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Thermally Insulated Container Assembly

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Abstract

A thermally insulated container assembly 90 comprises a base 70 erected from a first foldable blank 20, and a lid 80 erected from a second foldable blank 40. The base 70 includes a pair of opposing first side wall panels 22, and a respective spacer panel 25 hinged to each one of the first side wall panels 22. Each one of the first side wall panels 22 includes an exterior surface. The lid 80 includes a pair of opposing second side wall panels 41, 42. The lid 80 is mountable on the base 70 such that each one of the second side wall panels 41, 42 overlies the exterior surface of a respective one of the first side wall panels 22, and such that each one of the second side wall panels 41, 42 is spaced apart from the first side wall panel 22 which the second side wall panel 41, 42 overlies by an air gap 92 as well as the spacer panel 25 which is hinged to the first side wall panel 22.

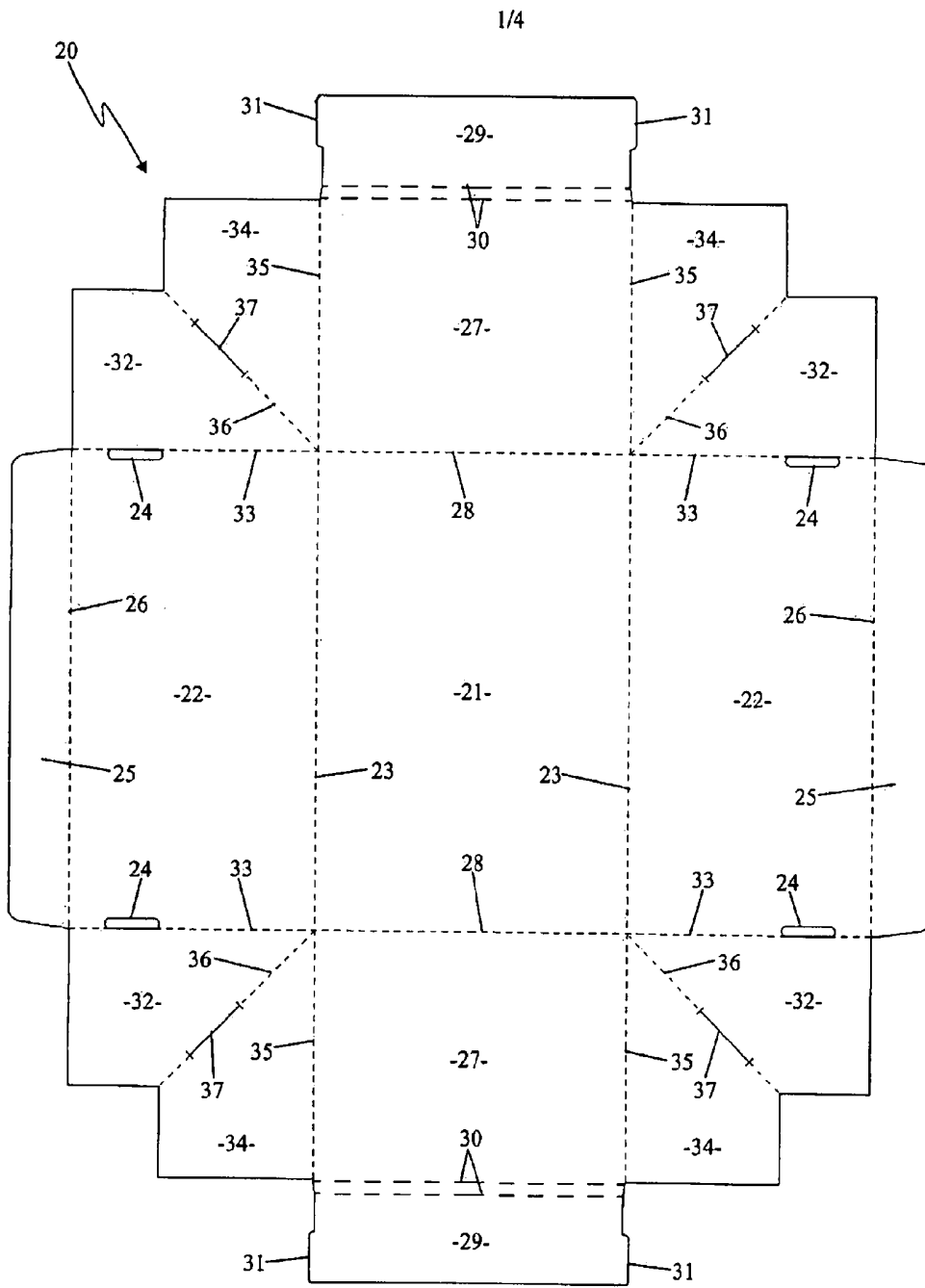


FIGURE 1

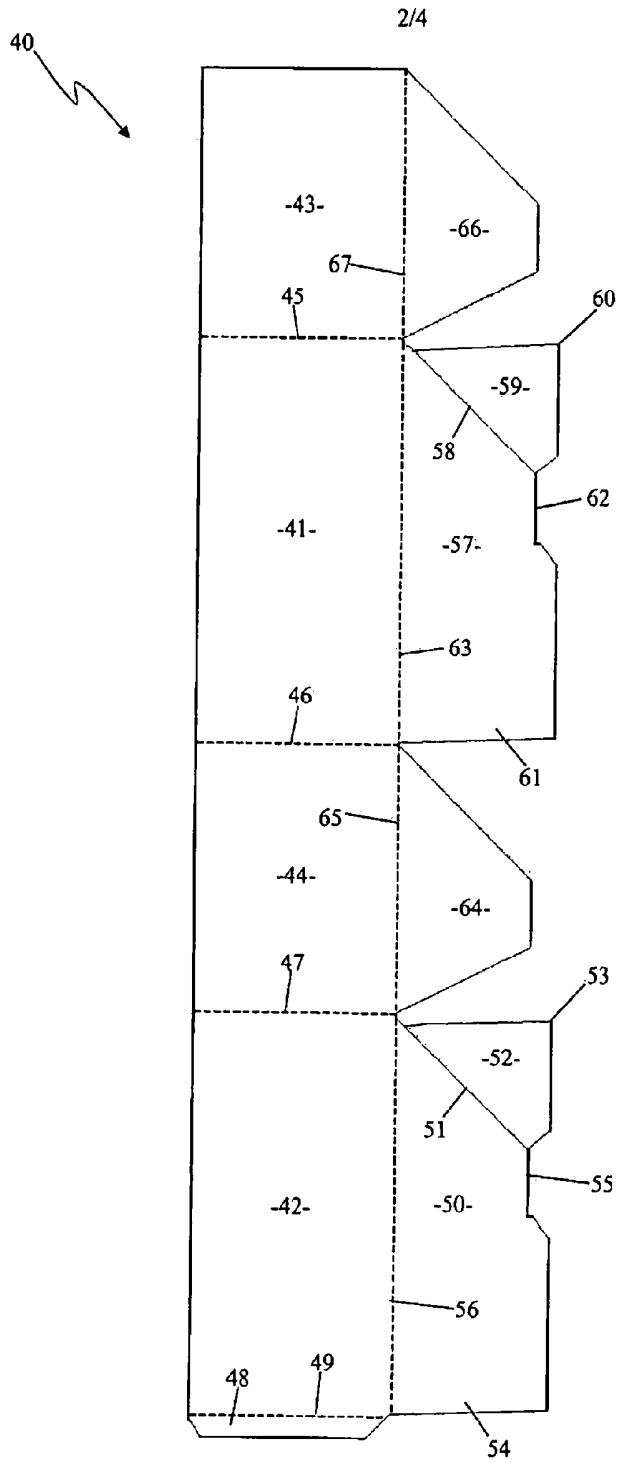


FIGURE 2

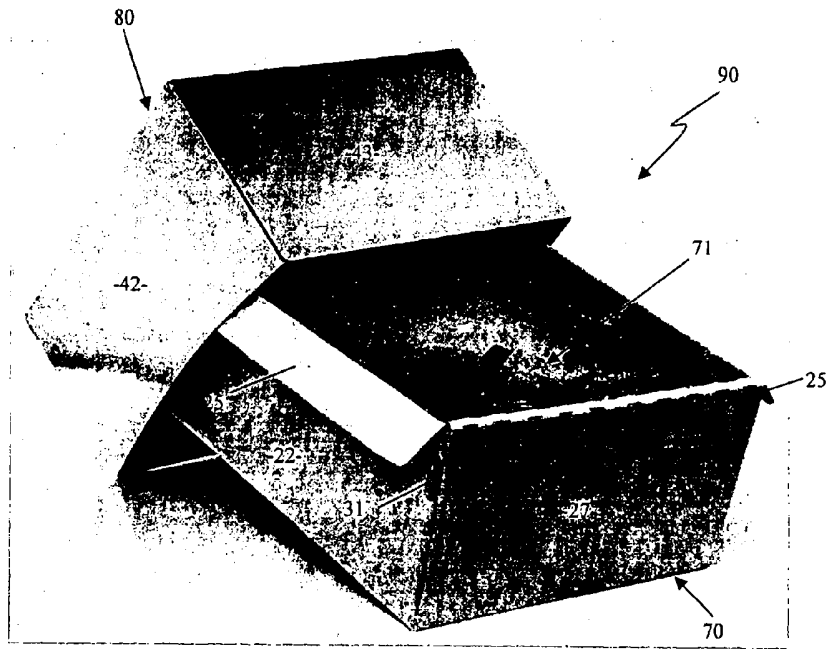


FIGURE 5

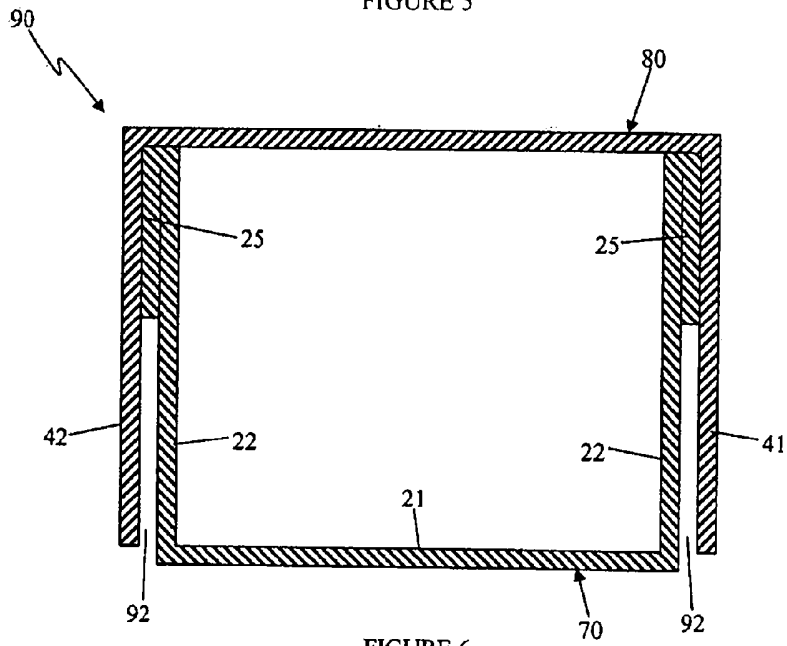


FIGURE 6

THERMALLY INSULATED CONTAINER ASSEMBLY

Field of the Invention

The present invention relates generally to container assemblies of the type
5 which include a base erected from a first foldable blank, and a lid which is erected
from a second foldable blank, and which is mountable on the base. In particular, the
present invention relates to thermally insulated container assemblies of the
aforementioned type.

Although the thermally insulated container assembly according to the
10 present invention will be described with particular reference to being used to store
chilled broccoli, it will be appreciated that this is by way of example only and that
the container assembly according to the present invention is not necessarily limited
to being used to store chilled broccoli. For example, the container assembly
according to the present invention may be used to store other vegetables, fruit, meat,
15 or any other products which may or may not be chilled.

Brief Discussion of the Prior Art

Thermally insulated container assemblies of the type which include a base
and a lid which is mountable on the base, are often made from styrofoam.

20 A significant disadvantage of styrofoam container assemblies of the
aforementioned type is that they usually cannot be configured so that they are able to
