May 2, 1939. A. W. THOMASEN 2,156,644

SWITCH BOX AND METHOD OF MAKING SAME

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Fig. 1.

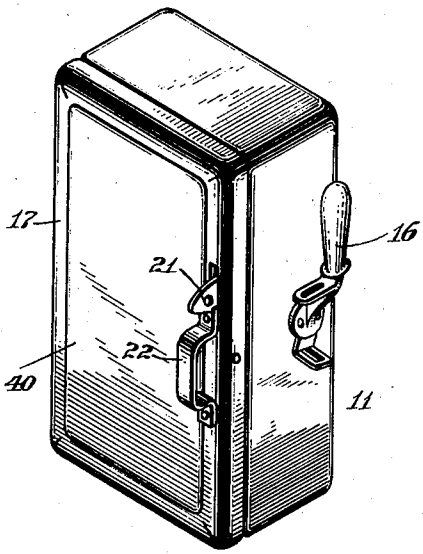


Fig. 3.

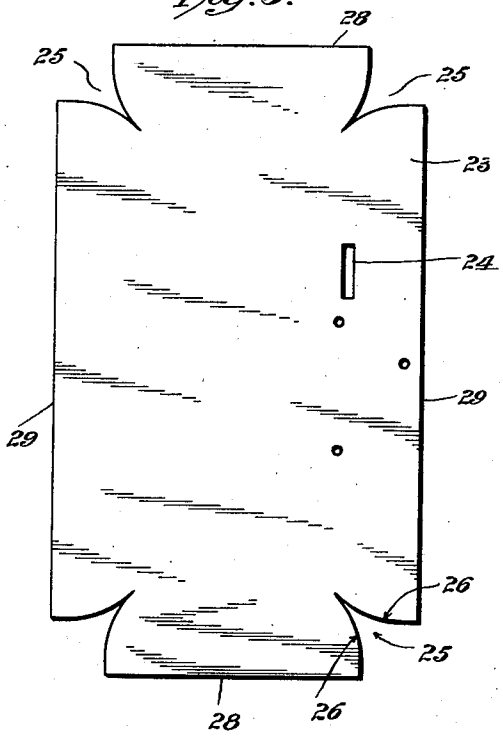
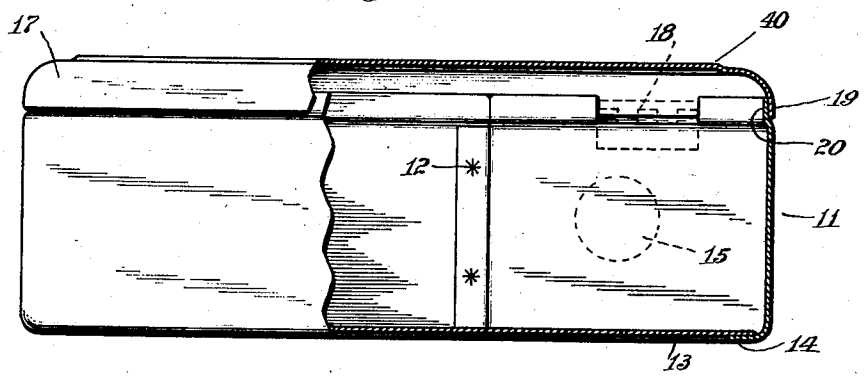


Fig. 2.



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Fig. 4.

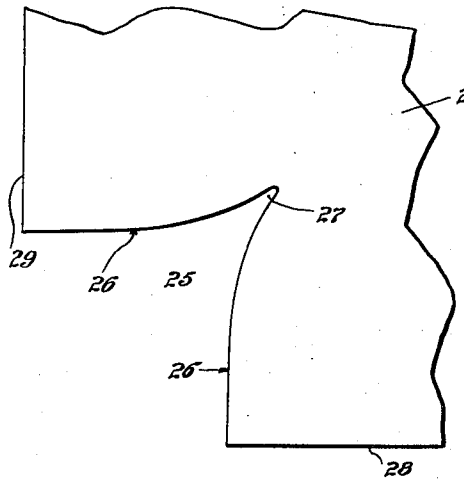


Fig. 5.

