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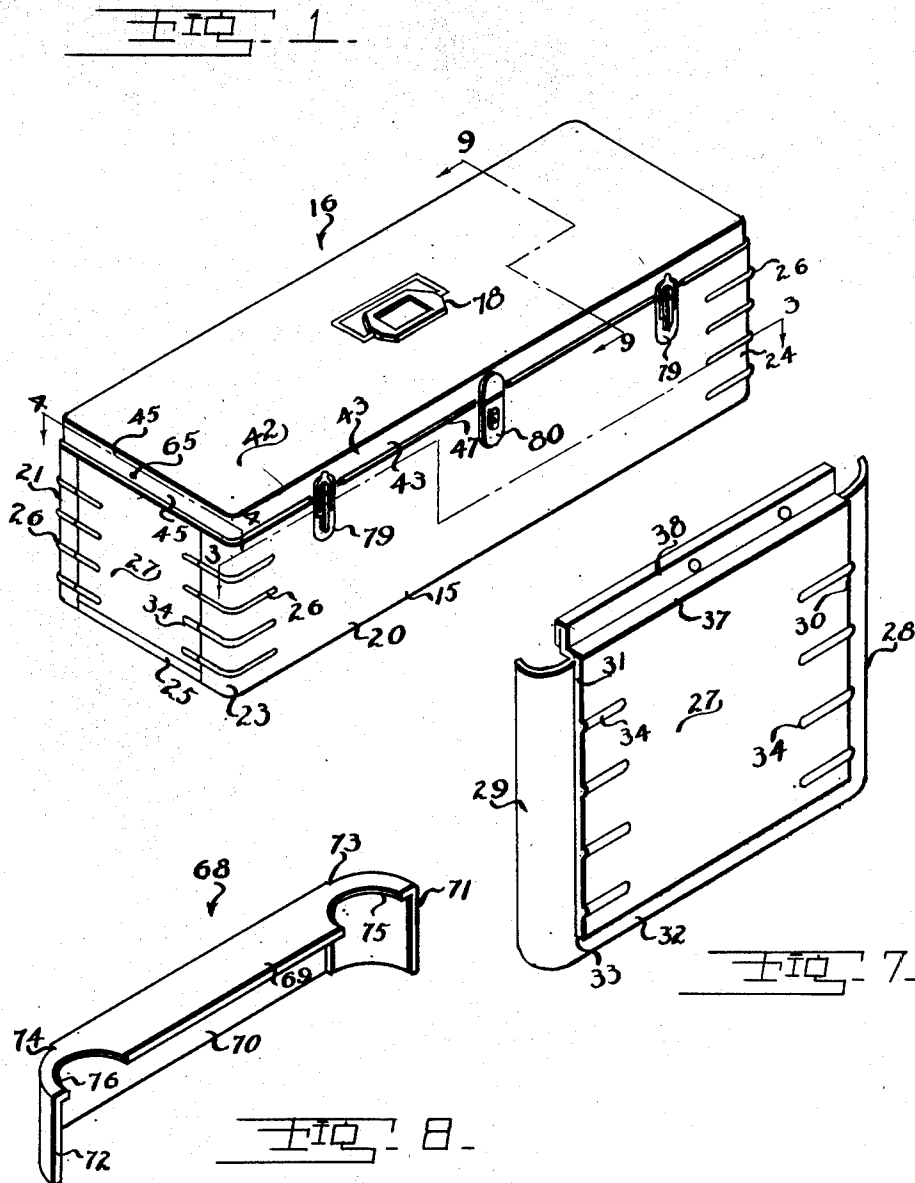
H. M. PIKER

