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STACKABLE PLASTIC CONTAINER

Filed June 1, 1959

Fig. 1

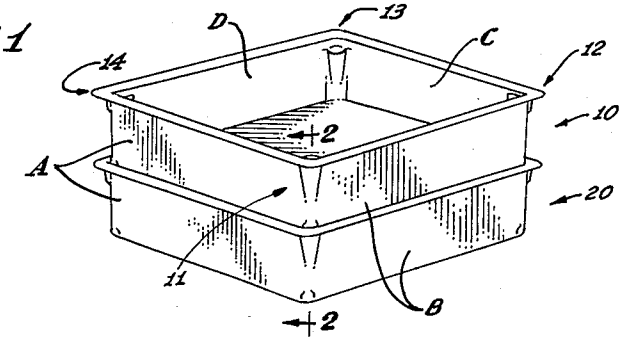


Fig. 2

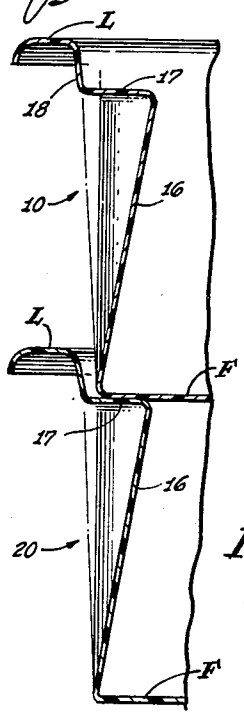


Fig. 3

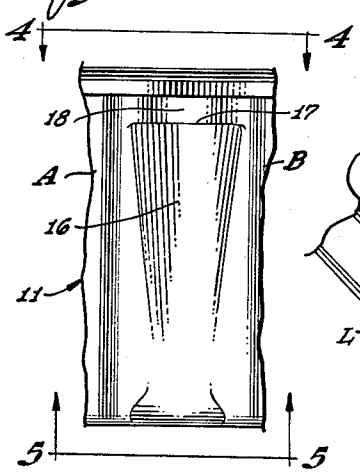


Fig. 4

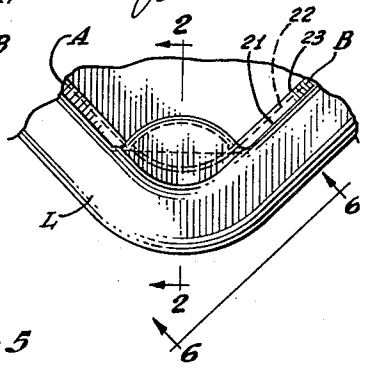


Fig. 6

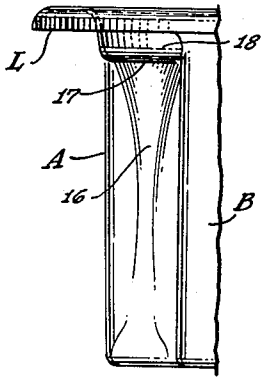
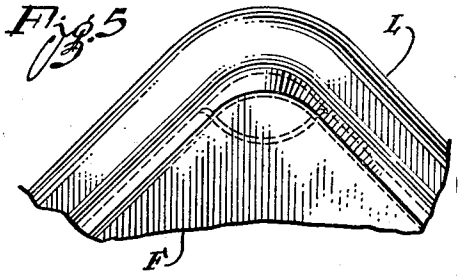


Fig. 5



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STACKABLE PLASTIC CONTAINER

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1 Claim. (Cl. 150—.5)

The present invention relates to a rectangular box integrally formed from resilient plastic material, and which is so formed as to provide rigid support for a loaded similar box when stacked upon it.

In fabricating stackable containers from plastic material it is inherently difficult to produce a type of container which can be stacked to great heights, since the plastic material is flexible and does not usually provide rigid support. It is desirable to economize on the amount of plastic material used, and it is also desired that the stacking lugs or stacking members provided in the box to receive and support the box next above it should occupy as little of the load space as possible.

In manufacturing plastic boxes or containers it is not only desirable that the container be integrally formed from a single sheet of plastic material, but it is also desirable that the plastic material have a substantially uniform thickness throughout the completed container. If the container is designed in such a way that some portions of the plastic material have a substantially greater or substantially smaller thickness than other portions, additional manufacturing cost is involved.

One object of the invention, therefore, is to provide a stackable container made of resilient plastic material, and in which rigid support of a superimposed similar container is nevertheless achieved.

Another object of the invention is to provide a stackable container which is integrally formed from a single sheet of resilient plastic material and which has a substantially uniform wall thickness throughout.

Yet a further object of the invention is to provide a stackable plastic container which is adapted to receive the vertical load stress of a superimposed stack of similar containers only at its corners, with the side and end walls thereof being placed in tension rather than in compression.

