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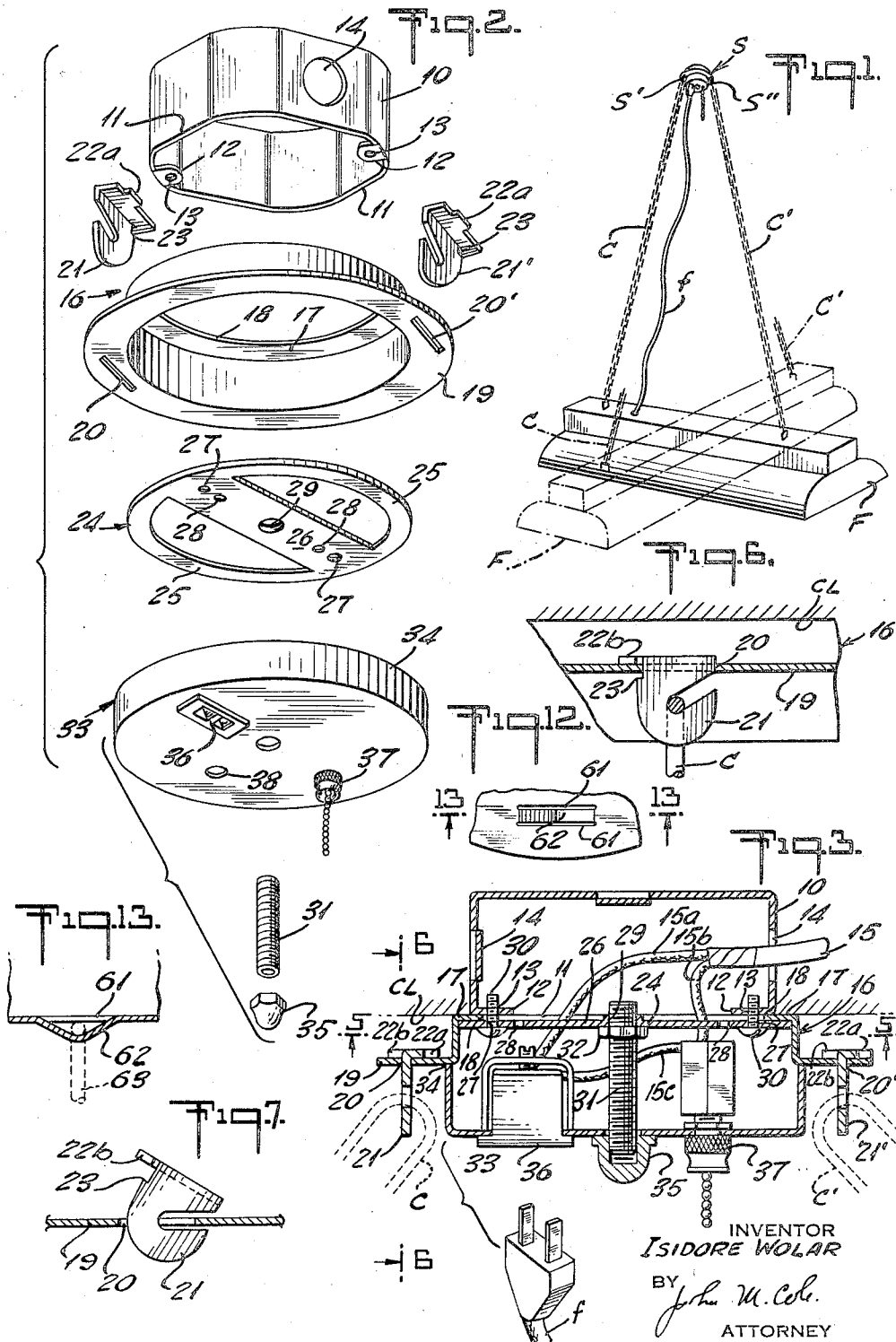
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LIGHTING FIXTURE SUSPENSION DEVICES