occupy less space when they are not being used to store anything. Consequently, a
relatively large amount of space is required to store empty styrofoam container
assemblies compared to the amount of space which is required to store container
25 assemblies which are able to be configured so that they are able to occupy less space.
Thus empty styrofoam container assemblies can be expensive to store and transport
compared to other types of container assemblies.

Also, because styrofoam is not a biodegradable material, styrofoam
container assemblies are not environmentally-friendly. This is in contrast to other
30 types of container assemblies which are made from biodegradable material such as
paperboard.

It would therefore be desirable to provide an alternative to thermally insulated container assemblies which are made from styrofoam.

Summary of the Invention

5 It is an object of the present invention to overcome, or at least ameliorate, one or more of the deficiencies of the prior art mentioned above, or to provide the consumer with a useful or commercial choice.

Other objects and advantages of the present invention will become apparent from the following description, taken in connection with the accompanying 10 drawings, wherein, by way of illustration and example, a preferred embodiment of the present invention is disclosed.

According to a broad aspect of the present invention there is provided a thermally insulated container assembly comprising a base erected from a first foldable blank, and a lid erected from a second foldable blank, the base including a 15 pair of opposing first side wall panels, and a respective spacer panel hinged to each one of the first side wall panels, each one of the first side wall panels including an exterior surface, and the lid including a pair of opposing second side wall panels, the lid being mountable on the base such that each one of the second side wall panels overlies the exterior surface of a respective one of the first side wall panels, and such 20 that each one of the second side wall panels is spaced apart from the first side wall panel which the second side wall panel overlies by an air gap as well as the spacer panel which is hinged to the first side wall panel.

When the lid is mounted on the base, the air gap between each one of the second side wall panels and the first side wall panel which the second side wall panel 25 overlies is able to serve as a thermal insulator which is able to inhibit the transfer of heat from outside of the container assembly to any chilled products which may be stored in the base of the container assembly. For example, if chilled broccoli is stored in the base of the container assembly, the air gap is able to inhibit the transfer of heat from outside the container assembly to the chilled broccoli which is stored in 30 the base of the container assembly.

