April 2, 1963 A. I. APPLETON 3,083,856

FOLD-UP OUTLET BOX WITH REINFORCED CORNERS

Filed Dec. 21, 1959

Fig. 1

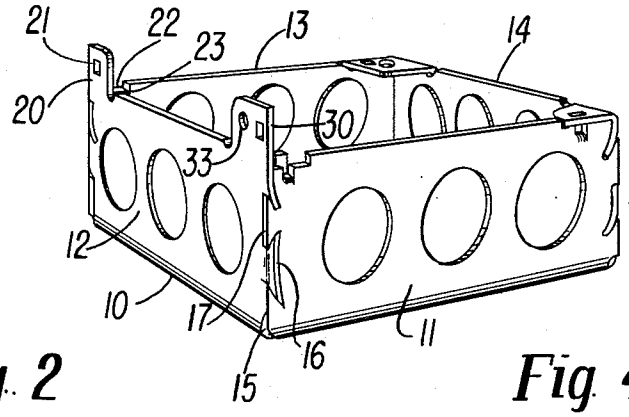


Fig. 2

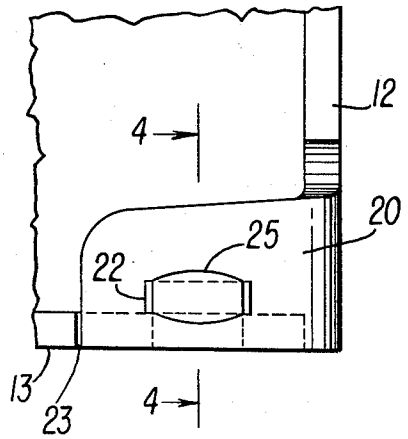
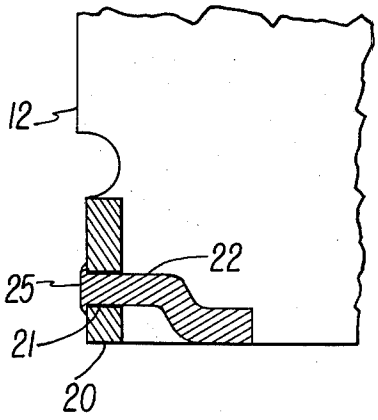


Fig. 4



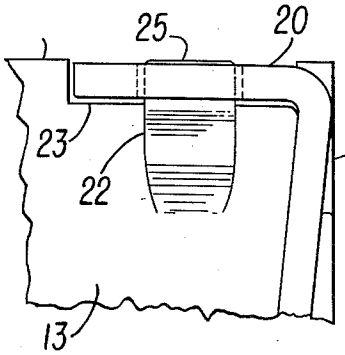


Fig. 3

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United States Patent Office 3,083,856 Patented Apr. 2, 1963

3,083,856

FOLD-UP OUTLET BOX WITH REINFORCED CORNERS

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Filed Dec. 21, 1959, Ser. No. 861,112
1 Claim. (Cl. 220—3.2)

This invention relates generally to electrical outlet boxes, more particularly, the type of box folded from sheet metal, and the method of manufacture of this type of box.

It is an object of this invention to improve the means of joining the sides of outlet boxes of this type by reinforcing the corners in a new and novel manner.

It is a further object of this invention to provide corner reinforcement adjacent the open end of the box so that the cover plate may be anchored thereto instead of to the lugs heretofore provided solely for this purpose.

Another object of this invention is to make a more rigid and stronger fold-up box construction thereby enhancing the ability of the box to withstand large forces directed toward collapsing the outlet box or tending to force it out of shape.

Other objects and advantages of the invention will become apparent from reading the following detailed description and upon reference to the drawings in which:

FIGURE 1 is a pictorial of a typical outlet box showing the corner reinforcements in different stages of completion;

FIG. 2 is a plan fragmentary view of one of the box corners;

FIG. 3 is a side fragmentary view of the same box corner; and

FIG. 4 is a sectional view substantially in the plane of line 4—4 in FIG. 2.

While the invention will be described in connection with a preferred embodiment and procedure, it will be understood that I do not intend to limit the invention to that embodiment or procedure. On the contrary, I intend to cover such alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning first to FIG. 1, a preferred embodiment of an electrical outlet box **10** is shown made by blanking a shape out of an ordinary strip of sheet material which may be sheet steel, trimming the shape to provide complementary scalloped edges for the side walls as shown by **16** and **17** and then erecting the sides **11**, **12**, **13** and **14** and joining them together at the edges to form an interlocked corner as indicated by the reference numeral **15**. A square box is shown, although it is understood that an oblong or other shape may be employed if desired and also the side walls could be fitted together without interlocking them.