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2 Sheets-Sheet 1



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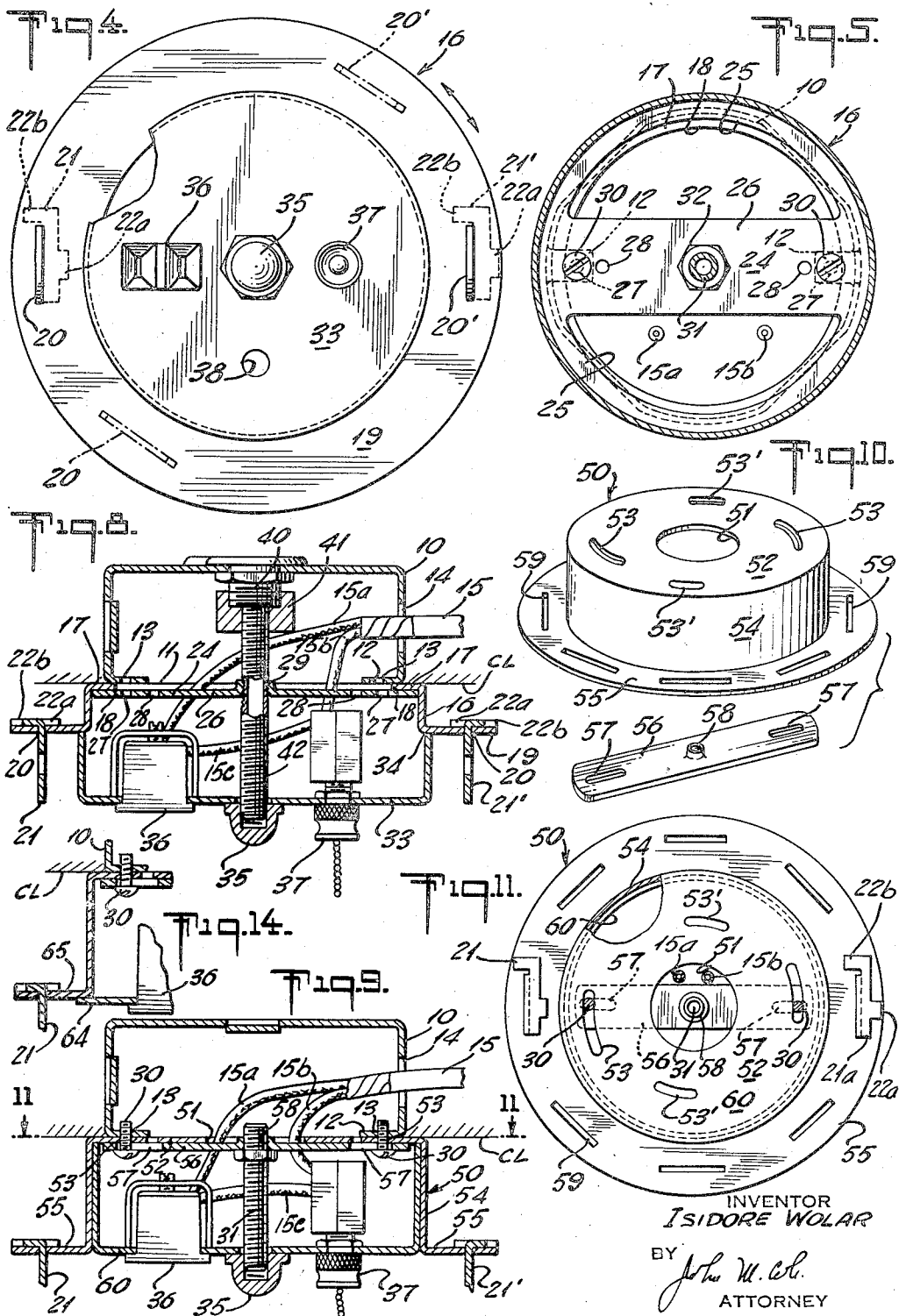
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LIGHTING FIXTURE SUSPENSION DEVICES

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23 Claims. (Cl. 174—61)

The present invention relates to lighting fixture suspension devices and is more particularly directed toward suspension devices suitable for use with elongated lighting fixtures for the purpose of facilitating the adjustment of such fixtures so that they extend in the desired lengthwise direction.

Where fluorescent lighting fixtures are to be mounted as individual units, it is not possible to hang them in random positions. It is generally necessary to have the fixtures mounted so that their lengthwise dimension bears a definite relation to some fixed reference such as the walls of the room, the direction of adjacent fixtures, etc. Where the fixtures are to be supported from a ceiling-carried outlet box by chain suspensions which converge toward the outlet box, the chain connections are at opposite sides of the vertical axis through the center of the outlet box and these connections need to be in the proper azimuth to orient the fixtures properly.

The present invention contemplates a construction for this purpose, wherein the angularly adjustable member adapted for connection to the chains, or other fixture supports, is supported from underneath by a plate, which receives its support from the outlet box. The plate may be secured to the outlet box ears or to a central, box-carried stud or rod, and the angularly adjustable member held against the mouth of the box loosely enough to permit intentional angular adjustment during installation.

