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WALL OUTLET AND FIXTURE MOUNTING

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2 Sheets-Sheet 2

FIG. 8.

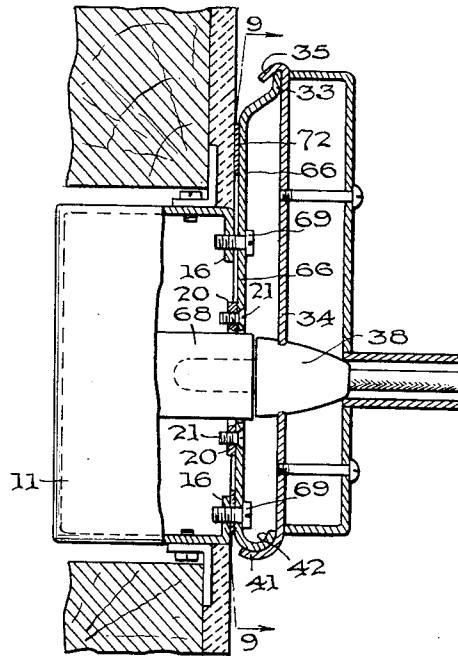


FIG. 9.

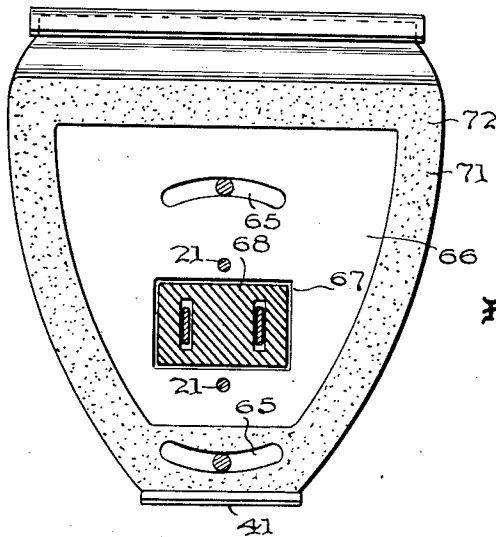
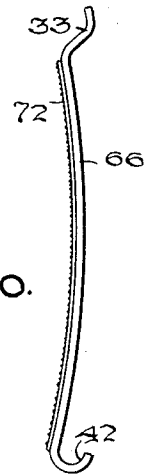


FIG. 10.



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WALL OUTLET AND FIXTURE MOUNTING

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6 Claims. (Cl. 174-61)

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This invention relates to an electrical wall outlet and fixture mounting and particularly concerns an outlet and mounting providing a detachable support and connection for a fixture.

According to present practice, a wall mounted electrical fixture is usually permanently connected to wiring in a wall outlet box and permanently attached by bolts to the box. To replace such a fixture, it is necessary first to remove the bolts and then disconnect the wiring. The new fixture requires the same permanent electrical connection and physical attachment to its support. Of course, lamps and portable fixtures have external wiring provided with male electrical connectors which may be engaged in the female electrical connectors of a conventional wall outlet. However, a separate support, such as a lamp stand or wall mounting, is necessary for the fixture. In such cases, the physical support and electrical connection are separated at least to the extent that separate steps are required for physically attaching the fixture and for electrically connecting it to a support.

It is the primary object of this invention to provide an electrical wall outlet and fixture mounting wherein a fixture may be physically attached and simultaneously electrically connected or physically removed and simultaneously electrically disconnected in a simple, quick operation.

More particularly, an object of the invention is to provide a wall outlet and fixture mounting in which the fixture may be snapped onto a wall plate and simultaneously electrically connected to the outlet.

A specific object of the invention is to provide a combined outlet and fixture mounting wherein the fixture mounting may be angularly adjusted relative to the outlet box.

Another specific object of the invention is to provide a combined outlet and fixture mounting in which lateral thrust of the fixture is carried by the wall rather than by the outlet box.

