

NESTABLE CONTAINER WITH PARTITIONS

TECHNICAL FIELD

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This invention relates to nestable containers having partitions. In particular the invention relates to nestable containers having partitions of a height exceeding 70% or more of the depth of the container.

10 BACKGROUND OF THE INVENTION

U.S. Patent No. 6,092,718 discloses a paper lunch box with partitions, which separate the holding space of the box into different compartments. Due to the partitions having heights less than the depth of the lunch box, food, especially fluids, in one compartment often run or spill into another compartment. If the height of the partitions exceeds about 70% of the depth of the box, the box warps when food is placed in it. If the heights of the partitions are substantially equal to or greater than the depth of the box, the notches in the vertical side panels will correspondingly extend across the entire height of the side panels, in order to retain effective nestability of the box, and cause the box to split. It is an object of this invention to provide a container that overcomes the above disadvantages or at least provide the public or industry with a useful choice.

25 SUMMARY OF THE INVENTION

It is an object of this invention to provide a container having partitions of a height exceeding 70% of the depth of the container, and at the same time retain rigidity of the container when contents are placed therein. It is another object of this invention to provide partitions of a height substantially equal to

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the depth of the container, and at the same time retain nestability of the container. It is yet a further object of this invention to provide partitions of a height greater than the depth of the container.

Accordingly the present invention consists in a container having:-

- 5 a base panel;
 walls connected to said base panel;
 at least one V or U shaped partition, each said partition attached to said base panel and two said walls
 flaps aligned with said partitions on the longitudinal exposed edges of
10 said walls; and
 cut-outs in said base panel and said walls below said partitions .

Preferably at least one of said at least one partition is M shaped.

- Preferably said container includes a plurality of partitions each said partition being attachable to another said partition instead of or in addition to at
15 least one said wall and said container includes a cut-out below each join of two said partitions.

Preferably said cut-outs below the attached partition are the shape of said attached partition.

- Preferably at least one of said at least one partition is of a height
20 exceeding 70% of the container's depth.

Preferably at least one of said at least one partition is of a height substantially equal to the container's depth.

Preferably at least one of said at least one partition is of a height greater than the container's depth.

- 25 Preferably said container includes a plurality of partition wherein said plurality of partitions are not all the same height.

Preferably said container includes a lid.

Preferably said lid is separate from said container.

Alternatively said lid is integral with said container.

Preferably said lid has grooves at positions corresponding to the partition vertices to enable said partition vertices to penetrate said lid.

Preferably said lid has sides.

Preferably said lid sides have slits to engage said flaps.

5 Preferably said lid has cuts to allow said flaps to penetrate therethrough.

Preferably said sides of said lid are at an acute angle to said lid and said walls are at an obtuse angle to said base.

Preferably said acute angle is about 80 degrees and said obtuse angle is about 100 degree.

10 Alternatively said sides of said lid are substantially at a right angle to said lid and said walls are substantially at a right angle to said base.

Preferably said container is formed from a cardboard blank.

Preferably said container is formed from molded plastics.

Preferably said container is formed from pulps.

15 Preferably said partitions are made of a different material to said base panel, said walls and said flaps.

This invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of
20 said parts, elements or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth.

25 BRIEF DESCRIPTION OF THE DRAWINGS

The following drawings illustrate, by way of an example, the preferred embodiment of the invention:-

Figure 1 is a top view of a cardboard blank according to one
30 embodiment of the present invention,

Figure 2 is an assembly view of a container formed from the cardboard blank of Figure 1,

Figure 3A is a perspective view of a partition with an inverted-V cross section,

5 **Figure 3B** is a perspective view of an alternate form of the partition having an inverted-U cross section,

Figure 3C is a perspective view of another form of the partition with an M cross section,

10 **Figure 4** illustrates an assembly view of the container with the partitions attached,

Figure 5 shows a cut in the length of a partition when another partition is attached to it,

15 **Figure 6** is a perspective view of an alternative embodiment of the container with the partitions having heights exceeding the depth of the container,

Figure 7 is a perspective view of the container of Figure 6 in a closed position,

Figure 8 is a side view of a part of the container of Figure 6 with the flap upright,

20 **Figure 9** is a perspective view of the container when the flap is upright and the container is closed.

