STACKABLE AND NESTABLE CONTAINERS

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This invention relates to open top containers which can be stacked one upon another without superimposing the weight of the upper containers upon the contents of the lower containers and which may, when empty, be nested together for easy handling, storing, transporting and the like.

In the handling and storing of materials or products by means of transportable containers, it is desirable that the containers be constructed so that when stacked in a vertical tier, they are supported directly upon one another to avoid damaging the products or materials contained therein by the weight of the upper containers and their contents.

Further, each tier of containers should be so stacked together as to form a stable stack and this objective must be accomplished without any substantial decrease in the storage space of the containers. However, when storing or transporting the empty containers, the containers should be constructed so as to telescope into each other to reduce the space requirements.

It is known to employ rectangular containers each having an upper encircling lifting flange so arranged that the containers may be rotated 90° and stacked in cresscross relation. The rectangular containers substantially overlap when cress-crossed and therefore the longest dimension extends in two directions. A substantial amount of unused space is required.

The present invention provides open top containers which may be square or slightly rectangular and which are provided with an upper encircling flange to facilitate handling. The side walls of the containers are slightly tapered with the bottom of the containers being somewhat lesser in cross-section than the top opening to allow nesting. At least one and preferably a pair of corresponding triangular openings or recesses are provided in each wall of each container and the adjacent flange. The triangular recesses are right triangles with each recess having its hypotenuse lying in the plane of the associated wall. The recesses are arranged with respect to each other so as to define an opening conforming generally to the lower portion or perimeter of the container. The containers may then be stacked into suitable tiers by disposing each container with its lower corners resting within the recesses of a container immediately below it. In the case of the employment of a pair of recesses in each container wall the containers are alternately angularly stacked so that every other container lies in the same vertical plane. The recesses securely lock the containers in position and the bottom of each container does not extend beyond the lifting flange of the container below it.

Where the container is rectangular, an auxiliary ledge is formed by a reinforcing rib extending inwardly from the supporting base of the recess to provide an additional surface for receiving the corners of a container when they are stacked in a tier.

The present invention is particularly adapted to a molded plastic container such as of resin impregnated fiberglass having all surfaces integrally joined.

The present invention provides strong, rigid containers which are capable of being stacked in tiers during the handling of products and which are also capable of being nested together during transportation, handling, storing and the like.

The drawing furnished herewith illustrates the best mode of carrying out the invention as presently contemplated and set forth hereinafter.

In the drawing:

Figure 1 is a perspective view of a square container embodying the present invention;

Fig. 2 is a side view of a plurality of containers disposed in nested relation with parts broken away to more clearly illustrate the invention;

Fig. 3 is a perspective view of a tier of containers disposed in stacked relation;

Fig. 4 is an enlarged fragmentary section of one of the containers taken on line 4—4 of Fig. 1;

Fig. 5 is an enlarged fragmentary section of one of the containers taken on line 5—5 of Fig. 1;

Fig. 6 is a plan view of a container which is slightly rectangular in shape;

Fig. 7 is a sectional view of a rectangular container taken on line 7—7 of Fig. 6; and

Fig. 8 is an enlarged section taken on the line 8—8 of Fig. 6.

Referring to the drawing and particularly Fig. 1, an open top container is illustrated which is adapted to be extruded or molded from plastic or the like into a unitary article. A continuously molded container produces a strong and durable storage means. The container includes a flat bottom wall 1 integrally joined with four vertical side walls 2. The side walls 2 taper outwardly from the bottom wall 1 to provide a top opening somewhat larger than the bottom wall 1 and to allow nesting of a plurality of similar containers as shown in Fig. 2. The bottom edge joining the bottom wall 1 and side walls 2 is rounded as at 3 to eliminate a sharp edge which would tend to separate if the container were dropped on the edge, and to facilitate cleaning the container.

An encircling flange 4 is integrally formed with the upper edges of the side walls 2 and extends outwardly in substantially parallel relation to the bottom wall 1. The encircling flange is employed to facilitate handling of the container and also to make the container more rigid. A bead 5 is formed in the outer edge of the flange to provide a smooth handling surface and a wire 6 of a solid or tubular material may be embedded in the bead 5 to strengthen the flange. Flange 4 adjacent the four corners of the containers is substantially removed or rounded off as at 7.

In the embodiment of the invention illustrated in the drawing, a pair of horizontally disposed triangular recesses 8 and 9 are provided in the junction of each side wall 1 and associated flange 4 with an uninterrupted portion 10 of the flange 4 extending between the apexes of the respective recesses and bead 6.

