

April 7, 1953

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2,634,020

TOTE BOX.

Filed May 19, 1948

2 SHEETS—SHEET 1

FIG. 1.

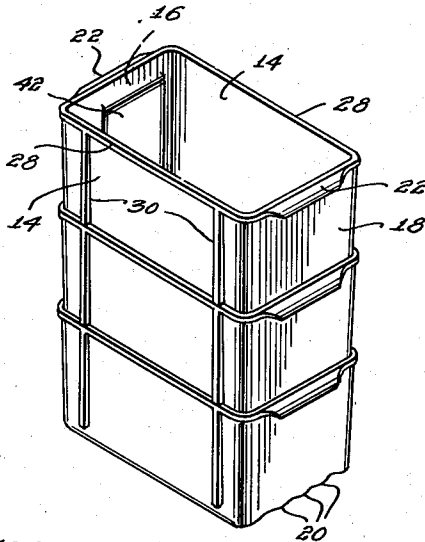
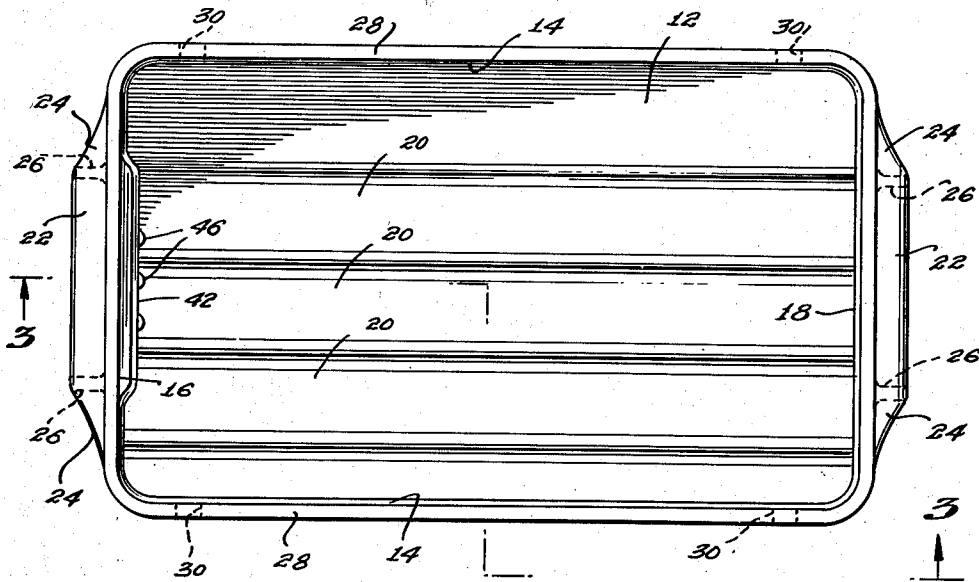


FIG. 2.



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2 SHEETS—SHEET 2

FIG. 3.

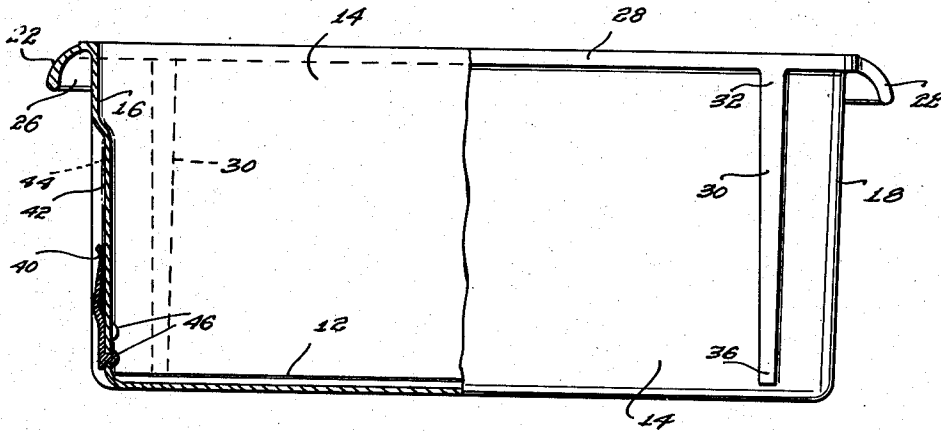


FIG. 4.