2,596,043

METAL BOX

Filed Dec. 26, 1946

3 Sheets-Sheet 1



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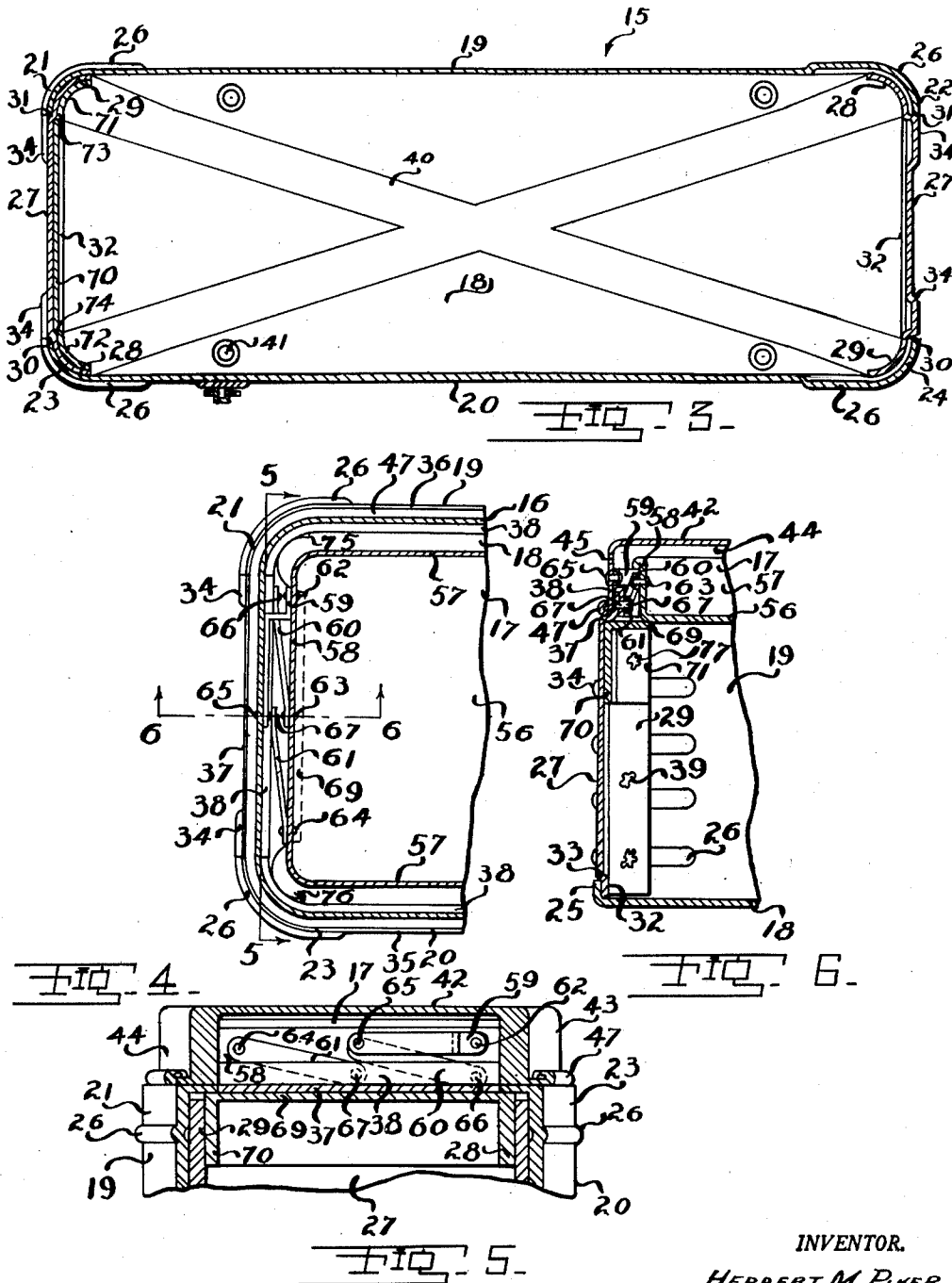
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3 Sheets-Sheet 2