The present invention also contemplates a construction in which it is unnecessary for the outlet box, usually filled with other wires and splices, to also accommodate the wiring for the particular fixture. This wiring passes below the plate which supports the angularly adjustable member. Below the plate is a closure which forms a wiring chamber for the fixture supply wires and this closure member is preferably provided with a control switch, a convenience outlet, and a wire opening. The closure is easily detachable for inspection without dismounting the fixture.

Other and further objects will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, several embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

Figure 1 is a perspective view of a fluorescent fixture mounted for adjustment about a vertical axis;

Figure 2 is an exploded perspective view of the parts employed in one form of construction in which the angularly adjustable member is supported from the ears of the outlet box and is adjustable through 360°;

Figure 3 is a vertical sectional view through an assembled fixture suspension utilizing the parts shown in Figure 2;

Figure 4 is an inverted plan view of the structure shown in Figure 3;

Figure 5 is a section on the line 5—5 of Figure 3;

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Figure 6 is a section on the line 6—6 of Figure 3;

Figure 7 is a fragmentary section on the line 6—6, showing the insertion of a hook into a slot in the angularly adjustable member;

Figure 8 is a vertical sectional view similar to Figure 3, illustrating parts, like or similar to those of Figure 2, but utilizing the central, outlet box stud;

Figure 9 is a vertical sectional view similar to Figure 3, but showing a construction in which the angularly adjustable member has limited angular movement and is provided with a pair of fixture supports which may be mounted in selected angular position;

Figure 10 is a perspective view of the angularly adjustable member and plate of Figure 9;

Figure 11 is a section on the line 11—11 of Figure 9, with parts broken away;

Figures 12 and 13 are fragmentary views illustrating a modified form of construction for the securement of the chain; Figure 13 being a section on the line 13—13 of Figure 12; and

Figure 14 is a fragmentary illustration of a further modification.

Figure 1 illustrates an elongated fluorescent fixture F of conventional form supported by two chains C, C' which converge toward and are secured at S' and S'' to a suspension S at the ceiling. The fixture supply wires are indicated at f. When the suspension is turned about the vertical axis, the fixture is swung to a new azimuthal direction as indicated in dot and dash lines.

A conventional 4" outlet box is indicated in the drawings at 10. It is mounted with its mouth 11 close to the ceiling line CL, and has the usual inwardly extending ears 12 with tapped holes 13, also the usual knockout 14 for wiring 15. Other wiring, not shown, is also usually in such a box.

The angularly adjustable member 16 (Figs. 2—8) is in the form of an annular sheet metal stamping. It has an inwardly extending upper flange 17 with an opening 18 of a size to be slightly larger than the spacing of the outside walls of the threaded holes 13 in the ears 12. The flange 17 is therefore able to bear against the mouth of the outlet box and clear the screws threaded into the holes 13. The member 16 also has a lower outwardly directed flange 19 slightly below the ceiling line. The flange, as shown in Figures 2, 3, 4, 6, 7 and 8, has diametrically opposed, elongated slots 20, 20'. The slots 20, 20' are adapted to receive hook members 21, 21' formed of stiff sheet metal. The hook members are alike and preferably of a configuration such that the hook part may be passed downwardly through the hole 20 or 20' as indicated in Figure 7 and then lowered to the position of Figures 3, 6, 8 and 9. The hook members have top flanges 22a, 22b, which rest on the upper face of flange 19, and shoulders 23 which interfere with pushing them back up through the holes 20, 20'.

The plate 24, Figures 2, 3, 5 and 8, is a flat sheet metal punching having a rim 25 of a size to be received in the annular member 16 and bear against the lower face of flange 17, and a bridging portion 26 provided with a pair of holes 27, 27 spaced the same as the threaded holes 13 (for the 4" box) and a second pair of holes 28, 28 spaced the same as the holes in the ears of a 3" box. The plate also has a central tapped hole 29.

The angularly adjustable member 16 with hooks in place and plate 24 may be secured to the outlet box by screws 30 as shown in Figures 3 and 5, and the annular member 16 held against the mouth. The member 16 may be adjusted angularly to the desired position without interfering with wires such as 15a, 15b which pass down through the center opening in member 16 and the openings in plate 24.

The plate 24 carries a depending threaded member 31, such as a rod or length of $\frac{1}{8}$ " pipe. It is shown as being conveniently secured in place by threading it into the hole 29 and locking it against easy loosening by a lock nut 32. It may, however, be welded or staked in place, if desired.

