

[54] PLASTIC CONTAINER

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[58] Field of Search220/97, 21, 70, 97 R, 66

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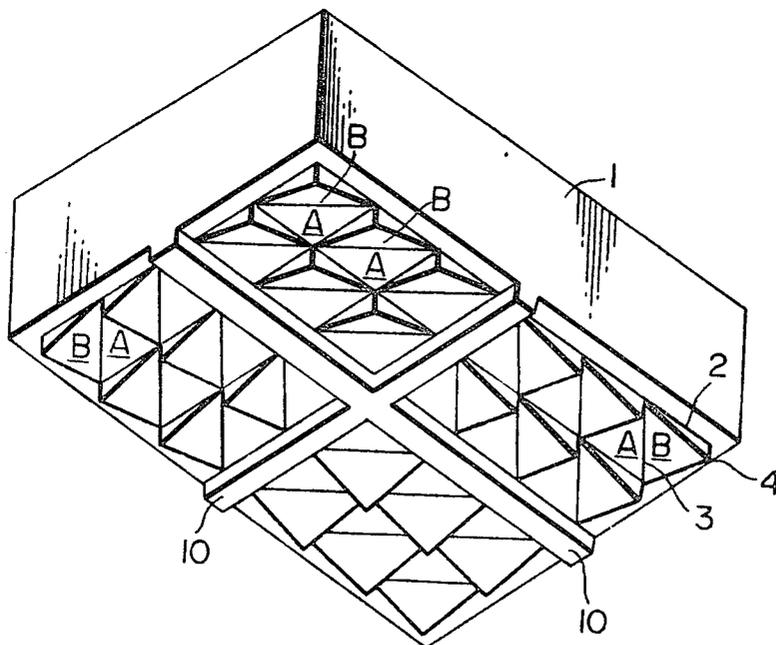
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[57] ABSTRACT

The improvement of a rectangular, bottomed container of plastic opening upwardly and having a plurality of bottle compartments divided by means of a latticelike partition. The underside of each of said divided compartments comprises, with the diagonal thereof as a boundary, a flat triangular zone and a triangular zone which gradually rises to an apex with said diagonal as a base, at least one of said triangular zones which gradually rise to an apex sloping in a direction different from the others.

