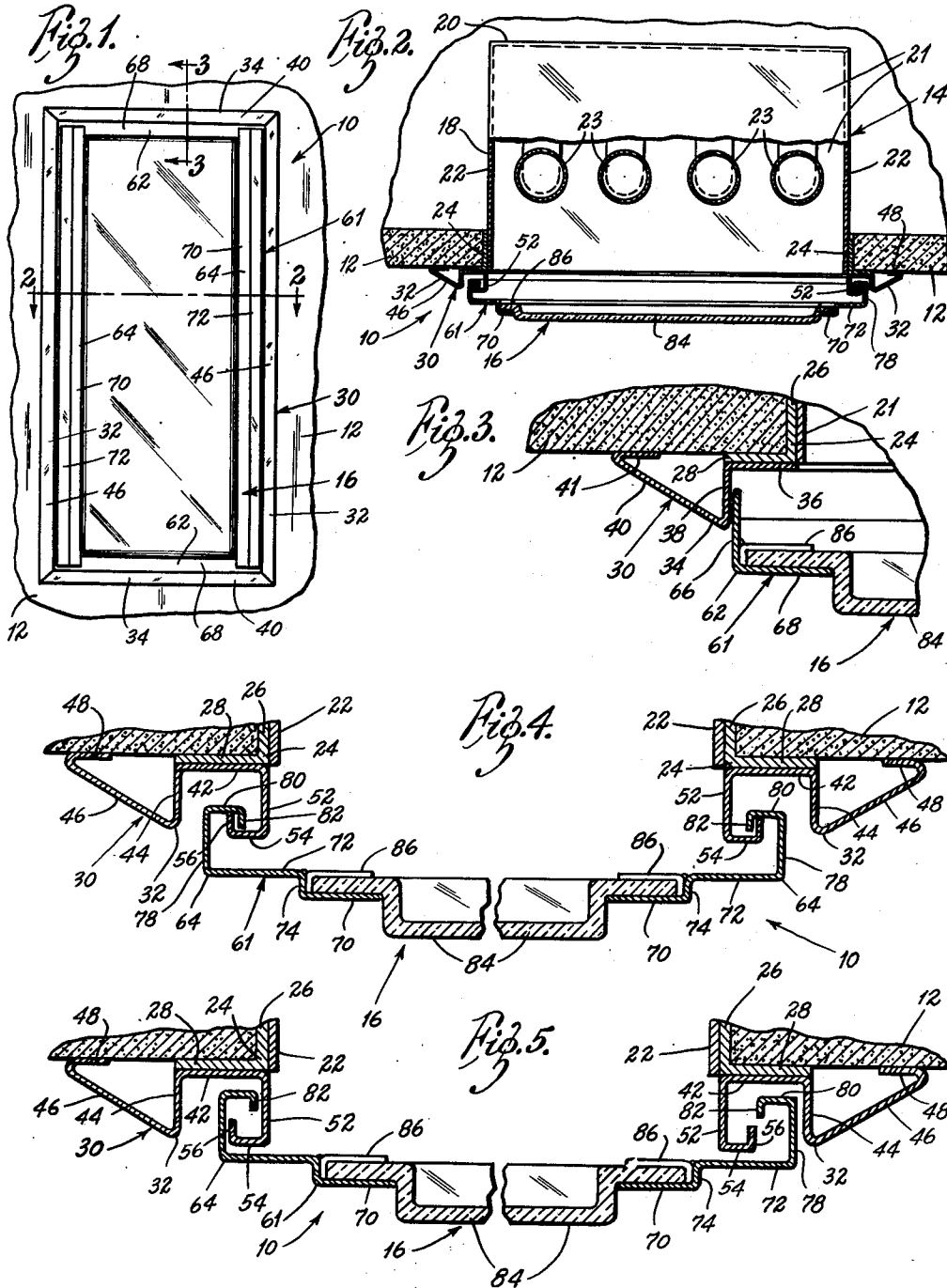
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LIGHTING FIXTURE HINGE CONSTRUCTION

