

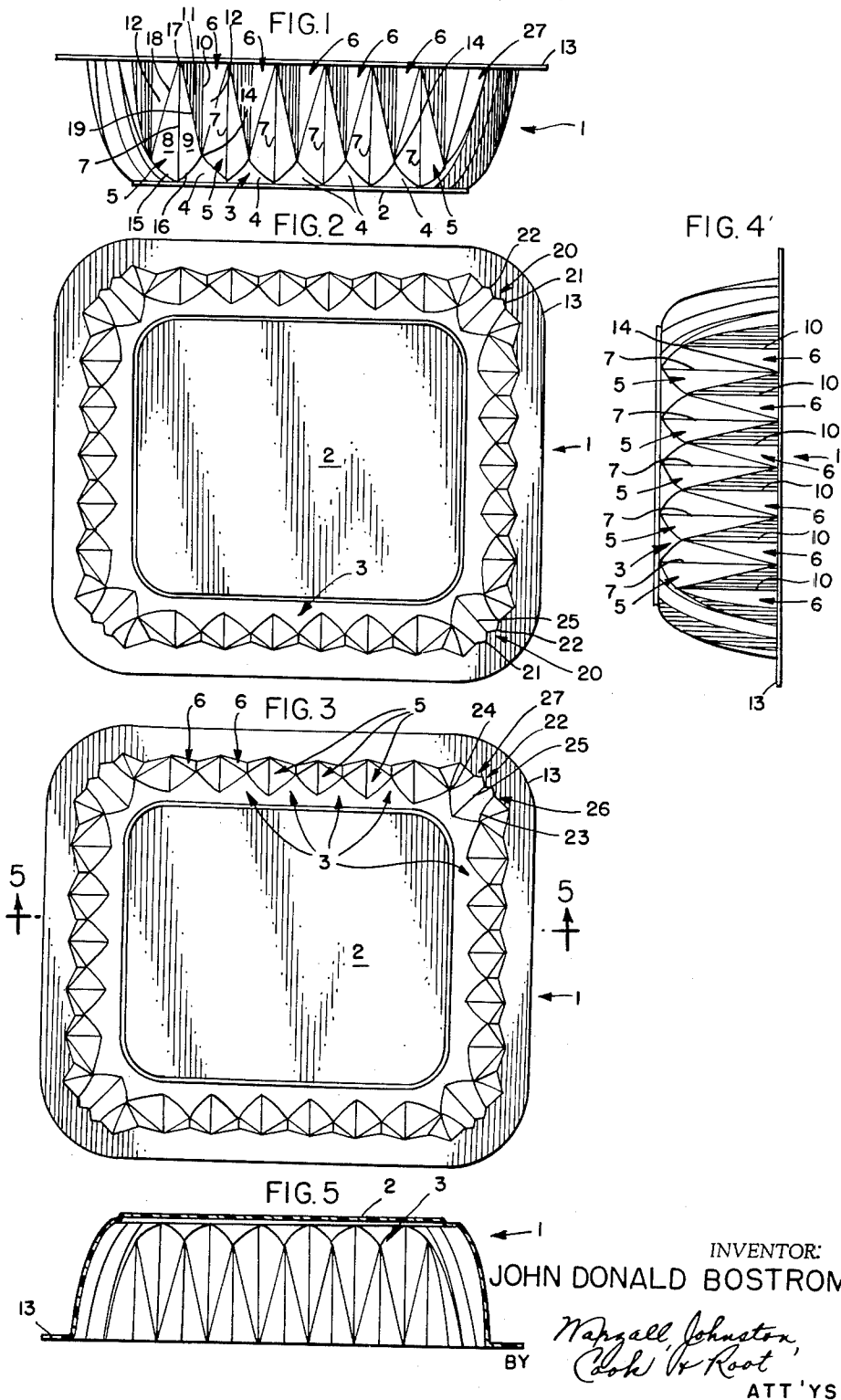
July 14, 1964

J. D. BOSTROM

3,140,807

CONTAINER

Filed April 12, 1963



INVENTOR:
JOHN DONALD BOSTROM

By *Margall Johnston,*
Cook & Root,
ATT'YS

1

3,140,807

CONTAINER

John Donald Bostrom, Niles, Ill., assignor to Poster Packaging, Inc., Chicago, Ill., a corporation of Delaware
Filed Apr. 12, 1963, Ser. No. 272,631
5 Claims. (Cl. 229-2.5)

This invention relates to a container and more particularly to a plastic container made out of a self-sustaining, relatively rigid, resilient, distortable plastic material so constructed as to resist distortion at the side walls and the corners.