10 Claims, 12 Drawing Figures



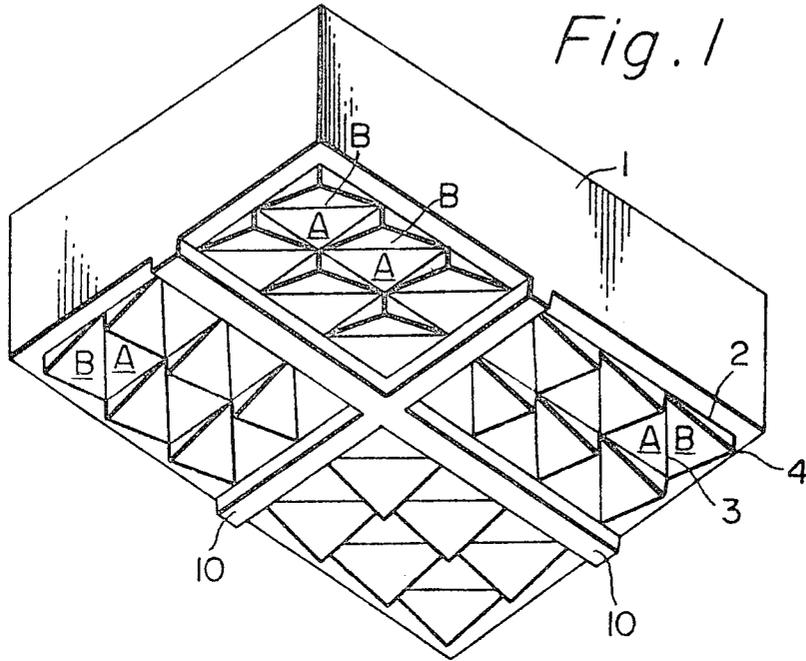


Fig. 2

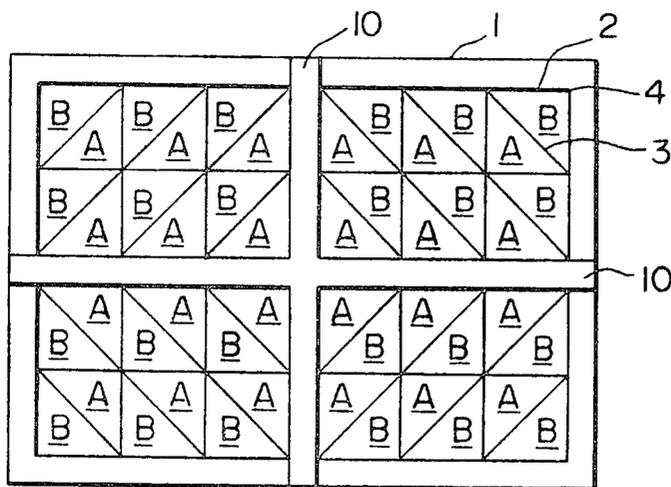


Fig. 3

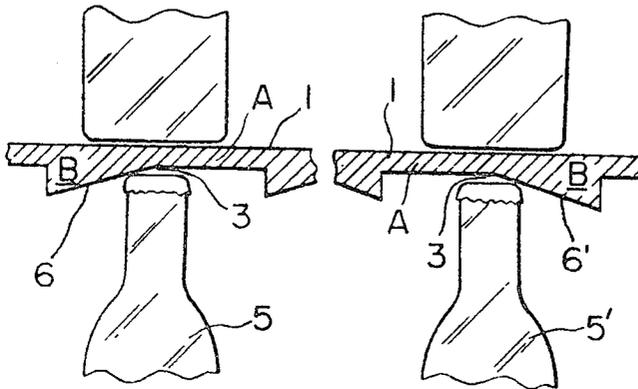


Fig. 4b

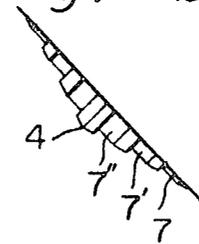


Fig. 4a

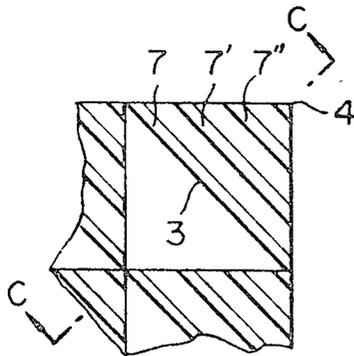
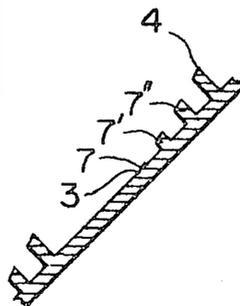
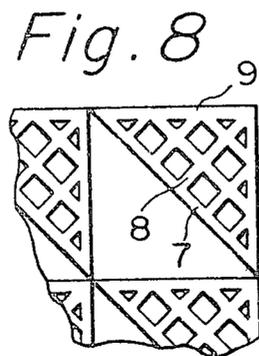
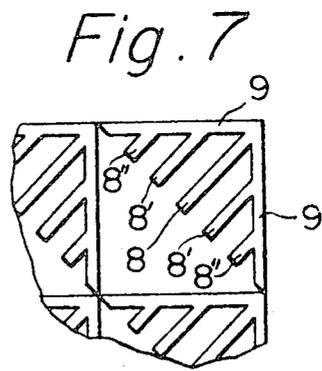
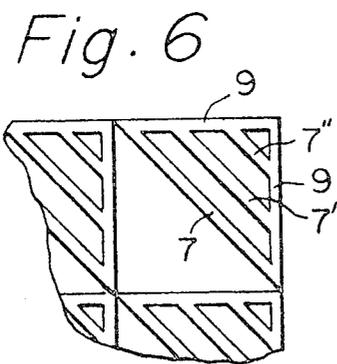
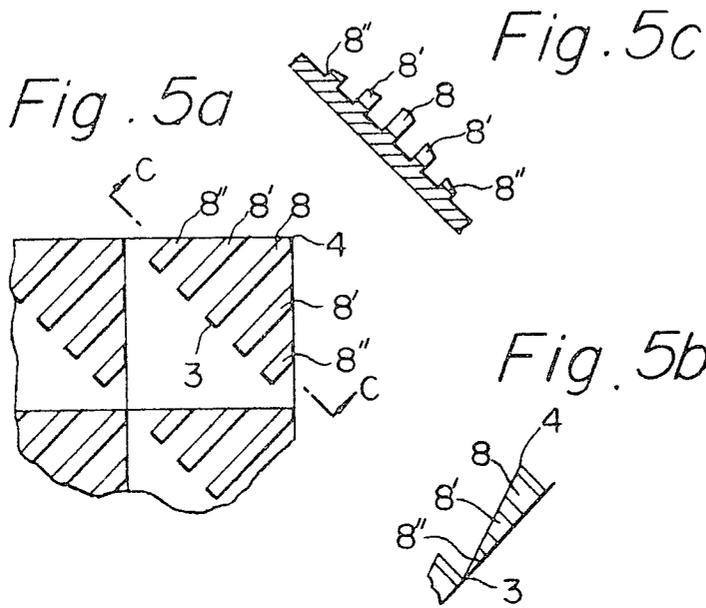


