

April 26, 1955

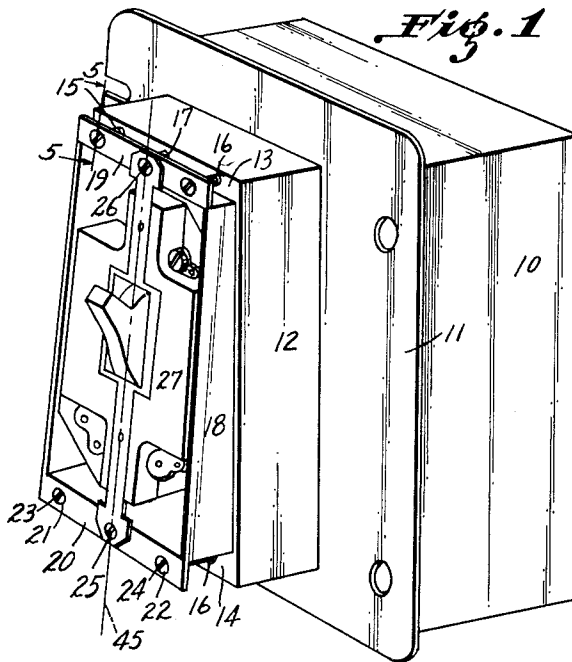
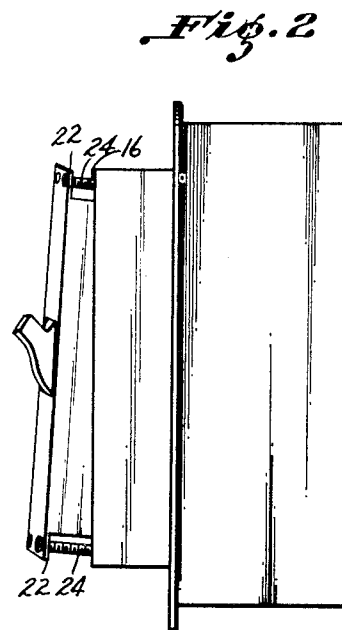
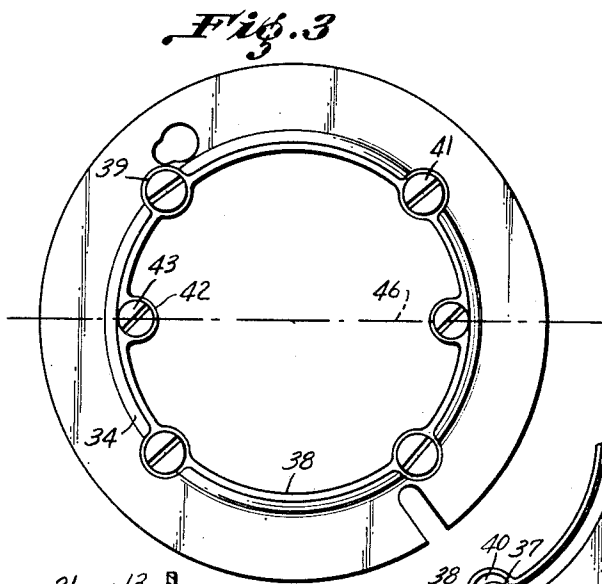
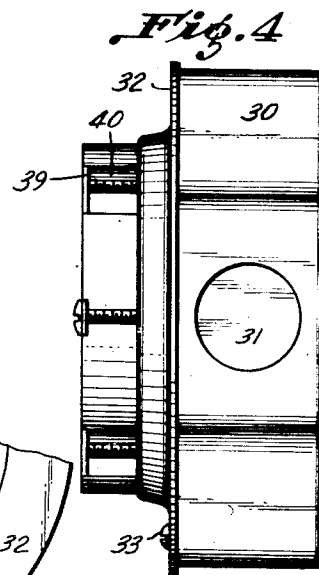
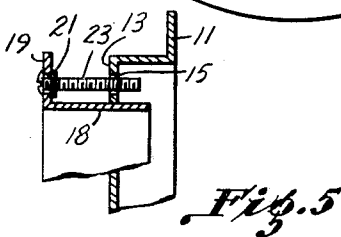
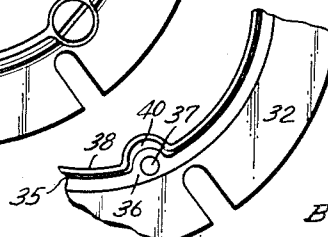
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2,707,221