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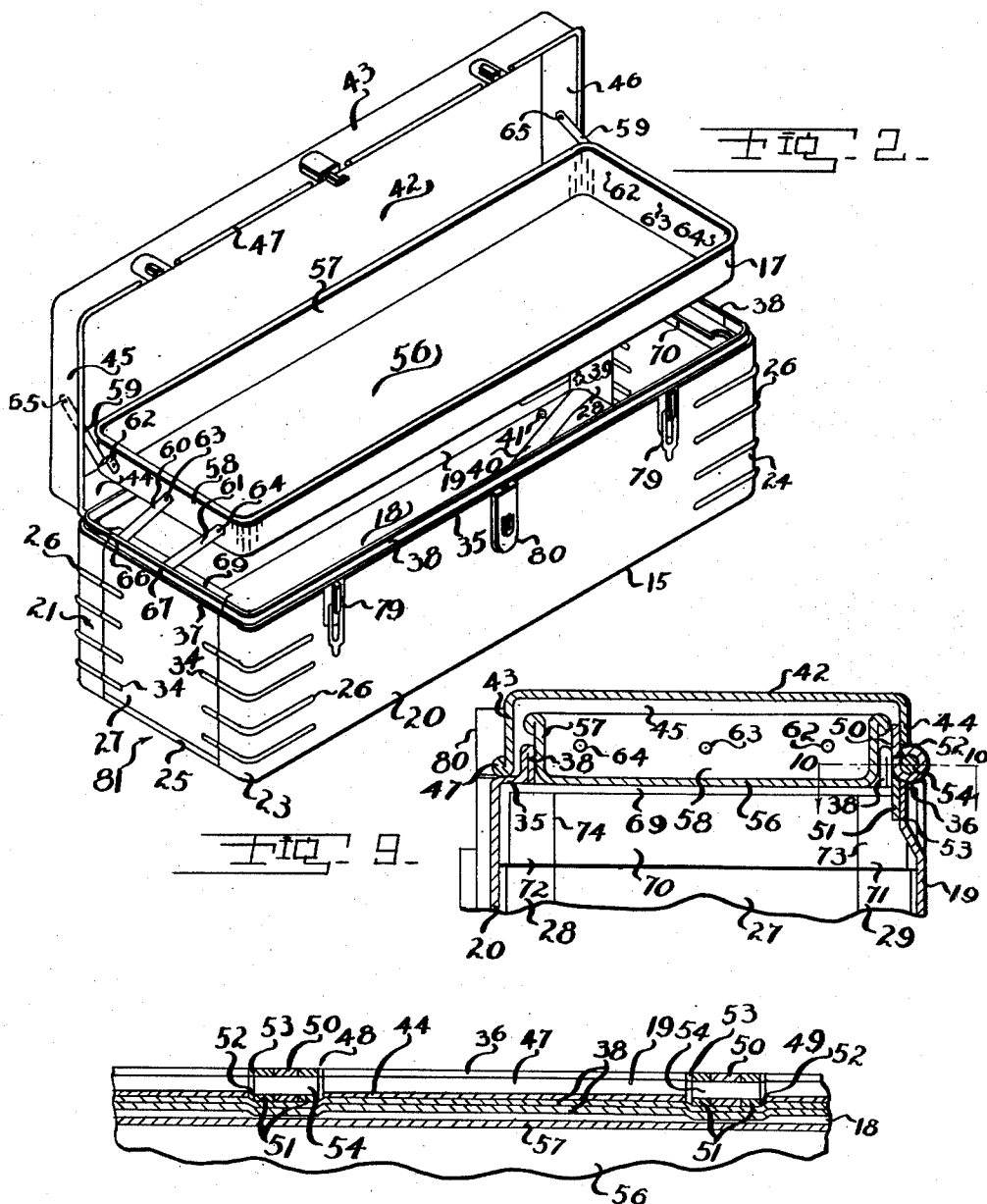
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3 Sheets-Sheet 3



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2,596,043

METAL BOX

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5 Claims. (Cl. 220—4)

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This invention relates to improvements in metal boxes which may be designated as a utility box, fishing tackle box, tool box, lunch box and the like.

The principal object of the present invention is the provision of a four-sided metal box which is materially strengthened over similar constructions now available.

Another object of the present invention is the provision of a four-sided metal box of the kind provided with a tray interiorly of the cover and in which a tray support is provided that is also utilized for reinforcing the end and side walls of the box as well as the corners thereof.