Fig. 4c





PLASTIC CONTAINER

This invention relates to a plastic container used in the transportation and storage of bottles and the like. More particularly, the invention relates to a container in which an improvement has been made relative to the prevention of slippage when the container has been packed with bottles and like and stacked in several layers.

When bottles and the like are packed in plastic containers and handled or stored, it is usual to stack the containers in several layers with the top of the bottles contained in a container of the layer beneath coming in contact with the underside of the bottom panel of the container stacked above. Thus, there is a likelihood of the containers readily slipping with the application of a slight external force to cause a displacement of the load and breakage of the bottles or containers. Hence, the underside of the bottom panel of the container is required to be of a slippage prevention construction, and various manners of achieving this end have been suggested.

The present invention, which prevents such slippage, is of a construction as illustrated in the accompanying drawings, wherein:

FIG. 1 is a view in perspective, as seen from the underside, illustrating one embodiment of the invention container;

FIG. 2 is a plan view of the underside of the container of FIG. 1;

FIG. 3 is a partial view in cross section illustrating a stacked container of the present invention packed with bottles;

FIG. 4a is a plan view illustrating a modification of the protruding portion;

FIG. 4b is a side view of the modification of FIG. 4a;

4c is a view in cross section taken along line c-c of FIG. 4a;

FIG. 5a is a plan view illustrating another modification of the protruding portion;

FIG. 5b is a side view of the modification of FIG. 5a;

FIG. 5c is a view in cross section taken along line c-c of FIG. 5a;

FIGS. 6-8 are each a plan view illustrating additional modifications of the protruding portion.

Referring to FIG. 1, which is a perspective view as seen from the underside of the bottom panel of a rectangular container 1 according to the present invention, container 1, which has a bottom with a planar upper support surface and opens upwardly, is divided by means of a latticelike partition into square compartments for 24 bottles. In FIG. 2, which is a plan view of the underside of container 1, an underside 2 of each compartment divided into a square is provided with triangular zones A and B with a diagonal 3 acting as the boundary. Triangular zone A is flat and disposed in parallel with the upper support surface of the bottom, whereas triangular zone B gradually rises from diagonal 3 towards an apex 4. In the FIGURES, the 24 square compartments are divided into four groups. The triangular zones B of the six compartments of these four groups all slope upwardly towards the central part of the container (hence the triangular zones of the 24 compartments do not all uniformly face in the same direction). The direction in which the slope faces can be suitably chosen with an artistic effect in mind; however, since the triangular zones B perform the function of preventing the slippage towards their apices as a result of their being in contact with the tops of the bottles in the container stacked below, the triangular zones B should not be all sloping uniformly in the same direction. At least one of the triangular zones B must be sloping in a different direction.

A container, such as illustrated in FIGS. 1 and 2, in which the several triangular zones B slope downwardly away from the central part of the underside of the container is one of the most preferred embodiments of this invention. When the bottle-packed invention container is stacked, the upper rim of the mouth portion of the bottles 5, 5' contained in the container stacked below contacts, as shown in FIG. 3, the aforesaid diagonal of the underside of the container 1 stacked above. Hence, even though an external force happens to act against the upper container from left to right, the slippage of the con-

tainer is prevented as a result of the slippage between the upper rim of the bottle 5 and the underside of the upper container being stopped by the slope 6 of the protruding portion. On the other hand, the slippage between the upper rim of bottle 5' and underside of the upper container is stopped by the slope 6' of another protruding portion sloping in an opposite direction to that of the foregoing protruding portion to prevent the slippage of the container stacked above by an external force acting from right to left. Thus the container stacked above is prevented from slipping and falling off the container stacked below.