Filed April 15, 1949

2 Sheets-Sheet 1



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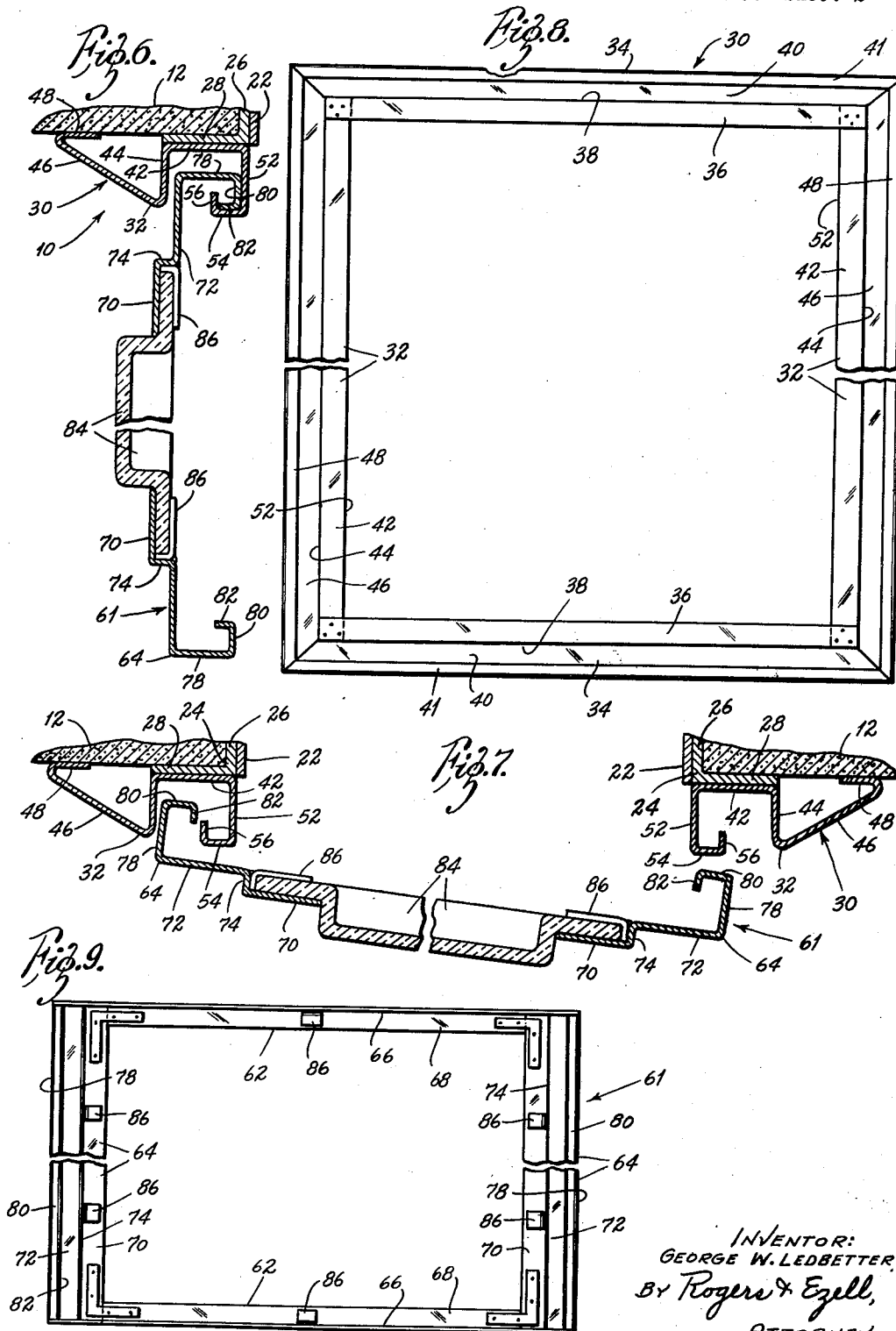
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## UNITED STATES PATENT OFFICE

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## LIGHTING FIXTURE HINGE CONSTRUCTION

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The present invention relates generally to lighting fixtures, and more particularly to the novel hinge construction of a lighting fixture adapted to be fastened to a ceiling or the like which contains a hinged removable panel for gaining access to the lighting elements within the fixture for the replacement and repair thereof.

There are numerous types of lighting fixtures in use at the present time which contain hinged removable panels. The majority of these, however, are unsatisfactory because they either require a great deal of time to remove the panel or else the panel falls out unexpectedly, thereby constituting a safety hazard.