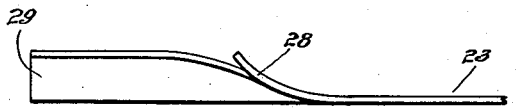


Fig. 6.

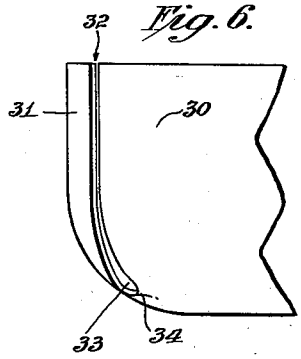


Fig. 7.

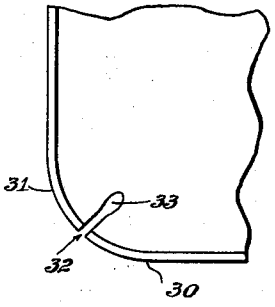


Fig. 8.

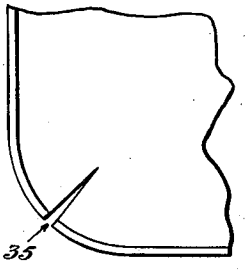


Fig. 9.

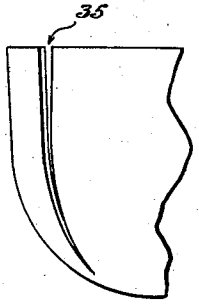
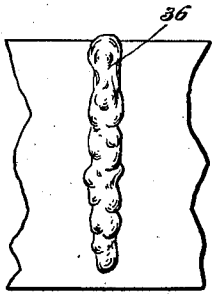


Fig. 10.



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UNITED STATES PATENT OFFICE

2,156,644

SWITCH BOX AND METHOD OF MAKING SAME

Alfred W. Thomasen, Plainville, Conn., assignor to The Trumbull Electric Manufacturing Company, Plainville, Conn., a corporation of Connecticut

Application May 22, 1937, Serial No. 144,130

3 Claims. (Cl. 29—148.2)

My invention relates to metallic boxes especially intended for enclosing electric switches, etc. and this application is a continuation in part from my application Serial Number 56,403 filed December 28, 1935.

The main object is to economically provide a deep and strong one-piece sheet metal part such as a cover with curved or rounded edges and corners.

Ordinary shallow covers can be readily formed by simple stamping and drawing operations but when a deep cover or box part is required the operation becomes comparatively difficult and expensive.

I have worked out a construction and method or process of manufacture which makes it possible to easily form a cover or a box body with rounded edges and rounded corners of various sizes and from material of different thicknesses by the use of very few and simple tools or dies.

The drawings illustrate the invention in the form of the finished box and show the steps in forming the corners and edges.

Fig. 1 is a perspective view of a box with a cover of my invention.

Fig. 2 is a side view and partial section.

Fig. 3 is a view of a blank of sheet metal from which the cover is formed.

Fig. 4 is a full sized view of one corner of the flat blank.

Fig. 5 is an edge view of the same after the first forming action or stage.

Fig. 6 is an edge view of the corner after the second forming action.

Fig. 7 is a plan view of the parts of Fig. 6.

Fig. 8 is a plan view of the corner after the third forming action.

Fig. 9 is an edge view of the parts of Fig. 8.

Fig. 10 is a fragmentary detail showing the material filled in by welding.

The invention is shown and will be described as applied to the cover portion of the box. The body 11 may be formed in any suitable manner for instance as set forth in my former application. As shown, the sides and ends of the box body are formed of a strip or strips of metal joined for instance by welding at 12. The bottom plate 13 is inserted in the flanged edges 14 of the side and end walls and welded in place. This bottom plate may be made of heavier metal to better withstand the strains due to the mechanism secured to it and to carry the weight of the entire box and contents when the box is secured to the wall. The side and end walls may have knockouts 15 or other means for connecting conduits or cables. The operating handle 16 is suitably supported by the box body.