So far as the triangular zone B, i.e., the protruding portion, performs the function described above, it need not necessarily have a continuous slope such as shown in FIGS. 1-3. For example, it may include ribs of rectangular form 7, 7', 7'' arranged in parallel, as in FIGS. 4a-c, or ribs of triangular form of differing height 8, 8', 8'' arranged in parallel, as in FIGS. 5a-c. In short, it is only necessary, as previously noted, that a slope is formed gradually from a diagonal 3 as the base to an apex 4, whether continuous or discontinuous. FIGS. 6 and 7 show modifications in which outer ribs 9 are provided for the embodiments illustrated in FIGS. 4 and 5, respectively, for reinforcement and for further facilitation of the transportation of the containers in a stacked state. On the other hand, the modification shown in FIG. 8 is one in which further reinforcement is provided by combining the structure of FIG. 6 with that FIG. 7. All of the foregoing embodiments can be employed in the present invention in accordance with the purpose for which the container is intended.

In the protruding portions of the embodiments illustrated in FIGS. 4-8, the area of contact with the top of bottle is in all cases greater than in the case of the embodiment shown in FIGS. 1-2. Hence the slippage prevention effect is greater. A further advantage in the case of the embodiments shown in FIGS. 4-8 is that there is a lesser possibility of irregularities of thickness of panel occurring in forming the container.

Further, as shown in FIGS. 1-2, a cruciform projection 10 having a given height, say equal to that of the apex 4, may be provided on the underside of the bottom panel in this invention. The sides of this projection 10 function as a slippage prevention wall in case slippage occurs between the surface of the triangular zone B and the top of the bottles. This is especially effective in the case of a container which, being stacked in the topmost position, is in a relatively easily slipped state.

According to the present invention, since the top of each bottle in a container in a lower layer is in contact with the base vicinity of the sloping protruding portion provided in the underside of the container stacked above and as at least one of the several protruding portions slopes in a different direction, resistance is had to external forces from all directions, with the consequence that slippage prevention effects are demonstrated. Therefore, the invention container has great utility value as it is suitable for packing of bottles and the like which are to be transported and stored by stacking of the containers.

What is claimed is:

1. A plastic rectangular container comprising a bottom and a plurality of sidewalls extending upwardly therefrom, said bottom having a lower surface divided into a plurality of squares, each of said squares being diagonally divided to define first and second triangular zones on either side of a diagonal boundary, said first zones being flat and said second zones being sloped downwardly to an apex from said diagonal boundary, at least one of said second zones being arranged with the direction from said diagonal boundary to said apex oriented differently from the direction from said diagonal boundary to said apex of the others of said second zones.

2. The rectangular container as recited in claim 1 and further comprising partition means disposed in the area defined by said sidewalls and said bottom to divide said container into a plurality of square compartments aligned with and having the same dimensions as said squares on said lower surface of said bottom.

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3. The rectangular container as recited in claim 2 wherein said bottom has a planar upper support surface, and said first flat zones are disposed in parallel with said upper support surface.

4. The rectangular container as recited in claim 2 wherein said second zones have continuous surfaces.

5. The rectangular container as recited in claim 2 wherein said second zones have discontinuous surfaces.

6. The rectangular container as recited in claim 2 wherein said second zones slope upwardly toward the center of said bottom.

7. The rectangular container as recited in claim 2 and further comprising a pair of transversely disposed ribs extending downwardly from said lower surface in the configuration of a cruciform.

8. The rectangular container as recited in claim 2 wherein said lower surface is divided into four rectangular sectors,

each of said sectors including a plurality of said squares, and said second zones of said squares in each of said sectors are aligned.

9. The rectangular container as recited in claim 8 wherein said second zones of said squares in a first of said sectors are aligned in a first direction, said second zones of said squares in a second of said sectors are aligned in a second direction opposite to said first direction, said second zones of said squares in a third of said sectors are aligned in a third direction at an angle to said first and second directions, and said second zones of said squares in a fourth of said sectors are aligned in a fourth directions opposite to said third direction.

10. The rectangular container as recited in claim 8 wherein said first and second sectors are diagonally disposed and said third and fourth sectors are diagonally disposed.

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