

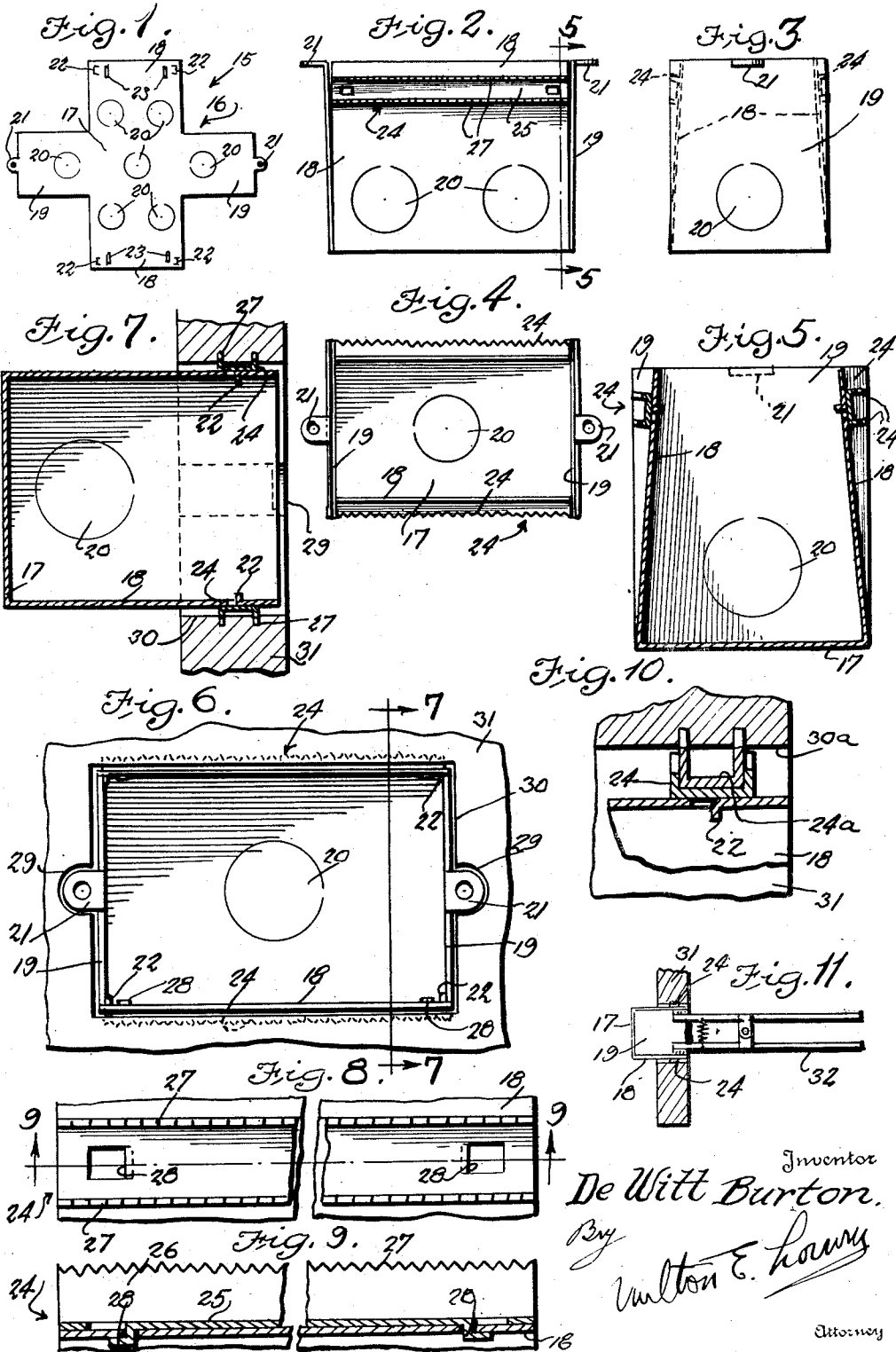
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ELECTRICAL SWITCH AND RECEPTACLE BOX

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ELECTRICAL SWITCH AND RECEPTACLE BOX

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16 Claims. (Cl. 247—21)

This invention relates to certain new and useful improvements in electrical switch and receptacle box.