In accordance with these objects, one important feature of the invention resides in the construction of a wall plate carrying a female electrical connector with a cooperating fixture supporting plate carrying a male electrical connector, the two plates being snapped together simultaneously with the engagement of the connectors. Another feature of the invention resides in the formation of a wall plate and fixture mounting plate with cooperating hinge elements permitting relative movements of the plates about the axis of the hinge to physically

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attach and simultaneously electrically connect the fixture to a wall outlet box. Also, a feature of the invention resides in a lock which cooperates with the hinge elements to secure the plates in superimposed position with the electrical connectors engaged. To permit the fixture supporting plate to be properly aligned, the wall mounting plate is attached to the outlet box by means permitting adjustment of the wall plate to different angular positions about an axis normal to the plate. Instead of supporting the fixture entirely on the outlet box, I preferably roughen the marginal surface of the wall plate so lateral thrust of the fixture is carried by the wall.

Other objects and advantages of the invention will become apparent from the following specification taken in connection with the accompanying drawings wherein

Figure 1 is a side elevation of an electric fixture supported on an outlet box with my improved wall outlet and fixture mounting, some parts being shown in section and others broken away for purposes of clearness;

Fig. 2 is a vertical sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a vertical sectional view taken on the line 3-3 of Fig. 1;

Fig. 4 is a fragmentary section of the arcuate threaded slot in the mounting plate shown in Fig. 2;

Fig. 5 is a front elevation of a modified form of mounting plate;

Fig. 6 is a vertical section taken on the line 6-6 of Fig. 5;

Fig. 7 is a sectional view taken on the line 7-7 of Fig. 5;

Fig. 8 is a side elevation of an outlet box with a modified form of my combination wall outlet and fixture mounting, with parts in section and other parts broken away for purposes of clearness;

Fig. 9 is a vertical section taken on the line 9-9 of Fig. 8; and

Fig. 10 is a vertical sectional view of the wall plate shown in Fig. 8.

In accordance with the invention in its preferred form, a wall plate is provided with a centrally located aperture to accommodate a female electrical connector. The wall plate is mounted onto the open end of a wall outlet box and has its marginal edge provided with a roughened surface to engage the wall and carry thrust loads in directions parallel to the wall. At its upper end, the wall plate has an upwardly projecting flange

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spaced outwardly from the wall. A fixture supporting plate carries a male electrical connector and has, at its upper end, a reversely bent portion forming a cupped lip to engage over the upwardly extending flange of the wall plate, the flange and lip forming hinge elements permitting the fixture supporting plate to be moved about the axis of the hinge toward and away from the wall plate. The lower ends of the plates have interlocking elements so the fixture supporting plate may be snapped into position on the wall plate with the male electrical connector engaged in the female connector.

Referring now to the illustrations of the invention as shown in the drawings, a conventional outlet box 11 has its outwardly extending ears 12, 12, secured to suitable supports in the wall. Open end 13 of the outlet box is partially covered by a mounting plate 14 which is secured as by bolts 15, 15, passing through holes 17, 17, in mounting plate 14 and threaded into inwardly extending ears 16, 16, of the outlet box. Mounting plate 14 has a centrally located opening 19 to accommodate a female connector 18. At opposite sides of the mounting plate 14, between opening 19 and holes 17, 17, a pair of arcuate threaded slots 22, 22, are arranged to accommodate bolts 23, 23, for securing wall plate 24 onto the mounting plate. Female connector 18 may be secured onto mounting plate 14 by screws 21, 21, passing through holes in the mounting plate and engaging threaded holes in ears 20, 20, on the connector. As shown in Fig. 4, slots 22, 22, are formed by bending portions 25, 25, rearwardly of the plate and cutting threads 26, 26, across the inner surfaces of the rearwardly bent portions 25, 25. The threads 26, 26, actually are ridges extending across the rearwardly bent portions 25, 25, so they will engage opposite sides of bolts 23, 23.

Wall plate 24 has a face area greater than open end 13 of the outlet box 11 to completely obscure the outlet box and any opening in the wall surrounding the box. Centrally located in wall plate 24 is an opening 27 arranged to surround the exposed face of female connector 18 secured by screws 21, 21, on the wall plate 24. As is apparent, wall plate 24 may be angularly adjusted about an axis normal to the plate to proper vertical alignment and then secured by bolts 23, passing through apertures 29, 29, in the wall plate 24, and engaging arcuate threaded slots 22, 22. Preferably, the rear surface of the wall plate is concave and has its marginal edges roughened, as by the provision of projecting prongs 31, 31, to engage the surface of the wall and carry any load tending to twist the wall plate 24 about an axis normal to its plane or to move the wall plate in a direction parallel to the wall. When the wall plate is tightened against the wall, it will be flattened and the roughened margin will bite into the plaster wall.