The bottom closure member is indicated at 33, Figures 2, 3, 4 and 8. It is in the form of a cup-shaped stamping preferably of a diameter to have its upper edge 34 engage the lower flange 19 of member 16. The closure member is supported by a nut 35 threaded on the rod or tube 31. When the nut 35 is tightened, it binds the parts tightly together so that the annular member 17 is held against turning about the vertical axis. The closure member preferably carries a convenience outlet 36 and switch 37 and has a knockout 38 for wires in case the convenience outlet is to be omitted. The switch need not be used. The wires 15a and 15b may be connected to the outlet and the switch, and the switch connected to the outlet by wire 15c. All this wiring as well as the switch and convenience outlet are housed below the outlet box where there is plenty of room for them, thereby avoiding crowding of these parts into the outlet box. All this wiring may be completed before the chains C and C' are secured to the hooks 21, 21'. Should the switch or convenience outlet need inspection or replacement, they are readily accessible by merely removing the nut 35.

When the fixture is hung, as indicated in Figure 3, it is possible to obtain considerable range of angular adjustment without disconnecting the wires 15a, 15b, and should greater adjustment be desired, the closure can be removed, the wires detached and reconnected, again without lowering the fixture.

The form of construction shown in Figure 8 uses the same principal parts as in Figures 1-7, inclusive. Instead of using the outlet box ears for support, this construction utilizes the usual outlet box stud 40. A reducer 41 threaded onto this stud receives the upper end of a threaded rod or tube 42 long enough to extend down through the closure member 33 and receive the nut 35. The plate 24 is threaded onto the rod or tube 42 and brought to a position to bear against the flange 17.

In the arrangement shown in Figures 9-11, the angularly adjustable member 50 resembles the member 16. It, however, has a smaller central opening 51 and a wider upper flange 52. This flange, as here shown, has pairs of arcuate slots 53 and 53' for the screws to fit the ears of 4" and 3" outlet boxes. It has deeper side walls 54 and the lower flange 55 is farther from the ceiling line CL. The plate 56 is a strap with elongated slots 57 adapted to receive screws for the ears of either sized box, and with a central tapped hole 58 similar to hole 29 above referred to. The plate 56 and adjustable member 50 are secured to the outlet box 10 by screws 30 as before. The flange 55 has several pairs of diametrically opposite slots 59 similar to slots 20, 20' and adapted to receive the hook members 21, 21'. The lowering of the flange 55 makes it possible to find the holes in a selected pair of slots, to approximately orient the fixture, and the arcuate slots through which the screws 30 pass permit further adjustment. The closure member 60 is similar to the closure member 33, but deeper and telescopes into the annular member 50 as shown.

Instead of providing the flanges with slots such as 20 or 59, and using hook members such as indicated at 21, other means may be employed to secure the upper end of the chain to the angularly adjustable member. For example, the metal may be slitted as indicated at 61 in Figures 12 and 13, and a strip 62, bent down so that the chain link 63 may be secured about it.

In the modification illustrated in Figure 14, the closure 64 is flat and bears against the bottom of flange 65, equivalent to 55 or a lower flange 19.

The hook member and slot construction shown herein

are claimed in my co-pending application Ser. No. 418,-652, filed March 23, 1954.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular forms shown are but several of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed:

1. A lighting fixture suspension device providing two points of support on opposite sides of a vertical axis and for accommodating fixture wiring, comprising a stamping having an upper, inwardly directed annular flange, a lower, outwardly directed annular flange, a horizontal bearing plate adapted to be supported from above by means passing through the stamping and engageable with the lower face of the upper flange to support the stamping for angular movement about said vertical axis, the plate and stamping having passageways for wiring, a closure member engageable with the lower face of the stamping outside the plate, the closure member and stamping having a shape when assembled to form a wiring chamber, means to secure the closure in place, and means carried by the lower flange outside the closure member for attaching fixture supports.

2. A device such as claimed in claim 1, wherein the upper flange defines an opening of a size less than the mouth of the standard outlet box of predetermined size so that the said upper flange may be held against the mouth of such an outlet box.

3. A device such as claimed in claim 1, wherein the plate has screw-receiving holes spaced to accommodate screws for engagement with supporting means, and the closure securing means includes a stud secured to the plate.

4. A device such as claimed in claim 3, wherein the inner edge of the upper flange is outside the screw receiving holes.

5. A device such as claimed in claim 1, wherein the plate has a threaded opening for a supporting rod and the closure securing means includes a rod threaded through the opening in the plate and extending above the plate for securement to a superposed support.

6. A device such as claimed in claim 1, wherein the closure securing means includes a rod secured to the plate and extending down through the closure, and a retaining device on the lower end of the rod.

7. A device such as claimed in claim 1, having a convenience outlet carried by the closure and connected to wiring in the wiring chamber.