It is an object of the present invention, therefore, to provide a panel type lighting fixture incorporating a novel panel hinge by which the panel can be removed quickly and easily when it is desirable to do so, and in which the panel in either the closed or fully open position is maintained without any possibility of falling from the supporting frame of the fixture.

Another object is to provide a novel hinge construction for use with a lighting fixture which contains a hinged removable panel, whereby the panel can be pivotally opened in either of two directions at the will of the user.

Another object is to provide a novel hinge construction for use with a lighting fixture which contains a hinged removable panel, whereby the panel cannot be removed when in the fully open or depending position.

Another object is to provide a novel hinge construction for use with a lighting fixture which contains a hinged removable panel, whereby the panel can be removed only when it is opened to a predetermined position.

Other objects are to provide a novel hinge construction for a lighting fixture which is rugged in construction, which is simple and easy to operate, which is relatively inexpensive to manufacture, which requires no tools for removal of the removable panel, and which may be adapted to continuous coupled or individual fixtures.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is shown, in which:

Fig. 1 is a bottom plan view of a lighting fixture embodying the teachings of the present invention, which is shown fastened to a ceiling;

Fig. 2 is an enlarged transverse vertical sectional view taken on the line 2—2 in Fig. 1;

Fig. 3 is an enlarged fragmentary vertical sectional view taken on the line 3—3 in Fig. 1;

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Fig. 4 is an enlarged vertical transverse sectional view of the supporting frame and the removable panel with the latter shown in the closed position;

Fig. 5 is a view similar to Fig. 4, but shows the panel moved to a position preparatory to either opening the panel or removing it from the supporting frame;

Fig. 6 is an enlarged vertical transverse sectional view of one side of the supporting frame and the panel showing the latter in the fully open or depending position;

Fig. 7 is a view similar to Fig. 5, but shows the panel immediately after it has been disengaged from the supporting frame;

Fig. 8 is a top plan view of the supporting frame; and

Fig. 9 is a top plan view of the panel frame.

Referring to the drawings more particularly by reference numerals, 10 indicates generally a lighting fixture, constructed in accordance with the teachings of the present invention, shown fastened to and extending into a ceiling 12. It comprises a supporting housing 14 and a hinged removable panel 16 mounted thereon. Manifestly, externally mounted and other fixtures may incorporate the present invention.

The supporting housing 14 (Fig. 2), which is preferably made of sheet metal, includes a rectangular-shaped enclosure 18, formed of a top wall 20, end walls 21, and side walls 22, which is anchored in a recess provided in the ceiling 12 by any desired means (not shown). Lighting elements 23 are mounted in the enclosure 18 in any preferred manner. Structural angles 24 having a vertically extending portion 26 and a horizontally extending portion 28 are removably fastened to the bottom edges of the end walls 21 and side walls 22 as by screws or bolts (not shown).

The supporting housing 14 also includes a supporting frame 30 (Fig. 8), having longitudinal members 32 and transverse members 34, which is illustrated as fastened to the horizontally extending portions 28 by spot welding, but which may be removably connected thereto by screws or bolts. The transverse members 34 (Fig. 3) include a horizontal portion 36, a vertical portion 38 depending from one edge thereof, and an oblique portion 40 extending upwardly and away from the lower edge of the vertical portion 38, the free end of the former being bent inwardly so as to form a horizontal flange 41. The longitudinal members 32 (Figs. 4-7) are shaped somewhat like the transverse members 34 in that they include a horizontal portion 42, a vertical portion 44, an oblique portion 46, and a flange 48,

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but, in addition, they contain a hook-like portion depending from the inner edge of the horizontal portion 42. The hook-like portion has a vertical wall portion 52, a horizontal portion 54, and a vertical flanged portion 56.

The hinged removable panel 16 includes a panel frame 61 which contains transverse members 62 and longitudinal members 64 (Figs. 2, 3 and 9). The transverse members 62 are shaped like structural angles and include a vertical portion 66 and a horizontal portion 68. The longitudinal members 64 include vertically spaced offset horizontal portions 70 and 72 which are interconnected by a vertical portion 74, and a hook-like portion extending upwardly from the outer edge of the portion 72. The hook-like portion includes a vertical wall portion 76, a horizontal wall portion 80, and a depending flange portion 82.