To form a hinge element for a purpose to be described, the upper end of wall plate 24 is bent outwardly, at 32, and then upwardly to form an upwardly extending flange 33 spaced outwardly from the main portion of wall plate 24. This upwardly extending flange 33 is to support a fixture supporting plate 34 having, at its upper end, a reversely bent portion 35 forming a cupped lip resting upon the flange 33 so the weight of fixture supporting plate 34 is carried by this flange 33 of the wall plate 24. Also, upwardly extending flange 33 of the wall plate 24, and cupped lip 35 of the fixture supporting plate 34, form cooperating hinge elements permitting the fixture sup-

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porting plate 34 to be moved relative to the wall plate 24 about the axis of the hinge, which axis is defined by upper edge 36 of the flange 33. Each end of the cupped lip is turned in to form ears, like ear 30, providing abutments for engaging the ends of flange 33 and preventing movement of the fixture supporting plate 34 sidewise relative to the wall plate 34.

Fixture supporting plate 34 has an aperture 37, aligned with apertures 19 and 27 in the mounting plate 14 and wall plate 24, respectively. Wedged into aperture 37 is a male electrical connector 38 provided with prongs 39, 39, to enter the sockets of female connector 18 when fixture supporting plate 34 is moved about the axis of hinge elements 33 and 35 toward wall plate 24. Fixture supporting plate 34 may be locked onto wall plate 24 with male electrical connector 38 engaged in female connector 18 by snapping rearwardly bent flange 41 at the lower edge of fixture supporting plate 34 over corresponding forwardly bent flange 42 on the lower edge of wall plate 24. Flange 41 on the fixture supporting plate has an inwardly turned ear 40 at each end providing abutments for engaging the ends of the flange 42 on the wall plate 24. The ears hereby take up side thrust and act in conjunction with ears 30 to oppose any force tending to rotate the fixture plate relative to the wall plate.

Any type of electrical fixture may be supported on fixture supporting plate 34. As illustrated in Fig. 1, a housing 43 is secured onto wall plate 34 as by bolts 45, 45, and wiring 46 extends from male connector 38 through tubing 47 on the housing 43 to a conventional fixture designated generally at 48.

Usually, outlet boxes will be provided at appropriate heights in the wall to receive an electrical fixture. In accordance with the invention, a wall plate 24 will be secured to the box and properly aligned with female connector 18, attached to the plate and extending accessibly through aperture 27. Then, any selected fixture may be secured to the fixture supporting plate 34 and electrically connected to male connector 38. The wall plate alone will present an attractive appearance. To attach an electrical fixture, it is only necessary to place cupped lip 35 of the fixture supporting plate 34 onto the upwardly extending flange 33 of wall plate 24 and then snap the supporting plate over the lower edge of the wall plate. By this single operation, the fixture may be mounted securely on the wall and simultaneously connected to the house wiring, as represented by leads 51, 51, connected to female connector 18.

It is realized that the mounting plate 14 may take a variety of forms, particularly with respect to the arrangement for attaching the wall plate and yet permitting adjustment of the wall plate about an axis normal to the surface of the wall. A modified variation of the mounting plate is shown at 54 in Fig. 5. This mounting plate 54 has a centrally located aperture 55 to receive the female connector 18. Also, this mounting plate is provided with holes 57, 57, to receive the bolts 15, 15, by which the plate is secured over the open end of outlet box 11. In this modified form of the mounting plate 54 a different arrangement is provided to secure bolts 23, 23, which attach the wall plate on the mounting plate. Mounting plate 54 is provided with two arcuate slots 58, 58, arranged on opposite sides of aperture 55 between the aperture and holes 57, 57. On each side of the slot 58 a portion is

stamped out and bent rearwardly behind the plate to form a pair of U-shaped channel members 59, 59, which cooperate to provide an arcuate track in which nut 61 may slide. Preferably, at the ends of slots 53, 53, ears are bent rearwardly behind the plate to form stops 62, 62, which will close the ends of the track and retain nut 61 in the track. With these two arcuate tracks behind slots 53, 53, bolts 23, 23, may be inserted into the nuts 61 to secure the wall plate 24 in position. Arcuate adjustment is provided by spreading the nuts to desired position before tightening the bolts.