Figure 10 is a side view of the part of the container of Figure 6 with the flap folded down, and

25 **Figure 11** shows the containers nested on one another.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A container is formed from a cardboard blank 100 shown in Figure 1. The cardboard blank 100 is shaped and bend lines are formed thereon by
30 methods known in the art. The cardboard blank 100 is then bent into shape

along the bend lines and adhered together at welding locations 102, by adhering methods such as ultrasonic welding or Electro Frequency welding, or other methods known in the art, to form a container 200 as illustrated in Figure 2. The formed container 200 has a rectangular base panel 202, walls 204 connected to the base panel 202, and flaps 206 extending from the longitudinal exposed edges of the walls 204. Slots 208 are cut in the base panel 202 and the walls 204 below the flaps 206. The container 200 also has a lid 210. The lid 210 has lid sides 212 with slits 214. The slits 214 may be cut partially or through the lid sides 212.

10 All the walls 204 are at an obtuse angle of about 100° with the base panel 202, and the lid sides 212 are at an acute angle of about 80° with the lid 210. This angled arrangement allows for the walls 204 and lid sides 212 to engage with each other to better secure the lid 210 in a closed position. The lid 210 is of a slightly larger size than the base panel 202 to enable closing the container 200. In an alternative embodiment, the walls 204 can be at a right angle with the base panel 202, and correspondingly the lid sides 212 can also be at a right angle with the lid 210. In this configuration where the walls 204 and the lid sides 212 are at right angles with the base panel 202 and the lid 210 respectively, the lid 210 is again slightly larger than the base panel 202 to ease closing of the container 200.

Figure 3A shows a partition 300 of a height substantially equal to the depth of the container 200 and has an inverted-V cross-section. Figure 3B shows an alternative form of the partition 300 having an inverted-U shaped cross section. Figure 3C shows another form of the partition 300 having an M shaped cross section. The M shaped partition has a recess 304 to allow for objects, such as chopsticks or toothpicks, to rest. The partitions 300 have varying lengths to accommodate for different partitioning requirements. The partitions 300 also have extended portions 302. The extended portions 302 provide adhering surfaces for the partitions 300 to attach to the base panel 202 and to the walls 204 over the slots 208, and to another partition 300 wherever

applicable, by adhering methods such as ultrasonic welding or Electro Frequency welding, or other methods known in the art.

Figure 4 shows an assembled container 200 with the partitions 300 attached by the extended portions 302 to the base panel 202 and to the walls 204 and to another partition 300 by adhering methods such as ultrasonic welding or Electro Frequency welding, or other methods known in the art. The partitions 300 have a corresponding inverted U or V shaped cut along its length if the extended portion 302 of another partition 300 is attached to it, as shown in Figure 5. By changing the combination of different partitions and arrangements, the holding space of the container 200 can be separated into different compartments.

When the lid 210 is flipped down and the container 200 is closed, the flaps 206 will also be folded down. As the lid is closed, the flaps 206, by the action of closing the container 200, engage with the slits 214 to further secure the lid 210.

Referring to Figure 6, an alternative embodiment of this invention is to provide partitions 602 of heights greater than the depth of the container 200. The higher partitions 602 are similar to the partitions 300 and can have either the inverted-V or inverted-U cross section. The higher partitions 602 are similarly attached to the base panel 202 and walls 204 and 602 by adhering methods such as ultrasonic welding.

Grooves 604 are made in the lid 210 at positions corresponding to the higher partitions 602. The grooves 604 not only allow for the vertices of the higher partitions 602 to penetrate the lid 210 and therefore permit closing of the container 200, as shown in Figure 7, but also minimise spill-over or leakage of contents or rapid loss of heat when the container 200 is closed.