ADJUSTABLE SWITCH FRAMES AND PLASTER RINGS

Filed Oct. 22, 1952

2 Sheets-Sheet 1



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Fig. 6

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ADJUSTABLE SWITCH FRAMES AND PLASTER RINGS

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2 Sheets-Sheet 2

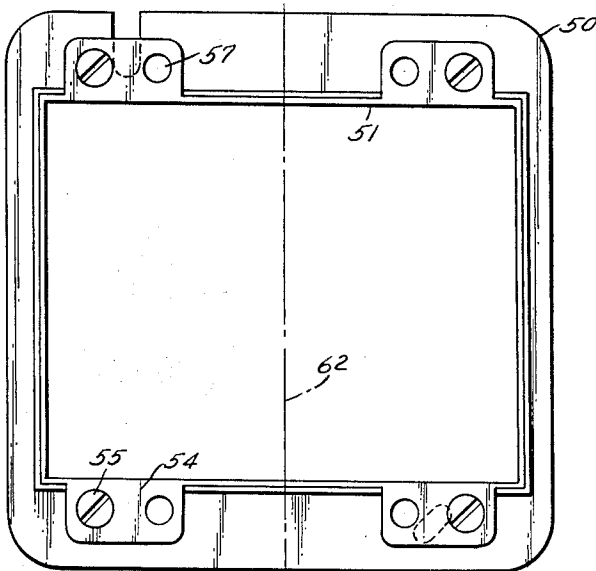


Fig. 7

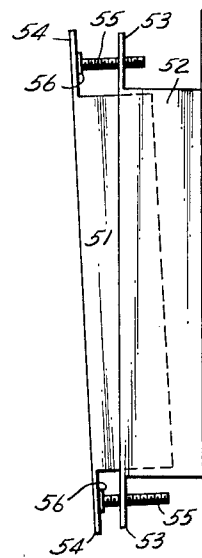


Fig. 8

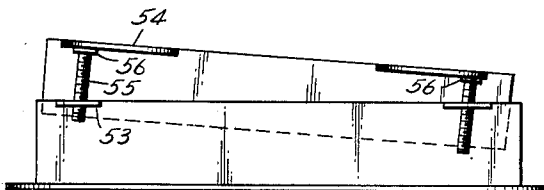


Fig. 9

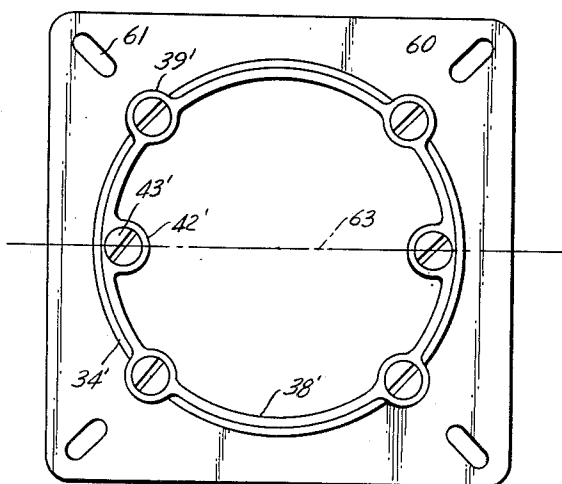


Fig. 10

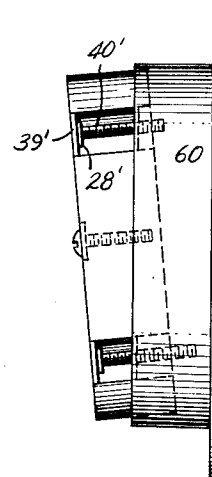


Fig. 11

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2,707,221

ADJUSTABLE SWITCH FRAMES AND PLASTER RINGS

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7 Claims. (Cl. 200—168)

This invention relates to adjustable switch frames and adjustable plaster rings, such as are used in electric wiring in buildings.

An object of this invention is to provide switch frames and plaster rings which can be adjusted to place the frames and rings flush with finished wall surfaces.

A further object of this invention is to provide adjustable switch frames and plaster rings for switch boxes with which adjustment of the frames or rings in flush position with the finished wall surface can be accomplished no matter at what angle the switch box is with respect to a wall surface.

A further object of this invention is to provide switch frames and plaster rings which insure secure support for switch boxes, etc. and in addition to provide a neat flush mounting for switches and other electrical equipment.