At the risk of slightly detracting from the appearance of the wall plate 24, the mounting plate 14 may be eliminated. This is accomplished, as shown in Figs. 8 and 9, by providing arcuate slots 65, 65, in wall plate 66 on opposite sides of centrally located aperture 67 which accommodates female connector 68. With this arrangement, outlet box 11 is provided with a female connector 68 supported by wall plate 66. Bolts 69, 69 are then passed through arcuate slots 65, 65, to engage inwardly extending ears 16, 16, of the outlet box. Proper vertical alinement of the wall plate and the female connector 68 may be obtained by shifting the plate about an axis normal to the wall and then tightening the bolts 69, 69.

As in the preceding form of the invention, marginal edge 71 of the wall plate is roughened to carry lateral thrust by directly engaging the wall. In this case, the roughened surface is provided by finely divided particles of grit, as indicated at 72. These particles may be in the form of sandpaper or other abrasive, a strip of which is cemented onto the wall plate 66. Wall plate 66 has the same upwardly extending flange 33 which cooperates with cut lip 35 on fixture supporting plate 34. Also, the bottom ends of the plate have inwardly turned portions 41 and 42 forming a lock to secure the fixture supporting plate in position on the wall plate with male connector 38 engaged with female connector 68.

To increase the effect of the marginal projections on the rear surface of the wall plates, the rear surface of the wall plate is preferably slightly concave, Fig. 10, so their central portions are normally cupped outwardly away from the wall to increase the pressure on the marginal area when the bolts are tightened to draw the wall plate toward the outlet box and flat against the wall.

In all forms of the invention, the wall plate provides access to the female connector and may be angularly adjusted to proper vertical alinement. The wall plate and fixture supporting plate have, at their upper ends, cooperating elements forming a hinge about which the fixture supporting plate may be moved. At their lower ends, one plate overlaps the other to provide a snap lock by which the fixture supporting plate is secured in position on the wall plate with the male connector engaged in the female connector.

What is claimed is:

1. An electrical wall outlet and fixture mounting comprising a wall plate formed with a centrally located aperture, the upper end of said plate being off-set from the plane of said plate to form a first hinge element, a female electrical connector carried by said wall plate in said aperture, a fixture supporting plate, the upper end of said fixture plate having a reversely bent por-

tion forming a second hinge element cooperating with and overlying said first hinge element to provide a detachable hinge pivotally supporting said fixture plate on said wall plate, a male electrical connector arranged on said fixture plate to enter said female connector upon movements of said fixture plate about the axis of said hinge toward said wall plate, and cooperating elements at the lower ends of said plate forming a lock for securing said plates in superimposed positions with said male connector engaged in said female connector.

2. An electrical wall outlet and fixture mounting comprising a wall plate formed with a centrally located aperture, the upper end of said plate being offset from the plane of said plate to form a first hinge element, a female electrical connector disposed in said aperture, a fixture supporting plate larger than said wall plate, the upper end of said fixture plate having a reversely bent portion forming a second hinge element cooperating with said first hinge element to provide a detachable hinge supporting said fixture plate on said wall plate, and a male electrical connector arranged on said fixture plate to enter said female connector upon movement of said fixture plate about the axis of said hinge toward said wall plate, the lower end of said wall plate being bent outwardly to form a rounded flange, the lower end of said fixture plate being bent inwardly to form a snap lock for engaging and overlapping said flange to secure said plates in superimposed positions with said male connector engaged in said female connector.

3. An electrical wall outlet and fixture mounting as claimed in claim 2 wherein said wall plate has projections extending from the back thereof to prevent movement of said wall plate on the wall surface.

4. An electrical wall outlet and fixture mounting as claimed in claim 3 wherein the wall plate is formed with a concave surface and the projections are arranged about the margin of said surface.

5. An electrical wall outlet and fixture mounting as claimed in claim 2 having a mounting plate for supporting said wall plate and projections extending from the back of said wall plate and surrounding said mounting plate to prevent movement of said wall plate on the wall surface.

6. An electrical wall outlet and fixture mounting as claimed in claim 2 wherein are provided ears on said fixture plate at the ends of said hinge element and said snap lock for preventing relative movement of said plates.

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