It is well known to make containers out of self-sustaining, relatively rigid plastic materials, such as, for example, oriented polystyrene. This type of material is readily distorted but will normally tend to return to its original position due to its inherent resiliency. Containers of this type have been made with fluted side walls which tend to impart some degree of rigidity to the containers. However, the amount of rigidity leaves something to be desired and in order to improve the rigidity and strength of these containers they are constructed with a substantial wall thickness of the order of say 0.017". While this may not seem to be a very heavy wall thickness, nevertheless it would be desirable to make these containers from thinner sheet materials. Unfortunately, the structures which have heretofore been used in making such containers do not have sufficient rigidity when thinner wall thicknesses of the order of say 0.012" are employed.

Unless the container has sufficient rigidity, the walls can be pressed inwardly by finger pressure and will not readily return to their initial positions. In containers having corners and especially rounded corners, the material at the corners does not return to its initial position very readily after it has been pressed inwardly. Dented containers are a disadvantage because they frequently arouse the suspicion of the customer that the container and its contents have been mishandled. Even where the container has not been dropped or otherwise mishandled, it is possible for the customer to press the sides and/or corners inwardly and leave the container in this shape so that the next customer will think that it has been dropped.

One of the objects of the present invention is to provide a new container having an unusual and novel structure which imparts rigidity to the side walls and corners and makes it possible to form the container from thinner sheets of self-sustaining, relatively rigid, resilient, distortable plastic material.

Other objects of the invention will be apparent from the following description in conjunction with the accompanying drawings in which

FIGURE 1 represents a side view of one embodiment of a container made in accordance with the invention;

FIGURE 2 is a top plan view of the container shown in FIGURE 1;

FIGURE 3 is a bottom view of the container shown in FIGURE 1;

FIGURE 4 is an end view of the container shown in FIGURE 1, and

FIGURE 5 is a sectional view taken along the line 5-5 of FIGURE 3.

As will be seen from the drawings, the invention provides a container which is preferably formed from a self-sustaining, relatively rigid, resilient, distortable plastic material comprising a bottom and side walls extending upwardly from said bottom. The side walls preferably terminate in an outwardly extending, substantially flat flange to which a sealing lid consisting of a flat sheet of material (not shown) can be heat sealed or otherwise secured. In the drawings, the container shown has corners and is provided with a special type of corner structure which tends to resist distortion or, if pressed inwardly,

2

tends to restore to its initial position. It will be understood, however, that in its broader aspects the invention is not limited to containers having this special corner structure. The container shown in the drawings is formed from a clear, transparent material, such as oriented polystyrene, but again it will be understood that the invention is not limited to the use of this particular material. A container of the type shown is so constructed that it is nestable. In other words, a series of these containers can be stacked on top of one another and will nest within each other so as to occupy a minimum amount of space.

The side walls of the container are preferably inclined downwardly and inwardly from the top or, stated in another way, upwardly and outwardly from the bottom. Where the container has corners, they are preferably generally rounded and have a special structure as hereinafter described. The bottom of the container may be flat, inverted inwardly, or offset downwardly with respect to the side walls. In the embodiment shown in the drawings, the bottom is offset downwardly with respect to the side walls.

A primary feature of the invention is the construction of a container having a side wall structure characterized by alternating inwardly and outwardly extending recesses formed by intersecting planes which impart rigidity to the side wall structure and make it possible to construct the container of self-sustaining, relatively rigid, resilient, transparent, distortable plastic material, such as oriented polystyrene having a thickness of the order of 0.012". The oriented polystyrene is well known in the art and is made by a special process in which the polystyrene sheet is stretched. The intersecting planes in the side walls are triangular or substantially triangular.

In the drawings the container 1 is provided with a bottom portion 2 which is substantially flat and is offset downwardly from the side walls 3. The side walls 3 extend upwardly and outwardly from the bottom portion 2 in a series of curved, generally triangular surfaces 4 which merge or intersect with another series of diamond shaped or tear-drop shaped surfaces 5. The latter surfaces 5 merge with triangular surfaces 6. The diamond shaped or tear-drop shaped areas 5 are in the form of recesses which extend inwardly about a central line 7 and consist of triangular planes 8 and 9. The triangular areas 6 form recesses which extend inwardly about a central line 10 and consist of triangular planes 11 and 12.

It will be seen that the triangular areas 6 have their base lines in the same plane as the flange 13. The flange 13 extends outwardly from these base lines and forms a rim for the container. A flat sheet of material (not shown) can be secured by heat sealing, or other suitable means, to said rim. Alternatively, the container can be used as such to form a top for another container or it can be used as a receptacle without a top.