An important object of the invention is to provide a switch or receptacle box wherein the wall structure is struck from a single blank of material to produce a box of the non-gangable type as distinguished from known boxes constructed of three parts to form the walls that were primarily designed for gang or series assembly.

A further and important object of the invention is to provide a switch or receptacle box that is automatically anchored in set position during placement thereof in a wall or other opening and eliminating the use of plaster ears so that a box may be set into an opening with less difficulty.

A further object of the invention is to provide an electrical switch or receptacle box wherein the wall structure is struck from a single blank of material with the walls possessing inherent resiliency, the opposed walls being normally movable toward each other, a pair of the opposed walls initially extending inwardly of the other pair of opposed walls and carrying toothed bars to accomplish the anchoring of the box, the opposed walls carrying the toothed bars being spread apart when the box is inserted in a mounting opening to permit the other pair of opposed walls to move inwardly toward each other and inwardly of the walls carrying the toothed bars for maintaining the toothed bars in engagement with the walls of the mounting opening.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing:—

Figure 1 is a developed plan view of a blank from which the electrical switch or receptacle box is constructed;

Figure 2 is a side elevational view of the box formed from the blank shown in Figure 1 and showing a toothed anchor bar carried by a side wall of the box;

Figure 3 is an end elevational view showing the toothed bar carrying side walls normally disposed inwardly of the end walls of the box;

Figure 4 is a plan view of the open side of the box showing the toothed anchor bars initially disposed inwardly of the side edges of the end wall;

Figure 5 is a vertical cross-sectional view taken on line 5—5 of Figure 2;

Figure 6 is a fragmentary elevational view of a part of a wall with the box anchored within an opening in the wall;

Figure 7 is a vertical cross-sectional view taken on line 7—7 of Figure 6, showing the toothed bars engaged with the walls of a mounting opening;

Figure 8 is a fragmentary side elevational view, showing a toothed bar attached to a side wall of the box;

Figure 9 is a vertical longitudinal sectional view taken on line 9—9 of Figure 8, showing the tongue connection between the toothed bar and the side wall of the box;

Figure 10 is a detail sectional view showing the placement of a second toothed bar to compensate for mounting openings of increased diameter; and

Figure 11 is a detail sectional view showing a pair of expanding pliers for expanding the side walls of the box into anchoring engagement with the walls of the mounting opening.

The electrical switch and receptacle box in this application is primarily designed for old work as distinguished from new work. The box heretofore employed comprised three wall sections including a one-piece bottom and ends and separable side walls to permit gangable installation and such boxes require a series of lug and screw devices for retaining the separable walls in assembled formation. The end walls of the known box carry mounting plates or plaster ears to facilitate the mounting of the box by means of the plaster ears on studding or other support. The screws for attaching the plaster ears to the end walls of the box project interiorly of the box and are exposed to the wire leading from a switch and frequently produce what is known in the trade as a "swinging ground". Vibrations frequently effect the contact between the plaster ear attaching screws and the wiring and a surge in the current, especially during an electrical storm will frequently jump at this point and due to fusing, creates a fixed ground. It is an extremely difficult proposition to mount the box provided with plaster ears for use in old work, that is, the installation of boxes in walls, floor boards and the like after the completion of a building because in a plaster wall, the plaster or wall paper or paint frequently chips or breaks away when providing a clearance for the plaster ears that is difficult to cover by a face plate and requires additional repairs. It is also difficult to locate a proper mounting for the plaster ears that are usually engaged with lathing and the latter frequently provides an unstable support for the box.