The above and other objects of the invention will be more readily apparent from the following description considered in conjunction with the accompanying drawing, in which:

Figure 1 is a perspective view of two of the novel containers provided by the present invention, one being stacked upon the other;

Figure 2 is a vertical cross sectional view of a corner of the containers taken on the line 2—2 of Figure 1;

Figure 3 is an elevational view of a corner of one of the containers viewed symmetrically with respect to the corner;

Figure 4 is a plan view of the corner taken on the line 4—4 of Figure 3;

Figure 5 is a bottom view of the corner taken on the line 5—5 of Figure 3; and

Figure 6 is an elevational view of the container corner taken at an angle of 90 degrees with respect to one of the associated outer walls, on the line 6—6 of Figure 4.

According to the invention the stackable box is integrally formed of resilient plastic material. The side

and end walls of the box slope slightly outwardly so that the bottom of a superimposed identical box may be partially inserted therein. All four corners of the box have stacking lugs formed integrally therewith which protrude inwardly of the box a short distance so as to support the respective bottom corners of the superimposed box. The upper surfaces of the stacking lugs lie at a common elevation above the bottom of the box.

Precise vertical alignment of the stack is assured by the fact that each superimposed box is partially inserted into the box beneath it. Rigidity of support by the bottom box is achieved by virtue of the geometry of the box and its stacking lugs, despite the resilience of the plastic material itself.

Since the walls slope outwardly, a vertical load stress near the top of each inner corner causes the main portion of each wall to be in horizontal tension. At each corner of the box the adjoining wall ends form an L-shaped beam which can carry the compressive load without buckling. Furthermore, the preferred form of the corner and stacking lug provide increased resistance to buckling while at the same time achieving minimum manufacturing cost by utilizing plastic material of substantially uniform thickness throughout.

Referring now to the drawing, in Figure 1 a box **10** is stacked upon an identical box **20**. Each of the boxes have side walls A, C and end walls B, D. The side and end walls slope slightly outwardly, hence the bottom of box **10** is partially inserted within the upper portion of box **20**.

The various corners of the box are identical but are separately designated as corner **11** where end wall A and side wall B join, corner **12** where side wall B and end wall C join, corner **13** where end wall C and side wall D join, and corner **14** where side wall D and end wall A join. The flat bottom of each box is identified as F. Surrounding its periphery each box has an outwardly flared lip L which is conveniently adapted for manually holding or carrying the box.

According to the invention a portion of each corner of the box projects inwardly thereof so as to limit the downward extent by which a superimposed box may be inserted therein. The inward projection at each corner of the box therefore provides a stacking lug. In the preferred form of the invention illustrated herein the stacking lug is designed to achieve both maximum efficiency and maximum economy.

More specifically, the joining side and end walls are smoothly rounded at their upper and lower edges with the junctures being in alignment with each other. The intervening juncture portion designated as **16** slopes inwardly of the box with increasing height above the bottom of the box, and then at a predetermined distance above the bottom of the box the juncture extends horizontally outwardly at **17** to join the normally formed, smoothly rounded corner portion **18** which extends above it.

In Figure 4 the outward slope of wall B is indicated by line **21** which represents the smooth inner surface at the top of the wall before rounding off, line **23** which represents the smooth inner surface at the bottom of the wall before rounding off, and dotted line **22** which represents the outer surface of the bottom of the wall.

While in the preferred form of the invention the various portions of the plastic material are of uniform thickness, it will be understood that different thickness values may be used throughout the box if desired.

For convenience the box has been described herein as being rectangular, but it will be understood that the box may be made square if desired.

Other forms and modifications of the invention will be

apparent to those skilled in the art, and the invention is not to be limited to the specific features shown and described herein.

I claim:

A stackable rectangular box integrally formed of resilient plastic material of substantially uniform thickness throughout and having side and end walls which, from bottom to top, slope slightly outwardly to permit the bottom of a superimposed identical box to be partially inserted therein, each corner thereof being formed in such a way that the junctures of the associated side and end walls at the upper and lower edges thereof are smoothly rounded and in alignment with each other, the intervening juncture portion sloping inwardly of the box with increasing height above the bottom of the box, and then at a predetermined elevation above the bottom of the box extending horizontally outwardly to join the upper portions of the side and end walls so as to provide near the top of the box a stacking support for the corresponding corner bottom surface of the superimposed box, whereby the vertical load of the superimposed box produces a horizontal tension in said side and end walls.

References Cited in the file of this patent

UNITED STATES PATENTS

1,816,930	Finn	Aug. 4, 1931
2,088,181	Swift	July 27, 1937
2,857,947	Powers	Oct. 28, 1958
2,889,072	Lapham	June 2, 1959

FOREIGN PATENTS

609,142	Great Britain	Sept. 27, 1948
544,833	Italy	June 20, 1956
742,516	Great Britain	Dec. 30, 1955