It will be seen from the drawings that the triangularly shaped areas 6 are in the upper part of the side wall structure formed by the intersection of triangular planes 11 and 12 on the line of intersection 10. These triangular areas have apices 14 which point downwardly and terminate in the lower part of the container.

The recessed areas 5 extend from a point near the top of the container to approximately the bottom of the container. The planes 8 and 9 are approximately triangular except for the fact that the lower edges 15 and 16 are curved. The upper parts of the triangular areas 8 and 9 intersect at an apex 17 which substantially coincides with the flange 13. The lines 7 and 10 are in vertical, substantially parallel, planes. The lines 10 are substantially straight while the lines 7 are straight in the upper part of the container but curve downwardly and inwardly below the apex point 14. It will be seen that the lines 7 extend from approximately the top of the container to a point just

3

above the bottom, whereas the lines 10 are shorter. The lines 18 and 19 which bound the recessed area 7 on one side and the recessed area 6 on another also represent lines of intersections between planes 8 and 12, on the one hand, and planes 9 and 11 on the other, and extend outwardly from the container as distinguished from lines 7 and 10 which extend inwardly.

The corners of the container are characterized by a special structure in which a single recess or indentation 20 extends from the underside of the flange 13 to a point just above the bottom 2 and substantially bisects the corner. The outer edges of the recess 20 are defined by lines 21 and 22 which extend downwardly and inwardly and curve at points 23 and 24 away from the center line 25 of the recess 22. An additional recess 26 is provided on one side of the recess 22 and another recess or groove 27 is provided on the opposite side. These recesses 26 and 27 curve slightly away from the corner and terminate at substantially the same level as the apices 14.

The side wall structure with its alternating inwardly and outwardly extending recesses formed by intersecting triangular planes imparts rigidity to the side walls of the container. The corner structure with the corner indentations falling in a straight vertical plane and adjacent indentations falling in a curved vertical plane, not only increases the rigidity of the corner but assists in restoring the plastic material to its original position when the corners and areas adjacent the corners are pressed inwardly.

It will be understood that the invention is directed primarily toward containers made from plastic materials which are relatively rigid but are distortable and at the same time have enough resilience to return to their original positions. While the invention is especially desirable for the manufacture of containers made from oriented polystyrene it can also be used to manufacture containers from high impact polystyrene and other plastic materials having the general properties previously described. The general shape of the container is not particularly important. It may, for example, be circular, elliptical or have three, four, five, six, seven or eight sides. However, most of the containers of this type are rectangular or four-sided.

The invention provides a container or container top which is especially useful in packaging food because of its ability to retain its shape under ordinary conditions of storage and handling and to restore it to its original shape when distorted by unusual external pressures.

4

The invention is hereby claimed as follows:

1. A plastic container of self-sustaining sheet material having a side wall structure characterized by alternating inwardly and outwardly extending recesses coextensive the entire height of said side wall and formed by intersecting triangular planes which impart rigidity to the side wall.

2. A plastic container of self-sustaining sheet material having a side wall structure characterized by alternating inwardly and outwardly extending recesses coextensive the entire height of said side wall and formed by intersecting triangular planes which impart rigidity to the side wall, said planes intersecting at obtuse angles.

3. A container of self-sustaining sheet material having a side wall structure characterized by alternating inwardly and outwardly extending recessed areas formed by intersecting triangular planes which impart rigidity to the side walls, said recessed areas forming a plurality of triangular shapes with their bases at the top of said container and their apices terminating in the lower part of said container and intermediate recessed areas primarily in the lower part of said container formed by intersecting triangular planes, said last mentioned areas terminating in apices adjacent the top of the container and having curved edges intersecting each other near the bottom of the container.

4. A container as claimed in claim 3 in which said curved edges near the bottom of the container define generally triangular areas which curve toward the bottom of the container.

5. A container as claimed in claim 1 which has corners formed between adjacent side walls of said container, each corner having a central inwardly extending groove on a line substantially bisecting said corner and extending from the top to the bottom of said container and an inwardly extending adjacent groove spaced from said central groove in the side walls leading to said corner and running from the top toward the bottom of said container, said adjacent grooves curving away from the central groove as they approach the bottom of said container.

References Cited in the file of this patent

UNITED STATES PATENTS

2,738,915	St. Clair	Mar. 20, 1956
3,005,572	Gustafson et al.	Oct. 24, 1961
3,094,240	Wanderer	June 18, 1963

FOREIGN PATENTS

58,857	France	Apr. 6, 1954
--------	--------	--------------