These and other objects and advantages will become apparent from the following description and the accompanying drawing, in which:

Figure 1 is a perspective view of an outlet box showing a switch frame constructed in accordance with the invention having a switch mounted therein.

Figure 2 is a side elevational view of the outlet box switch frame and switch shown in Fig. 1.

Figure 3 is a front elevational view of a plaster ring constructed in accordance with the invention.

Figure 4 is a side elevational view of an outlet box and the plaster ring shown in Fig. 3.

Figure 5 is a sectional view taken along line 5—5 of Figure 1.

Figure 6 is a fragmentary view taken from the rear of the plaster ring, as shown in Figure 3.

Figure 7 is a front elevational view of a two-gang switch frame.

Figure 8 is a side elevational view of the switch frame of Fig. 7.

Figure 9 is a bottom elevational view of the frame of Fig. 7.

Figure 10 is a front elevational view of a plaster ring as employed with a square cover plate.

Figure 11 is a side elevational view of the ring and cover plate of Figure 10.

Similar reference characters represent similar parts in the several figures.

In building construction, particularly in the construction of buildings having large electrical installations, approximately 95% of the electrical outlet boxes are installed before the walls are installed. Conduits or cables are stubbed up through cement floors and down from the ceilings into the various types of electrical outlet and connecting boxes. Many of the walls and partitions are masonry where there is no chance to support the outlet boxes properly. The boxes as a result do not remain plumb and at right angles or flush with the masonry or other wall surface.

Architects, builders and inspectors are more particular nowadays, and it is often required that plaster rings or switch frames be flush with finished wall surfaces instead of being left back in the wall from one-half to one inch or more. For many years standard rings and frames have been made with are not adjustable. These rings and frames were made in depths which varied from 1/4" to 1 1/4" in 1/8" variations in order to provide a means of obtaining at least an adjustment in depth variations. Naturally this required many sizes and a considerable amount of time in handling and selecting the right depth ring for proper adjustment was required.

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Today's high costs among other reasons have resulted in manufacturers discontinuing cost of the sizes. Some manufacturers today make only two or three different depths. This makes it impossible to get anywhere near the proper adjustment. Frames and rings which are adjustably connected to boxes have been devised but they are either too complex and costly or they do not provide for proper adjustment.

The herein disclosed invention, as will be noted, provides a means of fully solving the problem of aligning the frames or rings with wall surfaces. With my plaster rings and switch frames any adjustment can be made flush with the wall surface, no matter what angle or position the junction box might take with respect to the outer wall surface and a full range of adjustment for depth of the ring or box is possible. My connections are such that a universal joint type of mounting for the rings and frames is accomplished. Adjustment can be had in any direction. A corner of the box or equivalent one-fourth quadrant of the ring, as the case may be, can be moved outwardly or inwardly with respect to the other portions of the frame or rings. Thus there is substantially a universal angular adjustment possible with respect to the box in relation to adjustment for depth. This obviously provides means for attaining a truly flush mounting.

Referring now particularly to the drawings, reference character 10 indicates a junction box of the type normally installed in modern construction. The box is provided with a cover plate 11 which is attached to the box by means of mounting screws in the usual fashion. The cover plate is provided with a rectangular extension 12. The extension is formed by upstanding flange elements. The extension 12 forms a chamber open at opposite ends. The upper and lower flanges have returned legs or flanges 13 and 14. Each of the legs 13 and 14 are provided with two threaded openings 15 and 16 and a central opening 17.

Switch frame 18, which is also rectangular in shape, is adapted to be inserted into the opening in extension 12. The frame is also adapted for angular movement with respect to extension 12, as will be hereinafter described. The switch frame is formed so as to provide adequate clearance between the frame and the extension for permitting such angular movement. It is seen the frame 18 has an extending portion received in the extension 12 of cover plate 11. This extending portion forms a chamber as does the cover plate extension 12 with the chamber of the switch frame being received in the chamber of the cover plate. The two chambers form a means of fully enclosing a switch such as the one illustrated. The chamber formed in the switch frame is open at its opposite ends. The upper and lower sides of the switch frame are provided with outturned flanges 19 and 20. Flanges 19 and 20 are provided with two openings 21 and 22 for reception of screws 23 and 24, which have threaded engagement with threaded openings 15 and 16. It should be noted that there are four screws and that they are disposed adjacent each end of one of the flanges 19 and 20. This provides maximum stability and also enables better adjustment of the frame within the extension. Flanges 19 and 20 also contain threaded openings for receiving switch mounting screws 25 and 26 which maintain switch 27 in position. The two chambers of the cover plate and switch frame form a continuous enclosure for a switch such as switch 27 or any other type of fixture. No matter what angular position the switch frame assumes with respect to the cover plate, there is still a continuous chamber for the switch. Thus the switch is fully enclosed no matter what adjustment is necessary to get the switch frame flush with a wall surface. There is no opening between the junction box and the face plate which is placed against the outer surface of a wall. A completely fire-proof switch mounting is thus obtained. There is no gap between the junction box and the plates mounted flush with the wall through which sparks might escape. All the electrical connections and the switch itself are fully confined within an enclosure.