According to this invention, reinforcement of a typical corner joint is obtained by interlocking elements on adjacent sides of the box. For this purpose the blank of sheet material is trimmed to provide a lug **20** on certain sides adjacent the corner, the lug **20** having an opening **21**, while the other sides are provided with a tab **22** adapted to be received in the opening **21**. The reinforcement is obtained by bending the lug **20**, a lug is shown upright in FIG. 1 on the left side of the box, over the tab **22** so that the latter enters the opening **21**. To provide a neat and structurally sound corner joint, the side wall **13** has a notch **23** along the upper edge adjacent to the corner **15** so that when the lug is bent over the tab, a flat surface is formed approximately level with the top edges of the box in the above recited manner. To lock the lug in place, a portion of the tab protruding through

the opening **21** in the lug and projecting above the latter is swaged to form a head on the tab.

The successive operations required to produce the finished box with the interlocked elements and comprising an illustrative example of the method of this invention may be carried out in a progressive die in a single press or in separate dies in different presses, as desired, and as may be preferred to effect economies or to utilize machinery or factory space in keeping with production requirements or factory conditions. However, no matter whether a single press and progressive die or different presses and separate dies are employed in the manufacturing process, the method of this invention may be considered to involve a series of steps essentially including blanking, where strip steel is punched to produce a blank having the desired contour; trimming, where the blank is finished in such a way as to provide lugs, openings in the latter, tabs and notches, one each to the respective corner joints of the side walls; with the lugs ultimately bent over the tabs and the tabs swaged, the latter two results obtained, preferably in one machine operation.

Accordingly, as a first step in the manufacture of an outlet box with a reinforced corner, thin gauge strip steel is punched to produce a shape with a multiplicity of similar arms. The preferred embodiment of the box **10**, in FIG. 1, would appear after this blanking operation as a cruciform. After erection the arms of the cruciform become the side walls **11**, **12**, **13** and **14**, and the body becomes the bottom of the box. Each of the side walls is trimmed so that a lug **20** having a hole **21** to receive the tab **22** appears on one of the side walls, and a tab **22** with a notch **16** appears on the other side wall. The tab **22** is preferably formed to lie offset from the plane of the side wall from which it projects so that locking from the swaging operation takes place inside the confines of the outlet box and thus a smooth surface exists about the outside perimeter of the box.

The blanking operation produces an oversized shape, thus trimming and notching operations are utilized to provide the tabs, lugs and notches mentioned above. In the preferred embodiment two different types of lugs are shown, **20** and **30**. With this provision the larger lug **30** provides sufficient material to allow a hole **33** to be drilled therein and tapped with suitable threads so that a cover plate (not shown) holding screw can be threadably engaged.

The next operation is to erect the side walls of the box.

Following this operation the elements on the adjacent side walls are interlocked to form the reinforced corner. To achieve this the lugs are bent over the tabs and the latter are swaged. Attention is directed to lug **20** and tab **22** but the operation would be similar as to all other lug-tab combinations at each of the joints. The bending and swaging may be performed in one operation to provide a corner reinforcement which appears as shown in FIGS. 2 and 3. The swaging which locks the lug down on the tab is shown in the sectional view of FIG. 4. The head **25** is larger than the hole **21** and thus will retain the lug in its bent position.

The effect of this corner reinforcement is to make more rigid, stronger, electrical outlet boxes in an inexpensive, economical manner. All the advantages of a compact construction without protruding parts or sharp edges is obtained by having the reinforcement members or elements integral with the side walls and fitted together so as to remain within the structural confines of an ordinary outlet box. This method of corner reinforcement has great advantages already obvious from their increased specification rating.

I claim as my invention:

In an electrical outlet box of the type made from a unitary sheet metal blank having extending arms folded

to shape the side walls and having a plurality of corner joints formed by adjacent side walls each corner joint comprising, in combination, scalloped interfitting complementary vertical edges on the arms interlocking for strengthening the lower portion of the corner joint against transverse bending forces applied to said side walls and reinforcement means to strengthen the upper portion of the corner joint against said bending forces including a notch extending along the top edge of one of said side walls away from the corner and adjacent edge of the other side wall, a tab projecting from said one side wall and extending above the bottom of said notch and terminating substantially in the plane of the top edge of said side wall, said tab being offset from the plane of said one side wall toward the inside of the box, the offset portion of said tab traversing the edge of the notch intermediate the ends thereof, and a bent over lug integral with the other side wall and extending inwardly therefrom, said lug having an opening for receiving said tab with said lug surrounding said tab so as to tie the corner joints fast against said transverse bending forces on said walls, said reinforcement means for strengthening the upper portions of the corner joints being substantially within the outside surface planes of said side walls so as to form smooth, square joints.

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