Another object of the present invention is the provision of a metal box or container which has the corners thereof embossed for reinforcement and utilizes separate end walls from the main blank suitably embossed to correspond with the end wall embossing in reinforcing the corners of the box.

A still further object of the present invention is the provision of metal box or container that is economical to manufacture and acquire and which has unusual strength built into it for producing an exceptionally rigid box of the enclosed tray type.

Other objects and advantages of the present invention should be readily apparent by reference to the following specification considered in conjunction with the accompanying drawings forming a part thereof and it is to be understood that any modification may be made in the exact structural details there shown and described within the scope of the appended claims, without departing from or exceeding the spirit of the invention.

In the drawings:

Fig. 1 is a perspective view of a closed box or container of the present invention.

Fig. 2 is a perspective view of the box or container of Fig. 1 showing same with its lid or cover partially open.

Fig. 3 is a horizontal sectional view through the box taken on line 3—3 on Fig. 1.

Fig. 4 is an enlarged fragmentary horizontal sectional view through one end of the box and taken through a plane above that of Fig. 3 and as seen from line 4—4 on Fig. 1.

Fig. 5 is a fragmentary view partly in section and partly in elevation taken vertically of the box immediately behind the box and cover end walls as seen from line 5—5 on Fig. 4.

Fig. 6 is a fragmentary vertical sectional view through the end of the box and its cover taken on line 6—6 on Fig. 4.

Fig. 7 is a perspective view of a stamping forming the end wall of the box proper and forming a detail of the invention.

Fig. 8 is a perspective view of a stamping which

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forms a brace for the end wall and a support for the tray when the box cover or lid is closed.

Fig. 9 is an enlarged transverse sectional view through the upper end of the box and cover and particularly illustrating the hinging of the cover to the box with said view taken on line 9—9 on Fig. 1.

Fig. 10 is a fragmentary horizontal sectional view through the hinge as seen from line 10—10 on Fig. 9.

Throughout the several views of the drawings similar reference characters are employed to denote the same or similar parts.

The box of the present invention comprises a box proper 15 having an opened upper end closed by a cover or lid 16 which, as will later be made clear, is hinged to the box 15. Interiorly of the box and cover is a tray 17 connected to the said box 15 and cover 16 through links or levers to be actuated upon movement of the cover as will later be made clear.

The box proper 15 comprises a bottom 18 from the opposite edges of which rises the back 19 and front 20. The ends of the back and front 19 and 20 are turned or rounded to provide corners at the ends of the box as at 21 and 22 for the back 19 and 23 and 24 for the front 20. The corners 21 to 24 inclusive extend but a short distance around the ends of the box to provide, substantially, no more than vertical rounded corners with the ends of the box substantially entirely open. From the remaining ends of the box bottom or base 18 there is upstanding short flanges, such as 25 in Fig. 6. It is to be noted that a similar flange is provided for each end of the box proper. The corner pieces 21 to 24 inclusive are each provided with outwardly extending reinforcing corrugations or ribs 26 which are spaced from one another vertically of the box corners. There is illustrated in the drawings four such ribs 26 but in practice this number may be more or less depending upon the height of the box walls from the base or bottom 18.

In order to complete the box use is made of separate end wall stampings such for example as illustrated in Fig. 7, and indicated in general by the reference character 31, wherein a panel portion 27 is provided to form the end wall proper with offset flanges 28 and 29 extending from the vertical edges of the panel 27. The flanges 28 and 29 are offset sufficiently to provide shoulders 30 and 31 at each vertical edge of the panel 27 of a depth equal to the thickness of the material, metal from, which the box corners 21 to 24 inclusive are formed. The free edges of said corners 21 to 24 inclusive are adapted to substantially abut the shoulders 30 and 31 in the final assembly and erection of the box end wall stamping 31. Projecting below the end wall panel 27 is a flange 32 of a depth substantially equal to

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the upturned flange 25 at the ends of the box base or bottom 18. The offset of the flange 32 is similar to the offsetting of flanges 28 and 29 and thereby forms a shoulder 33 which rests upon the upper edge of the bottom flange 25. It should be noted that with the end wall stamping 81 in operative position the exterior surface of the panel 27 is flush or in a plane with the exterior surface of the adjacent front and back wall corners 21 and 23 or 22 and 24 as well as flush with or in the plane of the exterior surface of the bottom flange 25.