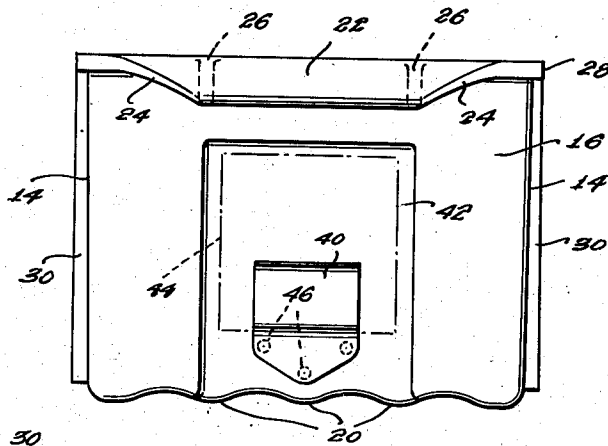
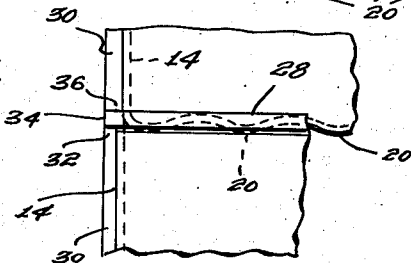


FIG. 5.



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TOTE BOX

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3 Claims. (Cl. 220-72)

1

This invention relates to tote boxes, and more particularly to an improved light-weight die-cast tote box.

The primary object is to generally improve tote boxes. Another object is to provide a tote box of improved utility and decreased weight. Still another object is to devise a tote box so shaped that it is readily cleaned and may be readily emptied of tiny objects.

A more particular object of the invention is to provide a tote box, the bottom wall of which has a substantial number of well rounded corrugations extending in parallel relation longitudinally of the box in order to stiffen the bottom of the box and to facilitate dragging the same along the floor. Still another object is to design handles of substantial dimension and area which are comfortable to use and which make it possible to carry a substantial weight with less fatigue. The handle is preferably reinforced by webs extending transversely between the handle and the end walls of the box, and the box is reinforced by the handles themselves.

In accordance with further features and objects of the invention, the peripheral top edge of the tote box is reinforced by a bead of substantial section, and the side walls are reinforced by a plurality of upright struts. The upper ends of the struts preferably terminate in the peripheral bead, and the lower ends of the struts preferably terminate short of the bottom wall of the box. The sides of the box are given a slight downward taper such that the bottom of one box may be fitted into the top of a subjacent box. In accordance with the present invention, the reception of the upper box into the lower box is limited by engagement of the lower ends of the aforesaid struts of the upper box with the peripheral bead of the lower box. The struts of a stack of boxes come into vertical alignment, and take the weight directly.

It is convenient to provide a holder on one end wall of the tote box to receive an identifying card. In accordance with one of the objects of the present invention, a major portion of the area of one end wall is indented, and the card holder is secured near the bottom of the indented wall. The indentation of the wall serves to protect the card against injury or loss.

The foregoing and other objects of the present invention are fulfilled by die casting a tote box out of aluminum or other light-weight metal or alloy. The die casting process makes it possible to provide all of the desired parts and reinforcements integrally in a single molding operation. It also makes it possible to round all of the inside

2

corners of the box on a substantial radius, thereby facilitating cleaning of the box, and preventing trapping of small parts, as often occurs when using tote boxes made of wood or folded sheet metal. At the same time the use of light-weight metals and alloys results in a tote box which, despite its substantial thickness and solid appearance, is nevertheless only a fraction of the weight of tote boxes of equal volume heretofore employed.

To accomplish the foregoing objects, and such other more detailed objects as may hereinafter appear, my invention resides in the tote box elements and their relation one to another as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings in which

Fig. 1 is a perspective view showing a few tote boxes in stacked relation;

Fig. 2 is a plan view of a tote box embodying features of my invention;

Fig. 3 is a partially sectioned side elevation of the same taken approximately in the plane of the line 3-3 of Fig. 2;

Fig. 4 is an end view of the same; and

Fig. 5 is a fragmentary view explanatory of a detail of the invention.