The spacer panels which are hinged to the first side wall panels are able to

reinforce the first side wall panels so that the first side wall panels are inhibited from being bowed outwardly by any products which may be stored in the base. Inhibiting the first side wall panels from being bowed outwardly in turn inhibits the width of the air gap between each one of the first side wall panels and the second side wall panel which overlies the first side wall panel from being reduced. Reducing the width of the air gap is undesirable because it reduces the amount of thermal insulation which is able to be provided by the air gap.

The first foldable blank and the second foldable blank may be formed from any suitable material. Preferably, the first foldable blank and the second foldable blank are formed from paperboard. In one particular preferred form, the first foldable blank and the second foldable blank are formed from corrugated paperboard.

It is preferred that the first foldable blank or the second foldable blank are substantially waterproof. In one particular preferred form, there is a layer of waterproof or substantially waterproof material on both sides of the first foldable blank or the second foldable blank. The waterproof material is preferably polyethylene, however it will be appreciated that any other suitable type of waterproof material may be used.

To assist in reflecting heat from the container assembly, the first foldable blank or the second foldable blank may include a reflective layer on at least an exterior surface of the first or second foldable blank. It is preferred however that there is a reflective layer on both an exterior surface and an interior surface of the first or second foldable blank.

The reflective layer may be any suitable type of reflective layer. Preferably, the reflective layer is a reflective metal layer. For example, the reflective metal layer may be a reflective metal foil layer.

Preferably, each one of the first side wall panels includes a top edge, and each one of the spacer panels is hinged along the top edge of a respective one of the first side wall panels.

The air gap may be located anywhere relative to the spacer panel. Preferably, the air gap is located below the spacer panel.