The flaps 206 act as reinforcements to provide bending strength to the container 200 and to prevent warping or splitting of the container 200 due to the slots 208. The flaps 206 can be left in an upright position as shown in Figure 8. In such a position, cuts 902 are made on the lid 210 to receive the

flaps 206 when the container 200 is closed. Figure 9 illustrates the flap 206 penetrating the cut 902 when the container is closed. Alternatively, flaps 206 can be folded down as shown in Figure 10 to facilitate closing of the container 200.

5 Two or more of the containers 200 are nestable on one another as shown in Figure 11, thus saving storage space.

The container 200 is not restricted to having a rectangular shape. The container 200 may also be in alternative shapes, such as circular, oval, or triangular.

10 The container 200 can also be formed from molded plastics or pulps or other multiple compounds.

The foregoing description of the preferred embodiment of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed, since many modifications or variations thereof are possible in the
15 light of the above teaching. All such modifications and variations are within the scope of the invention. The embodiments described herein were chosen and described in order best to explain the principles of the invention and its practical application, thereby to enable others skilled in the art to utilise the
20 invention in various embodiments and with various modifications as are suited to the particular use contemplated thereof. It is intended that the scope of the invention be defined by the claims appended hereto, when interpreted in accordance with the full breadth to which they are legally and equitably suited.

CLAIMS

1. A container having:-
a base panel;
5 walls connected to said base panel;
at least one V or U shaped partition, each said partition attached to said
base panel and two said walls
flaps aligned with said partitions on the longitudinal exposed edges of
said walls; and
10 cut-outs in said base panel and said walls below said partitions .
2. A container according to claim 1 wherein at least one of said at least one
partition is M shaped.
- 15 3. The container according to claim 1 or claim 2 including a plurality of
partitions each said partition being attachable to another said partition instead
of or in addition to at least one said wall and said container includes a cut-out
below each join of two said partitions.
- 20 4. A container according to any claims of 1 to 3 wherein said cut-outs
below the attached partition are the shape of said attached partition.
5. The container according to anyone of claims 1 to 4 wherein at least one
of said at least one partition is of a height exceeding 70% of the container's
25 depth.
6. The container according to anyone of claims 1 to 4 wherein at least one
of said at least one partition is of a height substantially equal to the container's
depth.

7. The container according to anyone of claims 1 to 4 wherein at least one of said at least one partition is of a height greater than the container's depth.
8. The container according to anyone of claims 1 to 4 having a plurality of
5 partition wherein said plurality of partitions are not all the same height.
9. The container according to any one of claims 1 to 8 further having a lid.
10. The container according to claim 9 wherein said lid is separate from said
10 container.
11. The container according to claim 9 wherein said lid is integral with said container.
- 15 12. The container according to anyone of claims 9 to 11, wherein said lid has grooves at positions corresponding to the partition vertices to enable said partition vertices to penetrate said lid.
13. The container according to anyone of claims 9 to 12 wherein said lid has
20 sides.
14. The container according to claim 13 wherein said lid sides have slits to engage said flaps.
- 25 15. The container according to anyone of claims 9 to 13 wherein said lid has cuts to allow said flaps to penetrate therethrough.
16. The container according to anyone of claims 13 to 15 wherein said sides of said lid are at an acute angle to said lid and said walls are at an obtuse angle
30 to said base.

17. The container according to claim 16 wherein said acute angle is about 80 degrees and said obtuse angle is about 100 degree.

5 18. The container according to anyone of claims 13 to 15 wherein said sides of said lid are substantially at a right angle to said lid and said walls are substantially at a right angle to said base.

19. The container according to any one of claims 1 to 18 formed from a
10 cardboard blank.

20. The container according to any one of claims 1 to 18 formed from molded plastics.

15 21. The container according to any one of claims 1 to 18 formed from pulps.

22. The container according to any one of claims 1 to 18 wherein said partitions are made of a different material to said base panel, said walls and said flaps.