The box of this invention is extremely simple in construction, easy to install and is free of all projections except for the switch mounting ears and may be readily installed in walls of metal lath or sheet rock construction and floor boards. Briefly described, the box is formed from a single piece of material struck from a blank to provide inherently resilient side and end walls normally movable toward each other with the side walls initially projected between the end walls and carrying toothed anchor bars adapted to be moved into engagement with the walls of a mounting opening after placement of the box in a mounting opening and at which time the end walls are moved inwardly towards each other to be positioned between the side walls for holding the latter extended. Means is provided on the side walls to limit inward movement of the end walls and when the box is anchored in position in a mounting opening, relative movement of the walls is prevented by the mounting of the switch on the ears carried by the end walls.

Referring more in detail to the accompanying drawing and particularly to Figure 1, the reference character 15 designates the blank from which the box of single piece construction is struck, the box blank 16 including sections to provide a bottom wall 17, side walls 18 and end walls 19. Each wall is provided with one or more knock-outs 20 to facilitate the passage of electric wires. An apertured switch mounting ear 21 is carried by the outer end of each end wall 19 and the outer edge of each side wall 18 adjacent each corner thereof is provided with a struck-out abutment 22 and an adjacent opening 23 for purposes presently to appear.

The walls of the blank 16 are folded into box-formation as illustrated in Figures 2 to 7 and the several walls possess inherent resiliency to cause the opposed walls to move toward each other and as illustrated, the side walls 18 initially extend inwardly of the end walls 19 that have the switch attaching ears 21 bent outwardly at right angles to the end walls.

As shown more clearly in Figures 8 and 9, a toothed anchor bar 24 is carried by the outer side of each side wall 18 adjacent its free edge, extending lengthwise of the side wall and being of U-shape in cross-section, comprising a bottom wall 25 and side walls 26 serrated at their outer edges as at 27. A finger 28 is struck out from the bottom wall 25 of the toothed bar 24 adjacent each end thereof and is passed through the adjacent opening 23 in the side wall 18 to be bent over the outer face of the side wall for locking the toothed bar thereto. It will be observed from an inspection of Figures 4 and 5 that in the initial position of the walls 18 and 19, the toothed bars 24 are located inwardly of opposite side edges of the end walls 19 so that no hindrance is offered to the box during its placement in a wall or other mounting opening.

In Figures 6 and 7, the box is illustrated as mounted in a wall, base board or other opening and in the cutting of this opening for the mounting of the box, it is the usual practice to first drill a pair of openings 29 and from the centers of these openings, cut a rectangular opening 30 in the wall or other structure 31. In the cutting of the opening 30, the drilled or bored openings 29 provide a recess for the switch mounting ears 21 as shown in Figure 6. When the box is placed in the opening 30, the expanding pliers 32 illustrated in Figure 11 is then engaged with the side walls 18 of the box for moving the side

walls away from each other and causing the serrated edges 27 of the toothed bars 24 to bite into the walls of the opening 30 as shown in Figures 6 and 7, and during which movement of the walls 18, the end walls 19, due to their inherent resiliency, move inwardly toward each other to occupy positions between the side walls 18, such movement being limited by the abutment 22 struck out from the side walls 18 as clearly shown in Figures 5 and 7. Expansion or separating movement of the end walls 19 is prevented by the mounting of the switch on the ears 21. The toothed bars 24 provide a safe and positive anchor for the box and are effective for engagement with the walls of a mounting opening in a base board, metal lath construction, sheet rock or the like. It will be observed that the usual plaster ears are eliminated and also the screws for attaching the plaster ears to the box so that danger of short circuiting or grounding is eliminated.

In the event that the opening 30 is cut to larger proportions than is required for the mounting of the box, as indicated at 30a in Figure 10, a second toothed bar 24a, U-shape in cross-section may be inserted or nested in the toothed bar 24 and in turn engage with the walls of the opening 30a for anchoring the box in position.