The end wall panel 27 is provided intermediate its upper and lower end with outwardly projecting reinforcing corrugations or ribs 34 which are equal in number and spacing to the ribs 26 of the box front and back corners with said corrugation or ribs 34 of the end wall stamping coinciding or matching the front and back corner ribs 26 when the said end wall stamping is in operative position.

The upper ends of the box front and back walls 19 and 20 are inwardly offset to provide a flange or shoulder such as 35, at the upper end of the front wall and 36 at the upper end of the back wall. The end wall stamping of Fig. 7 likewise has its upper end inwardly offset to provide the shoulder 37 which, when the end wall stampings 81 are in operative position, are in the plane of the shoulders 35 and 36 of the front and back walls. The said front and back walls and end wall stamping continue upwardly from their respective shoulders to form a vertically disposed flange or lip 38 around the box top.

The end wall stampings 81 of Fig. 7 are retained and secured in operative position by suitable spot welds 39 through the overlapped end wall stamping flanges 28 and 29 and box corners 21 to 24 inclusive, as well as by suitable spot welds through the end wall stampings bottom flanges 32 and the contacting bottom or base flanges 25.

For further reinforcing the box its bottom or base 18 is provided with an inwardly projecting stamped rib 40, illustrated in Fig. 3 as in the form of an X. In addition the said box bottom 18 is provided with outwardly disposed stamping in the form of circular lugs 41 to provide supports for the box.

As was noted above the box is provided with a lid or cover 16 which comprises a body portion 42 from the sides of which depend front and back flanges 43 and 44 while from the ends depend end flanges 45 and 46. The cover or lid 16 is drawn from a blank wherefore the said flanges 43 to 46 inclusive are integral with the cover or lid body portion 42 as well as have their adjacent ends integral with one another and forming rounded corner for the cover or lid. The free ends of the cover or lid flanges 43 to 45 inclusive, are each turned or rolled to provide a reinforcing bead 47 at the said free ends thereof, it is behind this reinforcing bead 47 that the box lip 38 is disposed with the said bead 47 resting on the front and back wall shoulders 35 and 36 as well as the end wall stampings shoulders 37.

Any suitable or desirable means may be employed for hingedly connecting the box 15 and cover or lid 16 to one another, that shown in the drawings comprising a pair of hinges 48 and 49, see Fig. 10. Each of the hinges 48 and 49 comprises a hinge leaf 50 carried by the cover or lid 16, particularly the cover or lid back flange 44, and a second hinge leaf 51, carried by the box proper 15, and particularly the box back 19, see

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Fig. 9. In order to accommodate the hinge leaf 50 the box lid or cover back flange 44 is provided with suitable cutouts or apertures 52 while, for a similar purpose, the box back 19 is provided with inset portion 53 for the hinge leaf 51, with said inset portion 53 arranging the inner surface of the back 19, in vertical alignment with the lid or cover back flange 44. In order to connect the hinge leaves 50 and 51 to one another the usual hinge pin 54 is provided for simultaneous passing through the hinge eyes at the adjacent ends of hinge leaves 50 and 51.

Within the box and cover, and particularly within the cover, when the cover is in a closed position is a drawn tray 55 comprising a tray bottom 56 with upstanding side walls 57 and end walls 58. As is usual practice the tray is to be positioned laterally of the box when the lid or cover is open and for which purpose it is connected to the said lid or cover by links. The links are at each end of the tray 55 and since this construction is substantially identical for each end only one set of links and their connection will be described in detail.