Screws 23 and 24 can be rotated with an ordinary screw driver so as to adjust any one of the corners of the frame 18 or the whole frame, or two or three corners

toward and away from the extension 12. Because of the four-point mounting a substantially universal connection between the switch frame and the extension is afforded. No matter what angular position the switch box should assume with respect to the finished wall, the switch 27 can be mounted flush with the wall by virtue of the fact that the frame 18 can be so adjusted.

It should be pointed out that the difference in exterior dimension of the frame 18 and the interior dimension of the extension 12 is such as to permit this universal movement. In Fig. 5 there is illustrated an undersized cone-shaped washer 28. Washers 28 are positioned on the screws 23 and 24 after the screws have been inserted in the outer frame 18. The cone-shaped washers are undersized and pushed onto screws by a power press. The press flattens out the washers causing them to bind fast to the screws the same as if the washers were a part thereof. The washers maintain the screws in position on frame 18, to permit rotation thereof.

Figures 3 and 4 illustrate a plaster ring and cover plate constructed in accordance with my invention. Reference character 30 indicates an outlet box having the usual punch-out opening 31. Cover plate 32 is secured to the outlet box by means such as screws 33. The cover plate is provided with a circular flange 34 which has an in-turned edge 35 and bosses such as 36, having threaded openings 37. Ring 38, which is adapted to be received within the opening in cover plate 32, is provided with bosses 39 formed on the outer upper surface thereof and channels 40. Four screws 41 are mounted one in each of the bosses 39. The screws threadingly engage the openings 37, and are each provided with washers 28. The plaster ring is also provided with inwardly extending bosses 42, which are adapted to threadingly receive screws 43 for mounting a switch or other device.

Numerals 45 and 46 in Figures 1 and 3 indicate the position of the median longitudinal plane of the switch enclosures 18 and 38. Connecting screws 23, 24 and 41 are mounted at points laterally equidistant from such median planes. The screws are also spaced laterally equidistant from the median planes extending at right angles to planes 45 and 46, respectively.

By adjusting any one of the screws 43, a quadrant of the ring 38 can be moved inwardly and outwardly with respect to the cover plate 32. Lateral adjustment of the plaster ring with respect to the box is accomplished by adjusting the four screws 43 similarly to the manner in which the frames can be adjusted. Thus the plaster ring can be adjusted to be flush with a wall surface, no matter at which angle the switch box 30 might be positioned with respect to such surface.

Figures 7 to 9 illustrate a modified form of the invention in which a two-gang switch frame is employed. It is understood that frames may be designed in accordance with the invention for use with any number of switches or other devices. As shown 50 indicates the cover plate to which the switch frame 51 is adjustably connected. The switch frame is movably mounted within the cover plate extension 52. Spaced flanges 53 extend laterally outward from extension 52, and lie opposite spaced flanges 54 extending outwardly from switch frame 51. Four adjusting screws 55, each of which is provided with a press-fitted washer 56, are rotatably received in flanges 54 and threadingly connected to flange 53. Flanges 54 are also provided with threaded openings 57 for reception of screws used to mount switches or receptacles, pilot lights, etc.

Figures 10 and 11 illustrate a plaster ring mounted in a square-shaped box cover 60. The box cover is provided with openings 61 for connection to a junction box. The plaster ring and cover plate are otherwise similarly constructed to the plaster ring and cover plate shown in Figures 3, 4 and 6, and like parts are shown with primed reference characters corresponding to the reference characters shown in the latter three figures.