From the above detailed description of the invention, it is believed that the construction and operation thereof will at once be apparent and while there are herein shown and described the preferred embodiments of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:—

1. In an electric switch box, a one-piece construction comprising a bottom wall and inherently resilient pairs of opposite walls with the walls of each pair respectively normally movable towards each other with one pair of walls initially disposed inwardly of the other pair of walls, a toothed anchor bar carried by the outer face of each wall of the inwardly disposed pair adjacent their outer ends and initially lying within the side edges of the other pair of walls, and means on the inner faces of the walls carrying the anchor bars for limiting movements of the other pair of walls towards each other when the anchor bar carrying walls are spread apart to receive the other walls therebetween and to move the anchor bars into engagement with the walls of a mounting opening.

2. In an electric switch box, a one-piece construction comprising a bottom wall and inherently resilient pairs of opposite walls with the walls of each pair respectively normally movable toward each other with one pair of walls initially disposed inwardly of the other pair of walls, a toothed anchor bar carried by the outer face of each wall of the inwardly disposed pair adjacent their outer ends and initially lying within the side edges of the other pair of walls, means on the inner faces of the walls carrying the anchor bars for limiting movements of the other pair of walls towards each other when the anchor bar carrying walls are spread apart to receive the other walls therebetween and to move the anchor bars into engagement with the walls of a mounting opening, and said anchor bars adapted to receive and support a second separable anchor bar with the second anchor bar pro-

jecting outwardly of the first named anchor bar.

3. In an electric switch box, a one-piece construction comprising a bottom wall and inherently resilient pairs of opposite walls with the walls of each pair respectively normally movable towards each other with one pair of walls initially disposed inwardly of the other pair of walls, a toothed anchor bar carried by the outer face of each wall of the inwardly disposed pair adjacent their outer ends and initially lying within the side edges of the other pair of walls, means on the inner faces of the walls carrying the anchor bars for limiting movements of the other pair of walls towards each other when the anchor bar carrying walls are spread apart to receive the other walls therebetween and to move the anchor bars into engagement with the walls of a mounting opening, said anchor bars being of U-shape in cross section, and finger and slot connections between the anchor bars and the walls of the box carrying the same.

4. In an electric switch box, a one-piece construction comprising a bottom wall and inherently resilient pairs of opposite walls with the walls of each pair respectively normally movable towards each other with one pair of walls initially disposed inwardly of the other pair of walls, a toothed anchor bar carried by the outer face of each wall of the inwardly disposed pair adjacent their outer ends and initially lying within the side edges of the other pair of walls, and means on the inner faces of the walls carrying the anchor bars for limiting movements of the other pair of walls towards each other when the anchor bar carrying walls are spread apart to receive the other walls therebetween and to move the anchor bars into engagement with the walls of a mounting opening, and finger and opening connections between the anchor bars and the walls of the box carrying the same.

5. An electric switch box comprising a bottom wall and inherently resilient side and end walls respectively normally movable towards each other with the side walls initially disposed inwardly of the end walls, anchor means for the box carried by the side walls and initially lying inwardly of the side edges of the end walls to facilitate placement of the box in a mounting opening, and means for expanding the side walls for moving the anchor means into engagement with the walls of a mounting opening and permitting inward movement of the end walls to occupy positions between the side walls for holding the side walls expanded.

6. An electric switch box comprising a bottom wall and inherently resilient side and end walls respectively normally movable towards each other with the side walls initially disposed inwardly of the end walls, anchor means for the box carried by the side walls and initially lying inwardly of the side edges of the end walls to facilitate placement of the box in a mounting opening, means for expanding the side walls for moving the anchor means into engagement with the walls of a mounting opening and permitting inward movement of the end walls to occupy positions between the side walls for holding the side walls expanded, and means for limiting movements of the side walls towards each other.

7. An electric switch box comprising a bottom wall and inherently resilient side and end walls respectively normally movable towards each other with the side walls initially disposed inwardly of the end walls, anchor means for the box carried by the side walls and initially lying

inwardly of the side edges of the end walls to facilitate placement of the box in a mounting opening, means for expanding the side walls for moving the anchor means into engagement with the walls and a mounting opening and permitting inward movement of the end walls to occupy positions between the side walls for holding the side walls expanded, in combination with an electric switch mounted on the end walls and active to prevent movements of the end walls relative to the side walls.