It is preferred that each one of the second side wall panels substantially covers the exterior surface of the first side wall panel which the second side wall panel overlies.

5 In a preferred form, the base of the thermally insulated container assembly also includes a bottom wall panel, and the first side wall panels are hinged to the bottom wall panel. The base may also include a pair of opposing first end wall panels hinged to the bottom wall panel. Preferably, a respective pair of opposing side flaps is hinged to each one of the first side wall panels. A respective pair of opposing end flaps may be hinged to each one of the first end wall panels. It is preferred that each one of the side flaps is hinged to a respective one of the end flaps. 10 It is also preferred that a respective reinforcing panel is hinged to each one of the first end wall panels, and that the reinforcing panels overlie the first end wall panels. In a preferred form, each one of the reinforcing panels includes a pair of tabs, and each one of the first side wall panels includes a pair of openings which each receive a 15 respective one of the tabs of each one of the reinforcing panels.

In a preferred form, the lid of the thermally insulated container assembly also includes a pair of opposing second end wall panels, wherein each one of the second end wall panels is hinged to each one of the second side wall panels. The lid preferably also includes a plurality of top closure flaps hinged to the second side wall 20 panels and the second end wall panels. It is preferred that at least some of the top closure flaps interlock with each other.

Preferably, the base or lid is/are able to be collapsed so that it/they does/do not occupy as much space as when it/they are erected. After the base or lid is/are collapsed, they may be re-erected so that it/they can again be used to store a product. 25

Brief Description of the Drawings

In order that the invention may be more fully understood and put into practice, a preferred embodiment thereof will now be described with reference to the accompanying drawings, in which:

30 Figure 1 depicts a foldable blank from which the base of a thermally insulated container assembly is able to be erected;

Figure 2 depicts a foldable blank from which the lid of the thermally insulated container assembly is able to be erected;

Figure 3 depicts the base of the thermally insulated container assembly;

Figure 4 depicts the lid of the thermally insulated container assembly;

5 Figure 5 depicts the lid of the thermally insulated container assembly when the lid is partially mounted on the base of the assembly; and

Figure 6 is a simplified cross-section of the thermally insulated container assembly when the lid of the assembly is mounted on the base of the assembly.

10 Detailed Description of the Drawings

Figure 1 of the drawings depicts a foldable blank 20 from which a base of a thermally insulated container assembly is able to be erected. Blank 20 includes a rectangular bottom wall panel 21, and a pair of opposing rectangular first side wall panels 22 which are hinged to the bottom wall panel 21 along fold lines 23. Each
15 one of the first side wall panels 22 includes a pair of elongate openings 24. A respective spacer panel 25 is hinged to each one of the first side wall panels 22 along a fold line 26. Spacer panels 25 are substantially rectangular-shaped.

Blank 20 also includes a pair of opposing rectangular first end wall panels 27. Each end wall panel 27 is hinged to the bottom wall panel 21 along a fold line
20 28. A respective reinforcing wall panel 29 is hinged to each one of the first and wall panels 27 along a pair of parallel fold lines 30. Each reinforcing wall panel 29 is substantially rectangular-shaped, and includes a pair of opposing tabs 31.

A respective pair of opposing side flaps 32 is hinged to each one of the first side wall panels 22 along fold lines 33. A respective pair of opposing end flaps 34 is
25 hinged to each one of the first end wall panels 27 along fold lines 35. Each side flap 32 is located adjacent to a respective one of the end flaps 34, and is hinged to the end flap 34 along a diagonal fold line 36. A respective cut line 37 extends along each one of the diagonal fold lines 36.

Figure 2 of the drawings depicts a foldable blank 40 from which a lid of the
30 thermally insulated container assembly is able to be erected. Blank 40 includes a pair of rectangular second side wall panels 41, 42, and a pair of rectangular second

end wall panels 43, 44. End wall panel 43 is hinged to the side wall panel 41 along a fold line 45. End wall panel 44 is hinged to the side wall panel 41 along a fold line 46, and is hinged to the side wall panel 42 along a fold line 47.

5 An elongate securing flap 48 is hinged to the side wall panel 42 along a fold line 49.

Blank 40 also has a top closure flap 50. Top closure flap 50 includes an oblique fold line 51 which defines a foldable flap 52. Foldable flap 52 forms part of the top closure flap 50. As can be seen, foldable flap 52 includes one corner 53 of the top closure flap 50. The other end 54 of the top closure flap 50 does not include
10 any oblique fold line. The top closure flap 50 also includes a recess 55. Top closure flap 50 is hinged to the side wall panel 42 along a fold line 56.

Blank 40 also has a top closure flap 57. An oblique fold line 58 is formed in top closure flap 57 to define a foldable flap 59. Foldable flap 59 includes a corner 60 of the top closure flap 57. The other end 61 of the top closure flap 57 does not
15 include any oblique fold line. The top closure flap 57 also includes a recess 62. Top closure flap 57 is hinged to the side wall panel 41 along a fold line 63.

Blank 40 also includes a top closure flap 64 which is hinged to the end wall panel 44 along a fold line 65, and a top closure flap 66 which is hinged to the end wall panel 43 along a fold line 67.