8. A device such as claimed in claim 1, wherein the upper edge of the closure member abuts the lower flange of the stamping.

9. A device such as claimed in claim 1, wherein the upper edge of the closure member abuts the lower face of the upper flange.

10. A lighting fixture suspension and wiring device for use with a downwardly opening outlet box, comprising an upper horizontal first member centrally apertured to accommodate wiring from the outlet box and adapted to bear against the mouth of the outlet box and having outwardly extending portions provided with devices on opposite sides of its axis, for the securement of lighting fixture supports, a second plate-like member under the inner portions of the first member and past which the wiring may extend, means for securing the plate-like member to the outlet box and against the first member so that it may bear against the outlet box mouth and the first member may be angularly adjusted while supported from the plate-like member, a closure member which together with the first member forms a wiring chamber below the plate-like member, a convenience outlet carried by the closure member for the reception of a plug, and means including a threaded rod carried by the plate like member and a nut carried thereon below the closure member for clamp-

ing the upper member, the plate-like member and closure member together.

11. A combined wiring device and lighting fixture suspension for use with a downwardly opening outlet box, comprising an upper apertured member of a size to bear against the mouth of the outlet box, a lower closure member which together with the upper member forms a wiring chamber, a convenience outlet carried by the closure member and housed in the wiring chamber, a supporting plate bearing against the lower surface of the upper member opposite the mouth of the outlet box and apertured for the passage of wiring, means to secure the supporting plate to the outlet box and support the upper member for angular adjustment about a vertical axis, means to secure the closure member to the plate so that the upper member, closure member and plate are clamped together and secured against angular movement, and fixture supporting devices carried by the upper member outside the closure member.

12. A device for supporting an elongated lighting fixture for selected azimuthal mounting positions, comprising a fixedly mounted outlet box with a horizontal downwardly facing mouth, an annular member having an opening of smaller diameter than the outlet box mouth so as to be able to bear against the mouth of the box and provide access thereto for wiring, a bearing plate under the annular member, the bearing plate being of a size to bear against the inner edges of the same and of a configuration to permit wiring to extend from the box past the same, means for securing the bearing plate to the outlet box to support the annular member from the outlet box with its upper face bearing against the mouth of the box and for angular adjustment about a vertical axis, a lower closure member which bears against the lower face of the annular member to form a closure for the wiring passages and a wiring chamber below the bearing plate, means to secure the closure member against the annular member and the annular member against the plate, and diametrically opposite devices carried by the annular member outside the closure member for securing lighting fixture supports.

13. A device such as claimed in claim 12, wherein the outlet box has inwardly extending ears with tapped holes and the plate securing means includes screws which pass through the plate and annular member and are threaded into the ears.

14. A device such as claimed in claim 13, wherein the opening in the annular member is larger than the spacing of the plate-securing screws, whereby the annular member may be shifted through 360°.

15. A device such as claimed in claim 13, wherein the annular member has slots of limited angular extent

through which the screws pass to limit the angular adjustment of the annular member relative to the outlet box.

16. A device such as claimed in claim 13, wherein the closure securing means include a depending threaded member carried by the plate, extending through the closure and provided with a retaining device.

17. A device such as claimed in claim 12, wherein the outlet box has a central dependent threaded member onto which the plate is threaded to bear against the annular member and the lower end of the threaded member passes through the closure to form, together with a retaining device, the closure securing means.

18. A device such as claimed in claim 13, wherein the bearing plate is in the form of a ring with a bridging member, and the closure supporting means includes the bridging member.

19. A device such as claimed in claim 13, wherein the outlet box has inwardly extending ears with tapped holes, the bearing plate is in the form of a ring with a bridging member, the plate securing means includes screws which pass through the plate and annular member and are threaded into the ears, and the closure supporting means includes said bridging member.

20. A device such as claimed in claim 13, wherein the outlet box has inwardly extending ears with tapped holes, the annular member has slots of limited angular length opposite the tapped holes, the bearing plate is in the form of a strap, the plate securing means including screws passing through the plate and the said slots and threaded onto the ears, and the closure securing means includes a threaded rod carried by the strap.

21. A device such as claimed in claim 13, wherein the opening in the annular member is in an inwardly extending upper flange and the annular member has a lower, outwardly extending flange from which the lighting fixture supports extend.

22. A device such as claimed in claim 13, wherein the closure member carries a convenience outlet which extends up into the wiring chamber.

23. A device such as claimed in claim 13, wherein the closure member carries a convenience outlet and a switch, both of which extend up into the wiring chamber.

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