As will be more fully described hereinafter, the distances between various portions of the panel frame 61 and between portions of the supporting frame 30 are such as to permit the panel frame 61 to be removed from the supporting frame 30 when in a predetermined position relative thereto, but not when in other positions such as, for example, when fully open.

A translucent member 84 for diffusing the light emanating from the lighting elements 20 is secured in the panel frame by means of spaced clips 86 (Fig. 9). Manifestly, the panel 16 may incorporate louvers, glass or other construction as desired.

#### Operation

Assuming that the lighting fixture 10 is fastened to a ceiling with the panel 16 supported from the supporting frame 30, as shown in Figs. 1 and 2, the panel 16 can be swung downwardly about either of the longitudinal sides of the supporting frame 30 by merely lifting it upwardly, moving it transversely until the tip of the depending flange portion 82 clears the tip of the vertical flange portion 56 (Fig. 5) and then permitting the disengaged side to swing downwardly to the position shown in Fig. 6. Being able to open the panel 16 in either of two directions has the particular advantage that the maintenance man does not have to worry about placing his ladder on the wrong side of the fixture whereby the panel would open toward him instead of away from him.

It will be noted from Fig. 4 that the distance between the inner faces of the flange portions 82 is slightly less than the distance between the inner faces of the vertical flange portions 56 so that the panel 16 will fit snugly in the supporting frame 30 without too much play. Also, the overlapping flanges 56 and 82 prevent the panel 16 from being disengaged by transverse movement alone.

As shown in Fig. 5, the distance between the inner face of the wall portion 78 on one side and the outer face of the flange portion 82 on the other side is slightly greater than the distance between the opposed outer faces of the vertical flange portions 56, so that, when the panel is lifted upwardly and moved transversely, the one side of it becomes free to drop downwardly. As the one side drops downwardly, the edge of the flange portion 82 of the other side rides outwardly along the inner face of the horizontal portion 54, and thence upwardly on the inner face of the flange portion 56, thereby keeping the edge formed by the wall portion 78 and the horizontal portion 72 from binding against the wall portion 44 as it swings upwardly past it.

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To close the panel 16, the downwardly extending side is swung upwardly until the tip of the flange portion 82 on that side is above the edge of the flange portion 56, the panel then moved transversely until the inner face of the flange portion 82 on the other side abuts the inner face of the flange portion 56 on the same side, and the panel then lowered into the position shown in Fig. 4.

One of the objects of the present invention, as stated above, is to provide a hinge construction for a lighting fixture which includes a panel, whereby the latter cannot be removed when in the fully opened position. From an examination of Fig. 6, it will be apparent that the panel 16 cannot be removed when in this position, nor in any position other than when it is substantially horizontal because the distance between the outer face of the portion 72 and the outer face of the portion 80 is considerably greater than the distance between the inner face of the vertical wall portion 44 and the outer face of the vertical flange portion 56.

To remove the panel 16 from the fixture starting from the fully closed position as shown in Fig. 4, it is moved upwardly and transversely to the position shown in Fig. 5, as described supra, the one side dropping a short distance until it clears the underside of the horizontal portion 54 and the other side of the panel 16 then moved transversely so that the panel is in the position shown in Fig. 7. In this position, the distance between the outer faces of the wall portion 78 and the flange portion 82 is slightly less than the distance between the inner face of the vertical wall portion 44 and the outer face of the vertical flange portion 56 so that the side of the panel 16 can be dropped downwardly and out of engagement with the supporting frame 30, thereby permitting easy removal of the entire panel.

It will be noted from a consideration of Fig. 7 that by merely changing the length of the portion 80 or the portion 42 (or the portion 54, and, to a certain degree, the portion 44), one can obtain a lighting fixture in which the panel can be removed only when, for example, it is between zero and ten degrees below the plane of the fixture, between zero and twenty degrees below the plane of the fixture etc.

To replace the panel 16, it is held approximately horizontal and one side thereof inserted in the opening between the inner face of the wall portion 44 and the outer face of the flange portion 56, and the flange portion 82 on that side hooked over the flange portion 56; the panel is then moved transversely until the inner face of the portion 78 abuts the outer face of the flange portion 56, the other side swung upwardly until the edge of the flange portion 82 is above the edge of the flange portion 56, the panel moved transversely until the inner face of the flange portion 82 on the one side abuts the inner face of the flange portion 56 on the same side, and the other side of the panel 16 then lowered into the position shown in Fig. 4.