20 Figure 3 depicts the base 70 which is erected from the foldable blank 20. Base 70 is erected from the blank 20 by folding the blank 20 along the fold lines 23, 28, 33, 35, 36 such that the first side wall panels 22 and the first end wall panels 27 are perpendicularly upstanding relative to the bottom wall panel 21, the end flaps 34 which are hinged to each of the first end wall panels 27 overlie the interior surface of
25 the end wall panel 27, and such that the side flap 32 hinged to each of the end flaps 34 overlies the end flap 34.

The reinforcing wall panels 29 are then folded relative to the first end wall panels 27 along the parallel fold lines 30 so that the reinforcing wall panels 29 overlie the side flaps 32 and the end flaps 34, and so that each one of the tabs 31 is
30 received by a respective one of the openings 24.

The spacer panels 25 are folded relative to the first side wall panels 22 along

the fold lines 26 so that the spacer panels 25 extend outwardly from the first side wall panels 22, and are substantially perpendicular with respect to the side wall panels 22. When the base 70 is filled with a product, the spacer panels 25 reinforce the side wall panels 22 and inhibit the side wall panels 22 from being bowed outwardly by the product which is stored in the base 70. For example, when the base 70 is filled with chilled broccoli 71 as depicted in figure 3, the spacer panels 25 reinforce the side wall panels 22 and inhibit the side wall panels 22 from being bowed outwardly by the broccoli 71.

Lid 80 is erected from the foldable blank 40 by first folding the blank 40 along the fold lines 40 5, 46 and 47, so that the second side wall panels 41, 42 are parallel to each other, and so that the second end wall panels 43, 44 perpendicular with respect to the side wall panels 41, 42 and extend between the side wall panels 41, 42.

The securing flap 48 is folded relative to the side wall panel 42 along the fold line 49 such that the securing flap 48 is perpendicular with respect to the side wall panel 42. Securing flap 48 overlies the end wall panel 43, and is adhered or otherwise secured to the end wall panel 43.

The top closure flaps 50, 57 are folded relative to the side wall panels 41, 42 along the fold lines 56, 63 so that the top closure flaps 50, 57 extend towards each other and are perpendicular with respect to the side wall panels 41, 42. Top closure flaps 50, 57 interlock with each other such that recess 55 of the top closure flap 50 receives the top closure flap 57, and such that recess 62 of the top closure flap 57 receives the top closure flap 50.

The top closure flaps 64, 66 are then folded relative to the side wall panels 43, 44 along the fold lines 65, 67 so that the top closure flaps 64, 66 extend towards each other and are perpendicular with respect to the end wall panels 43, 44. The top closure flaps 64, 66 overlie the top closure flaps 50, 57.

The foldable flaps 52, 59 of the top closure flaps 50, 57 are folded relative to the rest of the flaps 50, 57 along the fold lines 51, 58. Flap 52 is lifted above the top closure flap 64 such that flap 52 overlies top closure flap 64. Also flap 59 is lifted above the top closure flap 66 such that flap 59 overlies top closure flap 66.

The base 70 and the lid 80 may be collapsed so that they do not occupy as much space as they do when they are erected. The collapsed base 70 and the collapsed lid 80 may be re-erected so that they can again be used to store a product.

5 Figure 5 depicts the thermally insulated container assembly when the lid 80 is partially mounted on the base 70.

Referring to figure 6, lid 80 is mounted on the base 70 so that each side wall 41, 42 of the lid 80 is located adjacent to a respective spacer panel 25 and side wall panel 22 of the base 70. As the lid 80 is lowered on to the base 70, the spacer panels 25 are folded relative to the side wall panels 22 by the side wall panels 41, 42 so that
10 the spacer panels 25 overlie the exterior surfaces of the side wall panels 22, and so that the spacer panels 25 extend downwardly from the fold lines 26 which are located along top edges of the side wall panels 22. (For clarity, the top closure flaps 50, 57, 64, 66 are depicted in figure 6 as a single top wall panel 91.)

It can be seen in figure 6 that each one of the second side wall panels 41, 42
15 of the lid 80 is spaced apart from the first side wall panel 22 which the second side wall panel 41, 42 overlies by an air gap 92 as well as the spacer panel 25 which is hinged to the first side wall panel 22. The width of each air gap 92 is the same as the width of the spacer panel 25 which is located adjacent to the air gap 92.

The air gaps 92 between the second wall panels 41, 42 of the lid 80 and the
20 first wall panels are able to serve as thermal insulators which are able to inhibit the transfer of heat from outside of the container assembly 90 to any chilled products (e.g. broccoli 71) which may be stored in the base 70 of the container assembly 90.

The blanks 20, 40 are preferably formed from paperboard. The paperboard
25 from which the blanks 20, 40 are formed may be any suitable type of paperboard. For example, the blanks 20, 40 may be formed from corrugated paperboard.

Where the thermally insulated container assembly 90 will be subjected to
moisture, it is preferred that the blanks 20, 40 are formed from paperboard which is waterproof or substantially waterproof. For example, there may be a layer of polyethylene on both sides of the paperboard from which the blanks 20, 40 are
30 formed to inhibit water or another liquid from being soaked-up by the .

In the embodiment of the container assembly 90 depicted in figures 3-5,

there is a layer of white polyethylene on both sides of the blank 20 from which the lid 80 is erected, and the blank 40 from which the lid 80 is erected has a reflective metal foil layer on each side. The metal foil layer is able to reflect heat from the container assembly 90. This assists in keeping the contents of the container assembly 90 cooler for longer.

In another embodiment of the container assembly 90 which is not depicted in the drawings, the blank 40 has a layer of white polyethylene on both sides instead of a metal foil layer.