Both the multi-gang switch frame of Figs. 7 to 9 and the plaster ring of Figs. 10 and 11 are adjustable in the same manner as their corresponding devices illustrated in Figs. 1 and 3, respectively. The adjusting screws are mounted at points laterally equi-distant from the median plane 62 of the switch frame and 63 of the plaster ring, respectively, and are also spaced laterally equi-distant from the median planes extending at right angles to planes 62 and 63.

From the foregoing description it is seen that the

switch enclosures 18 and 38 are means for adjusting the mounting of switches and outlets so that neater, more secure electrical connections will be provided.

While I have shown and described a preferred form of my invention, it will be understood that variations in details of form may be made without departure from the invention as defined in the appended claims.

I claim:

1. An adjustable junction box switch mounting, comprising a cover plate adapted to be secured to a junction box, an extension formed on said cover plate, flanges attached to said extension, threaded openings provided in said flanges adjacent each end thereof, and a switch enclosure adapted to be received in said extension, said switch enclosure having an extended portion loosely received in said extension and angularly adjustable with respect thereto, said switch enclosure having flanges formed at each of two ends thereof, the last named flanges being adapted to overlie the first named flanges and having openings for receiving screws threadingly received in said threaded openings, the openings on the switch enclosure being adjacent to each end of each of the last named flanges, said screws connecting said cover plate and said enclosure, and operable to adjust the angular position of said enclosure with respect to said cover plate, said extension and said extended portion cooperating to form a continuous enclosure for a switch, and means for mounting a switch in said continuous enclosure.

2. An adjustable mounting for a switch, comprising a junction box cover plate having a projecting extension formed thereon having an opening for receiving a switch enclosing member, threaded openings provided on flanges extending laterally of said opening and adapted to receive mounting screws, a switch enclosing member adapted to be movably connected to said extension and having a projecting portion received in said extension and forming therewith a continuous enclosure and having spaced openings for receiving said mounting screws, said mounting screws adjustably connecting said switch enclosing member and said cover plate and being spaced so as to provide a means for adjusting the angular position of said switch enclosure with respect to said extension, and means for mounting a switch in said continuous enclosure.

3. Means for adjustably mounting a switch on a junction box, comprising an extension connected to said box, a switch having a projecting portion telescopically received in said extension enclosure, four spaced threaded openings provided in said extension, adapted to receive mounting screws, four spaced openings provided in said switch enclosure and adapted to receive said mounting screws, said mounting screws being spaced so as to provide universal angular and lateral adjustment of said switch enclosure with respect to said extension, said mounting screws being at points equidistant laterally from a median longitudinal plane of said switch enclosure, said projecting portion and said extension cooperating to form a continuous chamber, and means for mounting an electrical fixture in said continuous chamber.

4. In combination with an electrical outlet box, an extension connected to said box having an opening therein, a switch enclosure having an extending portion adapted to be telescopically connected to said extension, mounting screws, threaded openings formed in said extension, adapted to receive said mounting screws, openings formed in said switch enclosure for receiving said mounting screws, said mounting screws being spaced from a median plane of said switch enclosure so as to provide angular adjustment of said switch enclosure relative to said extension, said extension and said extending portion forming a continuous chamber extending from said outlet box adapted to enclose an electrical fixture.

5. In combination an electrical outlet box, an extension connected to said box, having an opening for telescopically receiving a plaster ring, an annular flange formed on said extension extending generally laterally of said opening, means on said flange for receiving mounting screws, a plaster ring having means receiving said screws so as to mount said ring on said extension, said plaster ring cooperating with said extension to form a continuous enclosure for an electrical fixture extending outwardly of said box.

6. An adjustable junction box switch mounting comprising a cover plate adapted to be secured to a junction

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box, an extension comprising a chamber open at both its ends formed on said cover plate, and a switch enclosure having an extended portion forming a chamber open at both its ends loosely received in said extension and angularly adjustable with respect thereto, means for connecting said enclosure to said plate and adjusting the angular position of one chamber with respect to the other, said extension and said extending portion cooperating to form a continuous enclosure for a switch in all angular positions of said one chamber with respect to said other chamber, and means for mounting the switch in said continuous enclosure.

7. An adjustable junction box switch mounting com-

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prising a cover plate adapted to be connected to said junction box, a switch mounting enclosure received in said cover plate and forming therewith a continuous enclosure for a switch, said switch enclosure being angularly adjustable with respect to said cover plate and forming a continuous enclosure with said cover plate when angularly disposed with respect thereto.

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