It is to be understood that the supporting frame and the panel frame could be made with rounded wall and flange portions without departing from the spirit of the invention, that the foregoing description and the accompanying drawings have been given only by way of illustration and example, and that changes and alterations in the present disclosure, which will be readily apparent to one skilled in the art, are contemplated as

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within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. In a device of the type described, the combination of a supporting frame adapted to be connected to a fixed base and having a pair of spaced elongated members, each of said members facing each other and being of inverted U-shaped cross section with the transverse portion having first and second leg portions depending therefrom, said first leg portions being on the inside of said pair with the second leg portions on the outside, the free end of the first leg portion extending at its bottom transversely toward the second leg portion and thence upwardly, said last named upwardly extending portion extending normal to and less than half the distance toward said transverse portion; and a panel-like member having a pair of spaced elongated members facing each other, each of said members containing an upwardly extending hook-like portion, the free end of which extends first inwardly toward said first leg portion and thence downwardly; the distance between the second leg portion of each of the supporting frame members and the upwardly extending free end of the first leg portion thereof being greater than the outer dimension of the inwardly extending portion of the hook-like portions of the panel members, but less than the outer dimension of the upwardly extending portion of said hook-like portions; the distance between the inner face of the upwardly extending portion of the hook-like portion of one elongated member and the inner face of the downwardly extending portion of the hook-like portion of the other elongated member being greater than the distance between the outer faces of the upwardly extending portions of the first leg portion of the supporting frame; and the distance between the inner faces of each of said second leg portions being greater than the distance between the upwardly extending portions of said hook-like portion whereby said second leg portion and the upwardly extending portion of said first leg act as a locking means to prevent the withdrawal of said panel-like member in any other than a prescribed manner.

2. In a device of the type described, the combination of a supporting frame adapted to be connected to a fixed base and a panel-like member adapted to be supported by said supporting frame and means on said frame and member for locking said member in a closed position against said frame against accidental dislodgment therefrom and for locking said member in a fully opened position, said means including a pair of

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spaced elongated members on said frame, each of said members facing each other and being of inverted U-shaped cross section with the transverse portion having first and second leg portions depending therefrom, said first leg portions being on the inside of said pair with the second leg portions on the outside, the free end of the first leg portion extending at its bottom transversely toward the second leg portion and thence upwardly, said last named upwardly extending portion extending normal to and less than half the distance toward said transverse portion; and said panel-like member having a pair of spaced elongated members facing each other, each of said members containing an upwardly extending hook-like portion, the free end of which extends first inwardly toward said first leg portion and thence downwardly, said last named downwardly extending portions extending normal to and less than half the distance toward said panel; the distance between the second leg portion of each of the supporting frame members and the upwardly extending free end of the first leg portion thereof being greater than the outer dimension of the inwardly extending portion of the hook-like portions of the panel members, but less than the outer dimension of the upwardly extending portion of said hook-like portions; the distance between the inner face of the upwardly extending portion of the hook-like portion of one elongated member and the inner face of the downwardly extending portion of the hook-like portion of the other elongated member being greater than the distance between the outer faces of the upwardly extending portions of the first leg portions of the supporting frame; and the distance between the inner faces of each of said second leg portions being greater than the distance between the upwardly extending portions of said hook-like portion whereby said second leg portion and the upwardly extending portion of said first leg act as a locking means to prevent the withdrawal of said panel-like member in any other than a prescribed manner.

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# References Cited in the file of this patent

## UNITED STATES PATENTS

| Number    | Name     | Date           |
|-----------|----------|----------------|
| 1,391,550 | Lockhart | Sept. 20, 1921 |
| 1,509,853 | Vance    | Sept. 30, 1924 |
| 2,227,892 | Soldan   | Jan. 7, 1941   |
| 2,427,084 | Alderman | Sept. 9, 1947  |
| 2,440,186 | Runge    | Apr. 20, 1948  |
| 2,440,603 | Guth     | Apr. 27, 1948  |