Throughout the specification and the claims, unless the context requires otherwise, the term "comprise", or variations such as "comprises" or "comprising", will be understood to apply the inclusion of the stated integer or group of integers but not the exclusion of any other integer or group of integers.

Throughout the specification and claims, unless the context requires otherwise, the term "substantially" or "about" will be understood to not be limited to the value for the range qualified by the terms.

It will be appreciated by those skilled in the art that variations and modifications to the invention described herein will be apparent without departing from the spirit and scope thereof. The variations and modifications as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of the invention as herein set forth.

It will be clearly understood that, if a prior art publication is referred to herein, that reference does not constitute an admission that the publication forms part of the common general knowledge in the art in Australia or in any other country.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A thermally insulated container assembly comprising a base erected from a first foldable blank, and a lid erected from a second foldable blank, the base including a pair of opposing first side wall panels, and a respective spacer panel
5 hinged to each one of the first side wall panels, each one of the first side wall panels including an exterior surface, and the lid including a pair of opposing second side wall panels, the lid being mountable on the base such that each one of the second side wall panels overlies the exterior surface of a respective one of the first side wall panels, and such that each one of the second side wall panels is spaced apart from the
10 first side wall panel which the second side wall panel overlies by an air gap as well as the spacer panel which is hinged to the first side wall panel.
2. The thermally insulated container assembly of claim 1, wherein each one of the first side wall panels includes a top edge, and each one of the spacer panels is hinged along the top edge of a respective one of the first side wall panels.
- 15 3. The thermally insulated container assembly of any one of the preceding claims, wherein the air gap is located below the spacer panel.
4. The thermally insulated container assembly of any one of the preceding claims, wherein each one of the second side wall panels substantially covers the exterior surface of the first side wall panel which the second side wall panel overlies.
- 20 5. A thermally insulated container assembly substantially as herein described with reference to the drawings.