Accordingly and as seen particularly in Figs. 2 and 5 use is made of three links 59, 60 and 61 each of which has, respectively, a pivotal or hinge connection at 62, 63 and 64 to a tray end wall 58 while link 59 has a pivotal or hinge connection 65 to the cover end flange 45 or 46 adjacent thereto with the links 60 and 61, respectively, having a pivotal or hinge connection at 66 and 67 to the flange or lip 38 of their adjacent box end wall stampings 81.

It is believed that the operation of the tray and its cover is well understood since movement of the cover or lid 16 from the position in Fig. 5 to that to Fig. 2 will, through the link 59, elevate the said tray from the position of Fig. 5; substantially at the top of the box and centrally thereof, to the position of Fig. 2 and will raise the tray above the upper end of the box and slightly rearwardly shift the same as seen in Fig. 5. Continued backward movement of the tray or lid 16 will carry with it the tray 55 until the said cover or lid and tray are substantially parallel with the support of the box whereupon the tray 55 will be resting on the upper end of the box back 19. Reverse movement of the cover or lid 16 returns the tray 55 to its position centrally of the box and at the upper end thereof and substantially entirely within the cover or lid 16 when same is in its closed position as illustrated in Figs. 5 and 9.

In order to support the tray 55 when the cover or lid is closed use is made of a bracket such as illustrated in Fig. 8 and which bracket, when in operative position, acts as a reinforcement for the end walls and as a tie for connecting the box front and back walls to one another and to the end walls. The bracket, as illustrated, in Fig. 8 and indicated in general by the reference numeral 68 is a stamping having a shelf like portion 69 and a depending skirt 70. The ends of the skirt or depending flange 70 are rounded as at 71 and 72 and conform to the rounding of the corners 21 to 24 of the box as well to the rounding of the end wall stamping flanges 28 and 29 since the outer surface of said supporting bracket ends 71 and 72 are adapted to nest with and engage the inner rounded surfaces of the flanges 28 and 29 of the end wall stampings 81. In order to properly nest these parts the said ends 71 and 72 of the supporting bracket 68 are inwardly offset to provide shoulders 73 and

74 between the said ends and the body of the depending skirt or flange 70. At the same time each of the supporting brackets 68, ends 71 and 72 is provided with inwardly projecting flanges 75 and 76 which is in alignment with the shelf 69 but of considerable less width.

In assembly the supporting bracket 68 is positioned adjacent the upper end of the end wall stamping body 27 with the corner of the shelf 69 immediately beneath the shoulder or flange 37 of the end wall stamping and with the flanges 75 and 76 beneath the box corners shoulders 35 which are in alignment with the end wall stamping shoulder 37, and at the same time the bracket shelf 69 projects into the box to receive the tray. By this construction the upper end of the end walls are suitably reinforced and strengthened. The supporting bracket 68 is retained in operative position by spot welding such as 77 in Fig. 6 which unites the said supporting bracket ends 71 and 72 to the end wall stamping flanges 28 and 29 and the respective box corners 21 to 24 inclusive.

In order to complete the box the lid or cover 16 has secured to its body portion 42 a suitable handle assembly 78. Also the box 15 carries latches 79 for latching the cover to the box in a closed position together with a lock 80 for securing the said cover 16 to prevent unauthorized tampering with the box contents.

From the foregoing it will be noted that there has been provided a metal box or container which can be economically produced and acquired and which accomplishes the objects initially set forth.

What is claimed is:

1. In a box of the class described comprising a bottom and front and back walls formed from a single blank, flanges from the ends of said front and back walls extending toward one another, and being in an arcuate shape in horizontal cross-section whereby rounded vertical corners for the box results, flanges upstanding from the bottom ends between the front and back wall flanges at substantially right-angles to said bottom, end walls for the ends of the box each formed from a separate blank and having an end wall portion with flanges from the sides and lower ends thereof for underlying the bottom and front and back wall flanges, said end wall flanges being formed on an arc corresponding to the arc of the front and back wall flanges and offset to the end wall portion to form shoulders abutting the edges of the front and back wall flanges whereby the surface of the front and back wall flanges and end walls are flush, means for securing the end walls in position, said front and back wall end flanges having reinforcing outwardly projecting ribs spaced from one another vertically thereof, and said end walls proper for a distance, inwardly of their flanges, having outwardly projecting ribs for alignment with the front and back wall flange ribs when in operative position.