The cover 17 with rounded edges and corners is preferably hinged at 18 to a side edge of the body of the box and the skirt 19 of the cover overlaps the inset flange 20 of the body. A latch 21 may be employed to hold the cover closed and a handle 22 may be employed to assist opening.

The cover is formed of a flat blank 23 of metal, for instance of steel, of suitable gage. This blank is perforated at 24 for the latch and may be perforated at any other places desired either before or after the blanking or forming operation.

In order to be able to form the round edges and corners of the cover I cut out each corner of the blank as at the dart shaped cut-out 25 leaving curved edges 26. These edges approach each other at the recess 27 (see Fig. 4) the inner end of which is preferably rounded somewhat so as to make it possible to more easily blank or stamp out the metal from between the edges 26—26. The corners may be cut out all at once or by four separate cuts of the same pair of dies.

The outer edge of each end 28 and each side 29 is then curled upwardly as shown in Fig. 5. Here also the four portions may be all done at once or by four separate actions of a single pair of dies.

The next action is to form the sides and ends as at 30 and 31 in Figs. 6 and 7 by suitable bending dies either all at once or one side or end at a time. This leaves a single curved slot 32 in each corner which is somewhat larger at 33 just above the bottom and leaves a slight bulge 34 apparently of excess metal.

The next operation reshapes the corners as shown in Figs. 8 and 9 and partially closes the slot 35 as the radius of the corner curve is somewhat increased. This action draws and smooths out the excess or "slack" metal 34 so that the surface is perfectly smooth and substantially a quarter spherical area.

The next step fills in the slot 35 at each corner with metal 36 by butt welding so that the flanges or edges of the cover are integrally united.

The corners are then ground off, polished and finished smooth as desired. A part 40 of the main surface may be bossed or pressed out of the plane of the remainder if desired.

This method of construction especially adapts itself to the use of few and simple tools with which many sizes of box parts may be made.

For instance only a single simple pair of dies is required to blank out all the corners—one at a time. Only one pair of dies is required for curl-

ing the four edges as shown in Fig. 5—one at a time. Only one pair of dies is required to bend up the four sides as shown in Figs. 6 and 7—one at a time, and only one pair of dies is required to reshape the four corners—one at a time.

Of course no special tools are required for welding or for grinding the corners.

Assuming the gage of metal to be approximately the same, a single set of tools or dies as above mentioned is all that is needed to make covers for any dimensions of box and any proportion of length to breadth and assuming the same depth of flange is to be used on all covers.

This greatly decreases the cost of dies and tools and makes it possible to form special sizes of boxes uniformly and economically even in small lots.

This does away with heavy and expensive presses and yet produces a strong and well finished product.

I claim:

1. The method of forming a part of a sheet metal box having rounded edges and rounded corners which comprises first forming a blank with cut-out corners whose edges are dart shaped, then curling the sides and ends of the blank, then bending the sides and ends until the corner edges nearly meet, then reshaping each of the corners and leaving a single curved slot in each then butt welding the edges of the corner slots then grinding off the excess metal from the filled-in corner slots.

2. A sheet metal box part formed of a single plate of metal having a main part with integral side and end flanges rounded at their connections with the main part and rounded at their ends and integrally connected by a single curved line of metal welded into the joint between adjacent sides and ends.

3. The method of forming a rectangular metallic box cover having rounded edges and rounded corners which includes first making a blank of sheet metal by stamping out metal in four corners leaving the edge of the metal at each end and side in each corner curved convexly with respect to the adjoining edge and the two adjoining edges meeting in a corner, then curling the ends and sides of the blank, then bending the curled ends and sides and bringing the adjacent curved edges in each corner close together in a single curved line, then reshaping the corners into approximately spherical form and then butt welding the edges together in the corners.

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