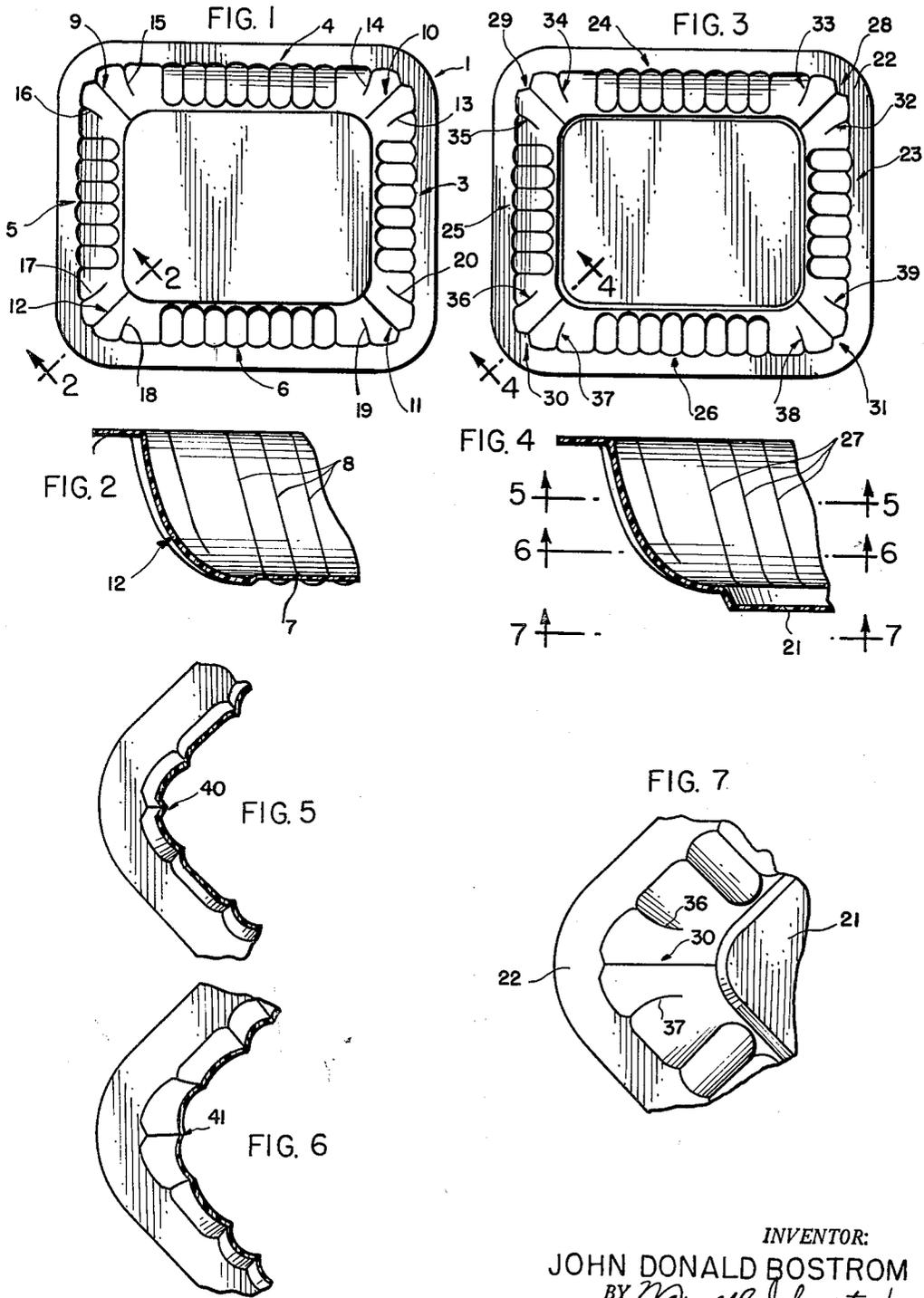


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J. D. BOSTROM
PLASTIC CONTAINER

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1

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PLASTIC CONTAINER

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This invention relates to a plastic 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 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. However, when containers constructed from this material have 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. This is a decided disadvantage, particularly in containers which are used to package foods and where it is desirable that the container have a pleasing appearance. A dented container frequently arouses 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 easily possible for the customer to press the 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 and improved container of self-sustaining, relatively rigid, resilient, distortable plastic material having corners which when pressed inwardly tend to restore to their initial positions.

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

FIGURE 1 represents a bottom plan view of one embodiment of a plastic container made in accordance with this invention;

FIGURE 2 represents a sectional view with parts broken away of the container shown in FIGURE 1 taken along the line 2-2 of FIGURE 1;

FIGURE 3 represents a bottom plan view of another embodiment of a container provided in accordance with the invention;

FIGURE 4 represents a partial sectional view of the container shown in FIGURE 3 taken along the line 4-4 of FIGURE 3;

FIGURE 5 is a plan sectional view taken along the line 5-5 of the portion of the container shown in FIGURE 4;

FIGURE 6 is a plan sectional view taken along the line 6-6 of the portion of the container shown in FIGURE 4; and

FIGURE 7 is a bottom plan view of the portion of the container shown in FIGURE 4.

As will be seen from the drawings, the invention provides a container of self-sustaining, relatively rigid, resilient, distortable plastic material comprising a bottom and wide walls extending upwardly from said bottom, corners formed between adjacent side walls of said container, and indentations formed in said corners whereby when said corners are pressed inwardly they will tend to restore to their original positions. The side walls are preferably inclined outwardly and the corners are preferably rounded or generally rounded as shown in the drawings. The side walls also preferably contain grooves or corrugations which increase the strength and rigidity.