2. In a box of the class described comprising a bottom and front and back walls formed from a single blank, flanges from the ends of said front and back walls extending toward one another, flanges upstanding from the bottom ends between the front and back wall flanges, end walls for the ends of the box each formed from a separate blank and having a body portion with flanges from the sides and lower ends thereof for underlying the bottom and front and back wall flanges, means for securing the end walls in position, said box front, back and end walls each having the upper end thereof inwardly offset and

upwardly disposed to form a shoulder at the upper ends of said walls with an upstanding lip therebehind, and end wall braces one for each end wall and each brace having an angular cross-section to provide a skirt portion and a shelf portion, said skirt portions each being of a length equal to the width of its end wall portion and flanges and in face contact therewith immediately below the shoulder at the upper end of the end wall and secured in position with the ends of said skirt secured to the end wall flanges and front and back wall flanges.

3. In a box of the class described comprising a bottom and front and back walls formed from a single blank, flanges from the ends of said front and back walls extending toward one another, flanges upstanding from the bottom ends between the front and back wall flanges, end walls for the ends of the box each formed from a separate blank and having a body portion with flanges from the sides and lower ends thereof for underlying the bottom and front and back wall flanges, means for securing the end walls in position, said box front, back and end walls each having the upper end thereof inwardly offset and upwardly disposed to form a shoulder at the upper ends of said walls with an upstanding lip therebehind, end wall braces one for each end wall and each having an angular cross-section to provide a skirt portion and a shelf portion, said skirt portion each being of a length equal to the width of its end wall portion and flanges and in face contact therewith immediately below the shoulder at the upper end of the end wall, and spot welds for securing the end wall braces in position with the said braces each having their ends beyond the end wall portion secured by spot welds to its end wall flanges and overlapped front and back wall end flanges.

4. In a box of the class described comprising a bottom and front and back walls formed from a single blank, flanges from the ends of said front and back walls extending toward one another, flanges upstanding from the bottom ends between the front and back wall flanges, end walls for the ends of the box each formed from a separate blank and having a body portion with flanges from the sides and lower ends thereof for underlying the bottom and front and back wall flanges, means for securing the end walls in position, said box front, back and end walls each having the upper end thereof inwardly off set and upwardly disposed to form a shoulder at the upper ends of said walls with an upstanding lip therebehind, and end wall braces one for each end wall and each having an angular cross-section to provide a skirt portion and a shelf portion, said skirt portion each being of a length equal to the width of its end wall portion and flanges with the ends of said skirt portion beyond the end wall portion offset to provide shoulders for abutment with the shoulders of the end wall flanges and in face contact therewith immediately below the shoulder at the upper end of the end wall and secured in position with the ends of said skirt portion secured to the end wall flanges and front and back wall flanges.

5. In a box of the class described comprising a bottom and front and back walls formed from a single blank, flanges from the ends of said front and back walls extending toward one another, flanges upstanding from the bottom ends between the front and back wall flanges, end walls for the ends of the box each formed from a separate blank and having a body portion with

flanges from the sides and lower ends thereof for underlying the bottom and front and back wall flanges, means for securing the end walls in position, said box front, back and end walls each having the upper end thereof inwardly off set and upwardly disposed to form a shoulder at the upper ends of said walls with an upstanding lip therebehind, end wall braces one for each end wall and each having an angular cross-section to provide a skirt portion and a shelf portion, said skirt portion each being of a length equal to the width of its end wall portion and flanges with the ends of said skirt beyond the end wall portion off set to provide shoulders for abutment with the shoulders of the end wall flanges and in face contact therewith immediately below the shoulder at the upper end of the end wall, and spot welds for securing the end wall braces in position with the said braces each having their ends beyond the end wall portion secured by spot welds to its end wall flanges and overlapped front and back wall end flanges.

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