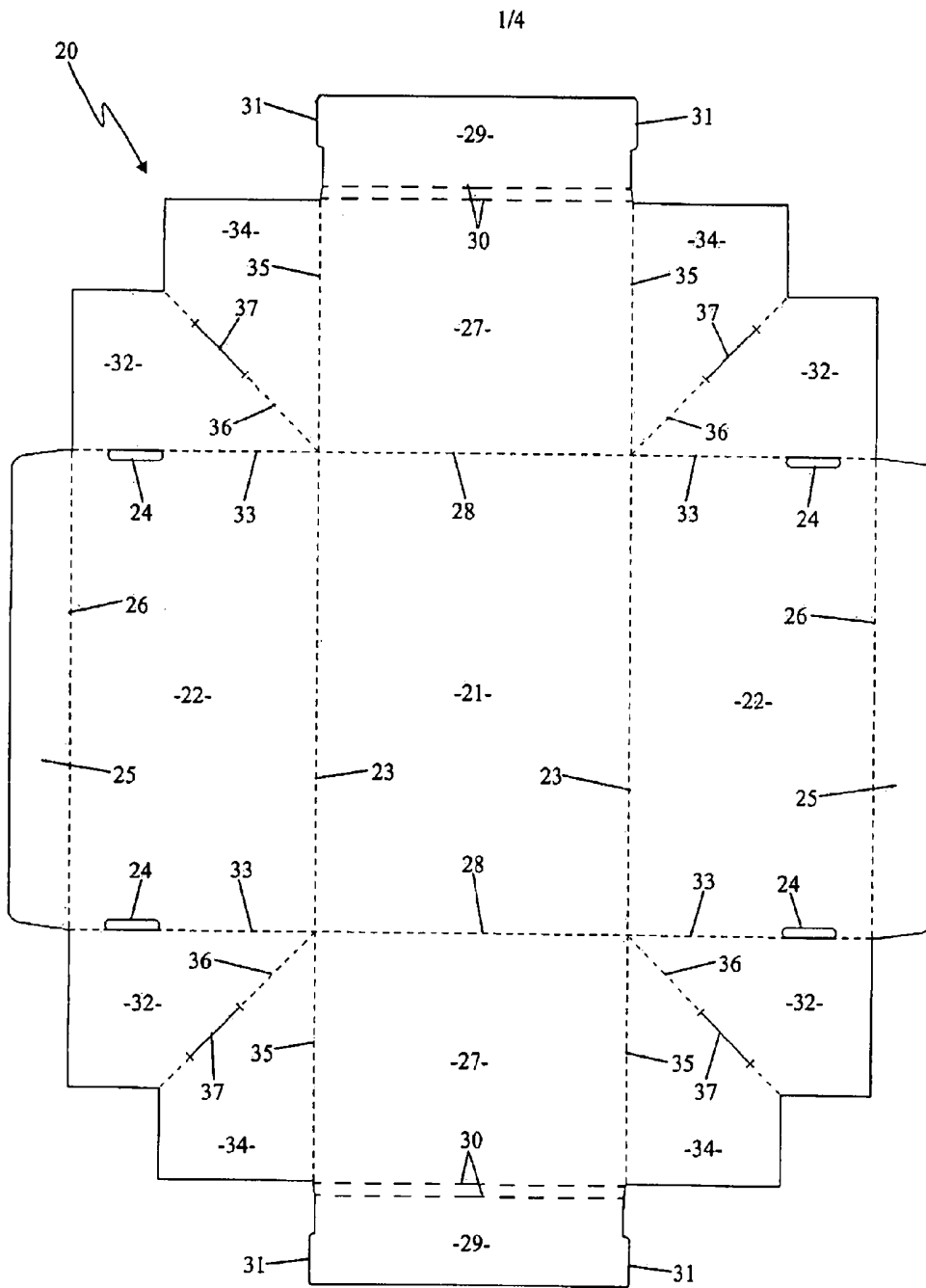


FIGURE 1

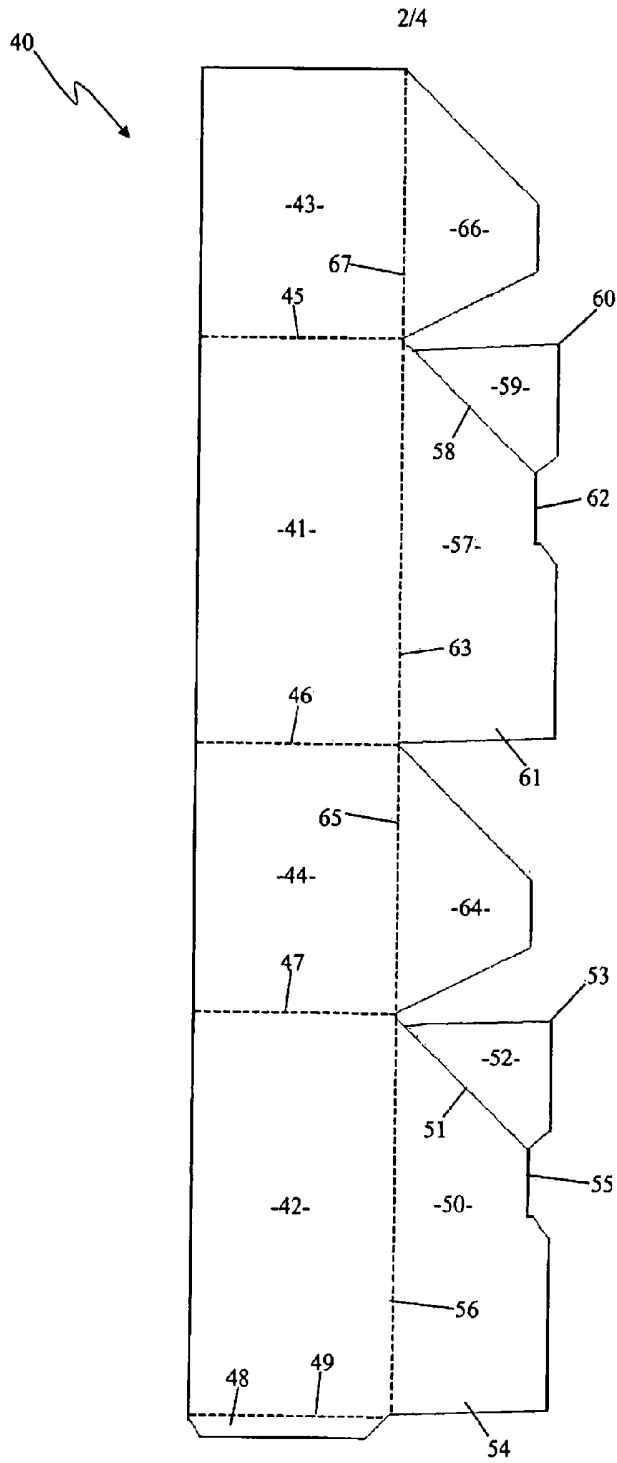


FIGURE 2

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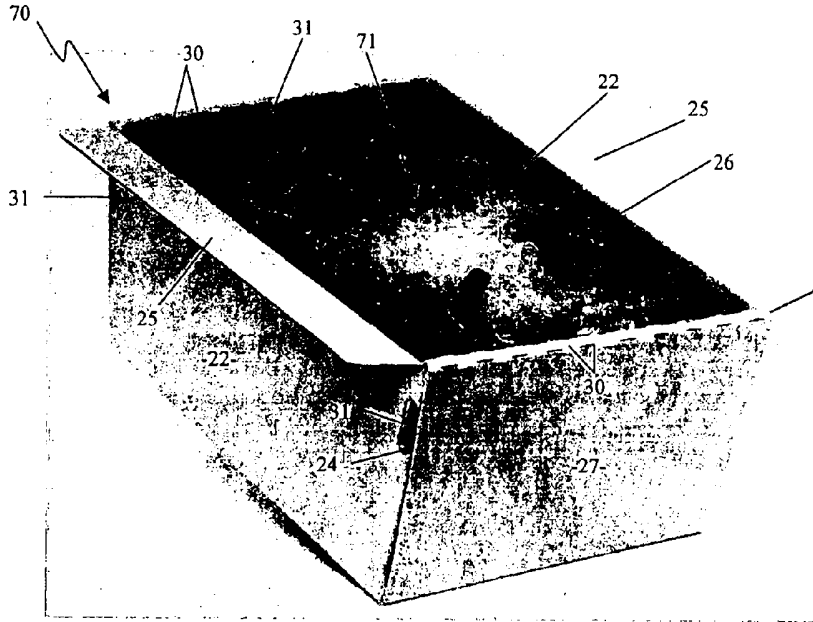