8. An electric switch box comprising a bottom wall and inherently resilient side and end walls respectively normally movable towards each other with the side walls initially disposed inwardly of the end walls, anchor means for the box carried by the side walls and initially lying inwardly of the side edges of the end walls to facilitate placement of the box in a mounting opening, means for expanding the side walls for moving the anchor means into engagement with the walls of a mounting opening and permitting inward movement of the end walls to occupy positions between the side walls for holding the side walls expanded, and means for limiting movements of the side walls towards each other, in combination with an electric switch mounted on the end walls and active to prevent movements of the ends walls relative to the side walls.

9. In an electric switch box, a box including a bottom wall and side and end walls joined to the bottom wall at their base edges and relatively free over the side edges thereof, switch mounting ears on the outer edges of the end walls, the side walls being movable into anchoring engagement with the walls of a mounting opening with the opposite side edges of the end walls presented for abutting engagement with the inner faces of the side walls, in combination with an electric switch mounted on the ears for holding the end wall's immovable relative to the side walls.

10. In an electric switch box, a box including a bottom wall and side and end walls joined to the bottom wall at their base edges and relatively free over the side edges thereof, switch mounting ears on the outer edges of the end walls, the side walls being movable into anchoring engagement with the walls of a mounting opening with the opposite side edges of the end walls presented for abutting engagement with the inner faces of the side walls, in combination with an electric switch mounted on the ears for holding the end walls immovable relative to the side walls, and means on the side walls to limit movements of the end walls toward each other.

11. In an electric switch box, a box having pairs of resilient walls with the opposite walls of each pair normally movable towards each other, one pair of walls being disposed inwardly of the side edges of the other pair of walls during placement of the box in a mounting opening, and means carried by the inwardly disposed walls for anchoring the box in an opening when the last named walls are spread apart.

12. In an electric switch box, a box having pairs of resilient walls with the opposite walls of each pair normally movable towards each other and one pair of walls being disposed inwardly of the side edge of the other pair of walls during placement of the box in a mounting opening, anchor means for the box carried by the inwardly disposed walls, and said inwardly disposed walls adapted to be spread apart to permit inward disposition of the other pair of walls with the anchor

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means for the box movable into engagement with the walls of the mounting opening.

13. In an electric switch box, a box having pairs of resilient walls with the walls of each pair normally movable towards each other and anchor means for the box on the outer faces of one pair of walls, said walls being initially relatively disposed to locate the anchor means inwardly of the side edges of the other pair of walls during placement of the box in a mounting opening.

14. In an electric switch box, a box having pairs of resilient walls and anchor means for the box carried by one pair of walls and initially disposed to facilitate placement of the box in a mounting opening and said anchor means adapted to be moved into engagement with the walls of the mounting opening when the walls carrying the same are spread apart against the resiliency thereof.

15. In an electric switch box, a box having pairs of resilient walls and anchor means for the box carried by one pair of walls and initially disposed to facilitate placement of the box in a mounting opening and said anchor means adapted to be moved into engagement with the walls of the

mounting opening when the walls carrying the same are spread apart against the resiliency thereof, and said walls carrying the anchor means being retained in their spread apart positions by automatic movement of the walls of the other pair towards each other for locating the side edges thereof inwardly of the walls carrying the anchor means.

16. In an electric switch box, a box having pairs of resilient walls and anchor means for the box carried by one pair of walls and initially disposed to facilitate placement of the box in a mounting opening and said anchor means adapted to be moved into engagement with the walls of the mounting opening when the walls carrying the same are spread apart against the resiliency thereof, and said walls carrying the anchor means being retained in their spread apart positions by automatic movement of the walls of the other pair towards each other for locating the side edges thereof inwardly of the walls carrying the anchor means, and means on the walls carrying the anchor means to be engaged by the other walls for limiting inward movement thereof.

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