Each recess 8 and 9 is generally right-triangular in shape with the shortest leg or base of each recess located adjacent to the corner of the container. Each recess is formed by the horizontal edge 11 which lies in the plane of the side wall 2 and vertical edges 12 formed in the top portion of the side wall and a pair of angularly disposed vertical surfaces 13 and 14, respectively, which extend from flange 4 downwardly and inwardly on a taper corresponding to the taper of the side walls. The surface 13 of each recess comprises the base of the recess heretofore described as located adjacent a corner of the container and the horizontal edge 11 corresponds to the hypotenuse of the triangle formed by each recess. The surfaces 13 and 14 join with a horizontal surface or ledge 15 extending outwardly from edge 11 to surfaces...
Although a container of molded plastic is illustrated and described any other suitable material can be employed. The present invention provides strong, rigid containers which are adapted to be disposed in stacked tiers or telescoped into nested relation. Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinguishing the subject matter which is regarded as the invention.

1. In a nestable and stackable container having an open top and four tapered side walls formed with a bottom wall and an upper encircling flange, at least one recess formed in each side wall and integrally connected flange portion, the outer extremity of each recess being inwardly spaced from the outer edge of the flange to maintain a continuous flange encircling the container, and the recesses being arranged relative to each other to define an opening corresponding to the bottom of a similar container disposed in stacked rotated relation therewith.

2. In a nestable and stackable container having an open top and four tapered side walls joined with a bottom wall and an upper encircling flange, a pair of perimetrically spaced recesses similarly formed in each side wall and connected flange, and corresponding recesses in each side wall being arranged relative to each other to respectively define the corners of an opening adjacent to the outer extremity of each recess, and the outer extremity of each recess being inwardly spaced from the outer edge of the flange to maintain a continuous flange encircling the container, and the recesses being arranged relative to each other to define an opening corresponding to the bottom of a similar container disposed in stacked rotated relation therewith.

3. In a nestable and stackable square container having an open top and four tapered side walls joined with a bottom wall and an upper encircling flange extending outwardly from the upper edges of the sidewalls, a pair of right-triangular recesses similarly disposed in each side of the container one within each quarter of the perimeter immediately adjacent a corner of the container, said recesses being defined by a triangular horizontal ledge extending outwardly from the base of a notch in said container and integrally connected flange portion, the outer extremity of each recess being inwardly spaced from the outer edge of the flange to maintain a continuous flange encircling the container, and the recesses being arranged relative to each other to define a pair of rectangular spaces corresponding to the lower portion of the container and rotated relative to each other to permit stacking of a plurality of containers.

4. In a nestable and stackable open top container of molded plastic having a generally square perimeter with tapered side walls integrally connected with a horizontal bottom wall and an outwardly extending upper flange, a pair of generally right triangular recesses equally spaced along the perimeter in each sidewall of the container and within the outer edge of the flange, each triangular recess including a horizontal triangular ledge extending outwardly from and integrally with the sidewall and a pair of angularly disposed side legs extending between said ledge and said flange to define the recess, the side leg nearest an adjacent corner of the container being a short leg and the side leg opposite thereof being a long leg, and said recesses having the short and long legs of corresponding recesses in adjoining sidewalls aligned to define a pair of rotated square openings corresponding to the lower portion of the container, said construction permitting alternate containers in a tier of the container to be in superposition in relation with a high usable volume to total volume ratio.

5. A generally rectangular shaped open top container having a bottom wall and side walls flaring outwardly therefrom with one pair of oppositely disposed side walls
being of lesser length than the other opposite pair of side walls, said container having a flange extending outwardly from the upper edge of the side walls and continuously around the top of the container, a triangular recess in each juncture of a side wall and flange in slightly spaced relation to a corner of the container to define a rectangle corresponding to the lower portion of the container whereby a plurality of containers may be stacked together, and an inwardly extending ledge formed in each short side wall in the same plane as the base of the recess to strengthen said container and to provide additional supporting surface for a superimposed container.

6. In a rectangular open top container of greater length than width and formed of molded plastic and having an integrally molded flange extending outwardly from the upper edge of the container and continuously around the container, the corners of the flange being rounded off, a pair of vertically outlined triangular recesses in each juncture of a sidewall and flange in slightly spaced relation to the container corners with the side legs of each recess lying within the outer dimensions of the flange, and inwardly extending indented ribs in each end wall having an upper surface extending inwardly from the base of the pocket to strengthen the container and to provide an increased supporting surface to the immediately next succeeding container in a tier of containers.

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