Referring to the drawing, the tote box comprises a bottom wall 12, side walls 14, and end walls 16 and 18. The bottom wall 12 is corrugated with a substantial number of corrugations 20 extending in parallel relation longitudinally of the tote box. These corrugations are preferably given a well rounded contour and are also preferably rounded at the ends of the tote box. The corrugated section stiffens the bottom wall against bending, even under very heavy loads. The rounded configuration of the corrugations facilitates dragging the box along the floor, for the corrugations act as rails, reduce friction, and prevent the piling up of dirt in front of the box as it is dragged along.

The end walls 16 and 18 are preferably provided with handles 22 of substantial dimension. These curve outwardly and downwardly, as is best shown in Fig. 3. They preferably extend for the full width of the end wall, and are preferably located at the top edge of the end wall, but the end portions of the handle may be tapered into the end wall, as is best shown at 24 in Figs. 2 and 4. The handles are readily strengthened against bending or breakage by the provision of transverse reinforcing webs which extend from the handle to the end wall of the box. Such webs are best shown at 26 in Figs. 2, 3 and 4. One typical tote box size is 20" long, 12" wide and

3

9" deep (inside dimensions), and consequently the space within handle 22 between the webs 26 is more than adequate for a hand, and in fact will accommodate two hands.

The peripheral top edge of the tote box is reinforced by means of a bead 28 of substantial cross-section. The side walls are reinforced by upright struts 30. The struts are disposed on the outside of the side walls, and at their upper ends preferably merge into the bead 28. The walls 14, 16 and 18 of the box taper or converge slightly in downward direction. This taper is such that the lower end of one box will be received for a short distance within the upper end of a subjacent box. The idea is to permit stacking of loaded boxes one above another, as shown in Fig. 1. The struts 30 terminate short of the bottom wall 12 and act as motion limiting means to limit the reception of an upper box into a lower box. In doing so they prevent one box from jamming tightly into and sticking within another box. Since the struts 30 come into vertical alignment when the boxes are stacked, as shown in Fig. 1, the struts directly take the weight of stacked, loaded boxes.

In Fig. 4 it will be noted that while the sides of the box taper downwardly, the struts 30 preferably diverge in thickness in a downward direction, the dimension of the parts being such that the outside faces of the struts are vertical. The advantage of this will be seen from inspection of Fig. 5, in which it will be noted that the thickness at the upper end 32 of a strut 30 is such as to come flush with the other face 34 of the peripheral bead 28. The lower end 36 of the strut 30 is, however, of greater thickness, it being equal to the thickness 32, plus the thickness of the side wall 14. From another viewpoint the lower end 36 of strut 30 is equal to the full thickness of the peripheral bead 28, including the wall 14.

In order to maintain the full cross-section of reinforcing metal at the upper end 32 of the strut 30, it may be widened when viewed in opposite direction, and this will be seen in Fig. 3 of the drawing, in which the upper end 32 of the strut 30 is wider than the lower end 36.

Incidentally, the various tapers referred to, all facilitate the molding operation.

The handles 22 previously referred to are preferably located at the very top of the end walls 16 and 18, and from this viewpoint it may be said that the reinforcing bead at the end of the box is extended outwardly and downwardly to form a handle of substantial dimension. From another viewpoint it may be said that at the ends of the box the handles are themselves used to provide a strongly reinforced top edge.

One end wall is preferably provided with a card holder shown at 40 in Figs. 3 and 4. In accordance with the present invention, a major portion 42 of the end wall 16 is indented for a substantial distance, and the card holder 40 is secured to this indented portion. It will be evident that the indentation serves to protect an inserted card against injury or loss as the tote box is handled. The card holder 40 may be made of any desired resilient material and may be secured to the end wall in any desired fashion. In the present case the card holder is die cast. One advantage of the die casting process for the card holder is that it may be cast integrally with rivet studs 46. These are passed through mating holes in the end wall of the box, and are riveted on the inside of the box.