2

These grooves preferably run from the top to a point near the bottom of the container in the manner shown in the drawings. This structure of the container does not form a part of the invention. The bottom of the container may be flat, inverted upwardly or offset downwardly with respect to the side walls.

In FIGURE 1 the container 1 consists of a single piece of self-sustaining, relatively rigid, resilient, transparent, distortable plastic material, such as oriented polystyrene, which is made by a special process in which the polystyrene sheet is stretched. The upper part of the container 1 is provided with a substantially horizontal flange 2 which can form a sealing portion for a sheet of plastic material or other suitable cover for the container. The side walls 3, 4, 5 and 6 extend from the flange portion 2 to the bottom 7. The intermediate portions of the side walls are shaped in the formation of the container by molding, stamping, or otherwise, to provide grooves or corrugations as shown at 8 in FIGURE 2 which extend from the top of the container to a point adjacent the bottom thereof and serve to increase the rigidity of the side walls. Heretofore, where containers of this type have been made with such reinforcing grooves or corrugations, it has been customary to make the corners rounded without any grooves. This results in a container in which the corners are readily distorted and do not recover from the distortion, particularly when the container is filled and sealed.

In the practice of this invention it has been found that by providing an inwardly extending groove or indentation at the corners as shown by the grooves 9, 10, 11 and 12, it is possible to make a container in which the corners, after being pressed inwardly, will tend to restore to their original positions. The grooves or indentations 9, 10, 11 and 12 preferably extend in a line substantially bisecting the corners and preferably run substantially from top to bottom of the container.

In addition to the indentation at the corners it is also desirable to provide inwardly extending adjacent grooves spaced from the corner groove in the adjacent side walls and running from the top toward the bottom of the container but curving away from the corner groove toward the bottom of the container. Such indentations are shown in FIGURE 1 by the numerals 13, 14, 15, 16, 17, 18, 19 and 20. These curved indentations further assist in restoring the corners after they have been pressed inwardly, especially containers having generally rounded corners, such as shown in the drawings.

The container shown in FIGURE 3 is generally similar to that shown in FIGURE 1 except that the bottom 21 is offset downwardly. The top flange portion 22 is connected to the bottom 21 by side walls generally shown at 23, 24, 25 and 26. The intermediate portions of the side walls are preferably provided with reinforcing, upwardly extending grooves 27 (FIGURE 4) similar to the grooves 8 in FIGURE 2. The inwardly extending indentations 28, 29, 30 and 31 at the corners are similar to the indentations 9, 10, 11 and 12 in FIGURE 1. Each corner is also preferably rounded and provided with adjacent indentations 32, 33, 34, 35, 36, 37, 38 and 39 which extend part way from the top toward the bottom and curve away from the corner indentation.

As will be seen from FIGURES 5, 6 and 7, the corner indentations preferably taper and form a sharper angle at 40 near the top of the container than at 41 near the bottom. FIGURE 7 illustrates the manner in which the indentations adjacent the corner indentation curve in the preferred practice of the invention. The combination of the corner indentations which fall in a straight vertical plane and the adjacent indentations which fall in a curved vertical plane assists in restoring the plastic material to

3

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 shape of the container is not particularly important so long as it has corners. It may, for example, 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 receptacle 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.

The invention is hereby claimed as follows:

1. A container of self-sustaining, relatively rigid, resilient, distortable plastic material comprising a bottom and side walls extending upwardly therefrom, 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 along at least a portion of the vertical height of the side walls to substantially adjacent the bottom of said container and first and second inwardly extending adjacent grooves each spaced from said central groove and located on opposite sides of said central extending groove in the side walls leading to said corner and running along at least a portion of the vertical height of the side walls toward the bottom of said container in the respective side walls, said adjacent grooves curving respectively away from the central groove as they approach the bottom of said container.

2. The container set forth in claim 1 wherein the side walls extend radially outwardly from the bottom wall and the central groove in the corner has a curvilinear portion along the vertical height thereof.

3. The container set forth in claim 1 wherein the said adjacent grooves terminate short of the vertical plane of the lower termination of said central groove.

4

4. The container set forth in claim 1 wherein the central groove merges with the bottom of the container.

5. The container set forth in claim 1 wherein the central groove has a varying width as measured at the mouth and along the vertical extent thereof, the groove being narrower adjacent the bottom of the container.

6. The container set forth in claim 1 which is further characterized as being generally rectilinear in configuration, the periphery of the container adjacent the top having a greater dimension than the periphery adjacent the bottom, the side walls being stepped adjacent the bottom, the central and adjacent grooves terminating at the step portions of the side wall.

7. The container set forth in claim 1 wherein said central inwardly extending groove extends from the top of the container to substantially adjacent the bottom of the container.

8. A container of self-sustaining, relatively rigid, resilient, distortable plastic material comprising a bottom and side walls extending upwardly therefrom, corners formed between adjacent side walls of said container, each corner having a central inwardly extending groove on a line bisecting said corner and extending along at least a portion of the vertical height of the side walls to the bottom of said container, a plurality of grooves in each of said adjacent side walls spaced from said central groove in said corner, at least said corner groove extending radially inwardly adjacent the lower terminus thereof for a discreet distance into the plane of said bottom wall and at a relatively large angle to the major plane of said side walls, first and second areas of said container immediately adjacent and on opposite sides of said central groove intermediate the next adjacent grooves in adjacent side walls in the vicinity of the lower terminus of the central groove, each having a radially outward bulbous shape to provide increased strength to resist deformation thereof.

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