FIGURE 3

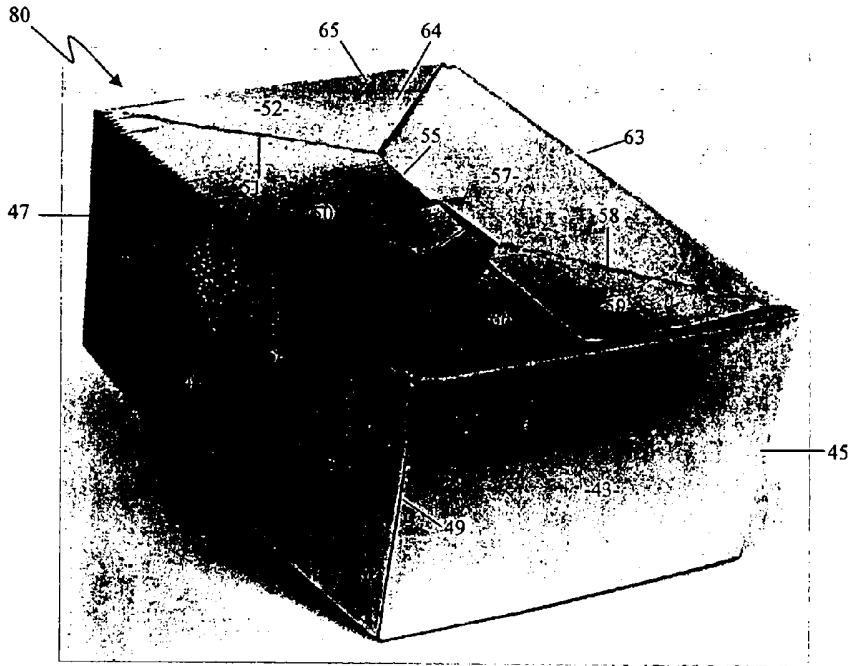


FIGURE 4

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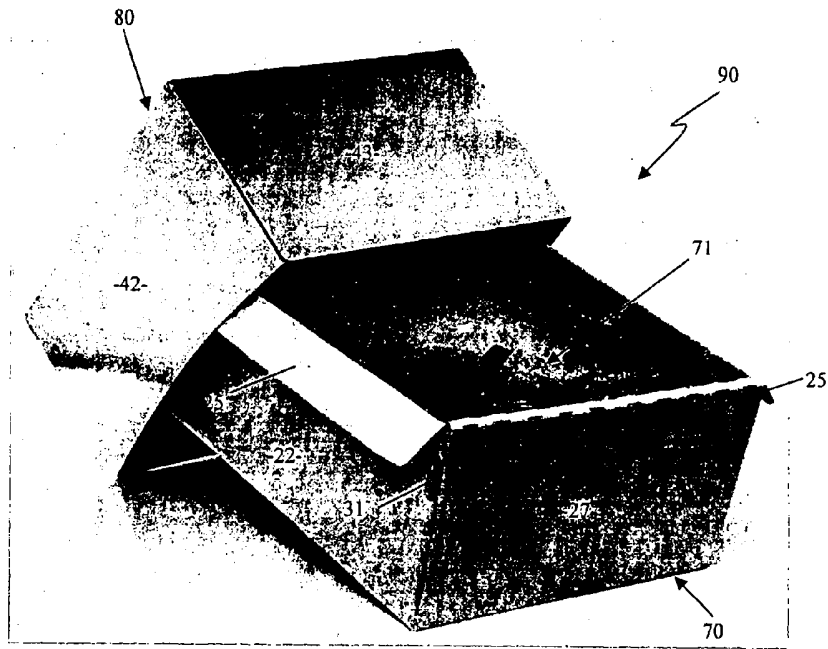


FIGURE 5

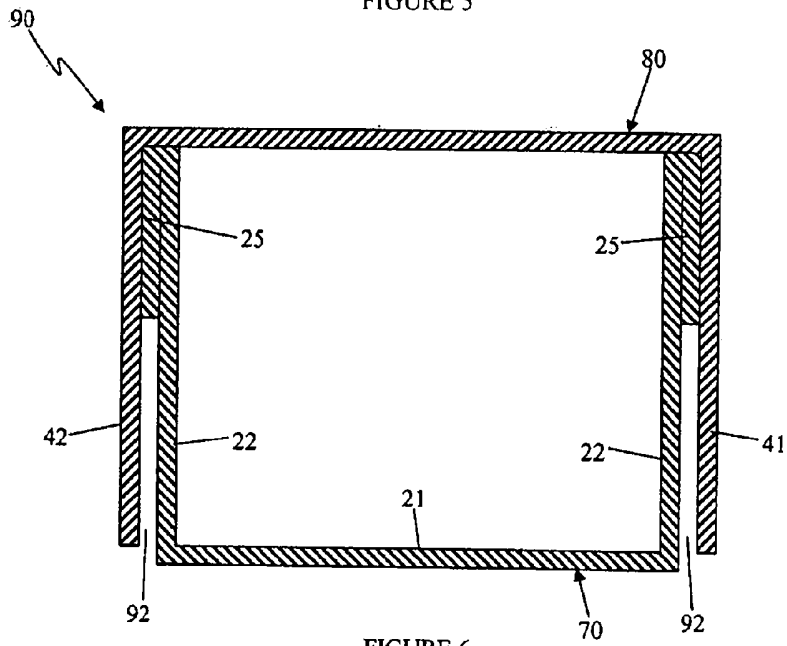


FIGURE 6