4

This eliminates the need for separate rivets; eliminates the need for forming heads on the outside of the card holder; and provides a smooth, finished appearance on the outside, there being no visible rivets or other securing means.

It is believed that the construction of my improved tote box, as well as the advantages thereof, will be apparent from the foregoing detailed description. Steel tote boxes of comparable dimension weigh more than twice as much as the present tote box when cast of aluminum alloy, and, of course, the weight may be lowered even further by using a magnesium alloy. Because the tote box is cast, numerous refinements in the way of curved and filleted surfaces may be employed, and numerous advantageously located reinforcements may be provided. The curved inside surfaces facilitate emptying and cleaning the box. The well rounded corrugations on bottom facilitate dragging the box along the floor. Handles of substantial area and comfortable shape are readily provided, and are easily reinforced by suitable transverse webs extending to the walls of the box itself. Outside struts may be used not only to reinforce the walls of the box, but to improve the stacking of the boxes, and to directly take the weight of stacked, loaded boxes. The card holder is sturdy and of good appearance, yet inexpensive to make and apply. A card inserted in the card holder is protected against tearing or loss, because of the indentation of the end wall at the card holder.

It will be apparent that while I have shown my invention in a preferred form, changes may be made in the structure disclosed without departing from the spirit of the invention as sought to be defined in the following claims.

I claim:

1. A tote box comprising integrally joined bottom, side, and end walls, the inside corners of said box being smoothly rounded and easily cleaned, the ends of said bottom wall curving smoothly upwardly into said end walls, the peripheral top edge of the box being reinforced by a bead of substantial section, said bead being formed by increasing in outward direction the thickness of the walls at the bead, the bead at said end walls extending outwardly and downwardly to form handles of large dimension, said side walls having a plurality of upright struts which merge at their upper ends in the aforesaid bead and which terminate short of the bottom wall at their lower ends, said struts being formed by increasing in outward direction the thickness of the walls at the struts, the said walls tapering somewhat to permit the lower end of one box to fit into the open top of another box, the reception of the upper box in the lower box being limited by contact of the lower ends of the struts with the peripheral bead.

2. A die cast tote box comprising integrally joined bottom, side, and end walls, the inside corners of said box being smoothly rounded and easily cleaned, said bottom wall being corrugated longitudinally of the box, the ends of said bottom wall curving smoothly upwardly into said end walls, the peripheral top edge of the box being reinforced by a bead of substantial section, said bead being formed by increasing in outward direction the thickness of the die cast walls at the bead, the bead at said end walls extending outwardly and downwardly to form handles of large dimension, said side walls having a

5

plurality of upright struts which merge at their upper ends in the aforesaid bead and which terminate short of the bottom wall at their lower ends, said struts being formed by increasing in outward direction the thickness of the die cast walls at the struts, the said walls tapering somewhat to permit the lower end of one box to fit into the open top of another box, the reception of the upper box in the lower box being limited by contact of the lower ends of the struts with the peripheral bead, all of said parts being die cast as an integral unit out of a die casting alloy.

3. A die cast tote box comprising integrally joined bottom, side, and end walls, the inside corners of said box being smoothly rounded and easily cleaned, said bottom wall being corrugated longitudinally of the box, the ends of said bottom wall curving smoothly upwardly into said end walls, the peripheral top edge of the box being reinforced by a bead of substantial section, said bead being formed by increasing in outward direction the thickness of the die cast walls at the bead, the bead at said end walls extending outwardly and downwardly to form handles of substantial dimension, the end portions of the handles tapering off to the end walls, two reinforcing webs extending transversely inside each of the handles to said end walls, said webs being located inside the tapering end portions but being so widely spaced apart as to provide a large size handle between the webs, said side walls having a plurality of upright struts which merge at their upper ends into the aforesaid bead and which terminate short of the bottom wall at their lower ends, said struts being formed by increasing in outward direction the thickness of the die cast walls at the struts, the said walls

6

tapering somewhat to permit the lower end of one box to fit into the open top of another box, the reception of the upper box in the lower box being limited by contact of the lower ends of the struts with the peripheral bead, all of said parts being die cast as an integral unit out of a light weight die casting alloy.

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