(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 722 892 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
24.07.1996 Bulletin 1996/30

(51) Int Cl.[6]: **B65D 81/32**, B65D 81/34

(21) Application number: **96400117.6**

(22) Date of filing: **17.01.1996**

(84) Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL PT SE

(30) Priority: **17.01.1995 US 373430**

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(54) Blow molded paper board tray with near vertical sidewalls and a separate lid

(57) This invention relates generally to the art of food packaging and more particularly to a container (2) for packaging, storing and heating food. Such structures of this type, generally, are constructed with near vertical sidewalls (26) and a separate lid (4) such that the trays are easily nestable and remain stable when the lid (4) is removed.

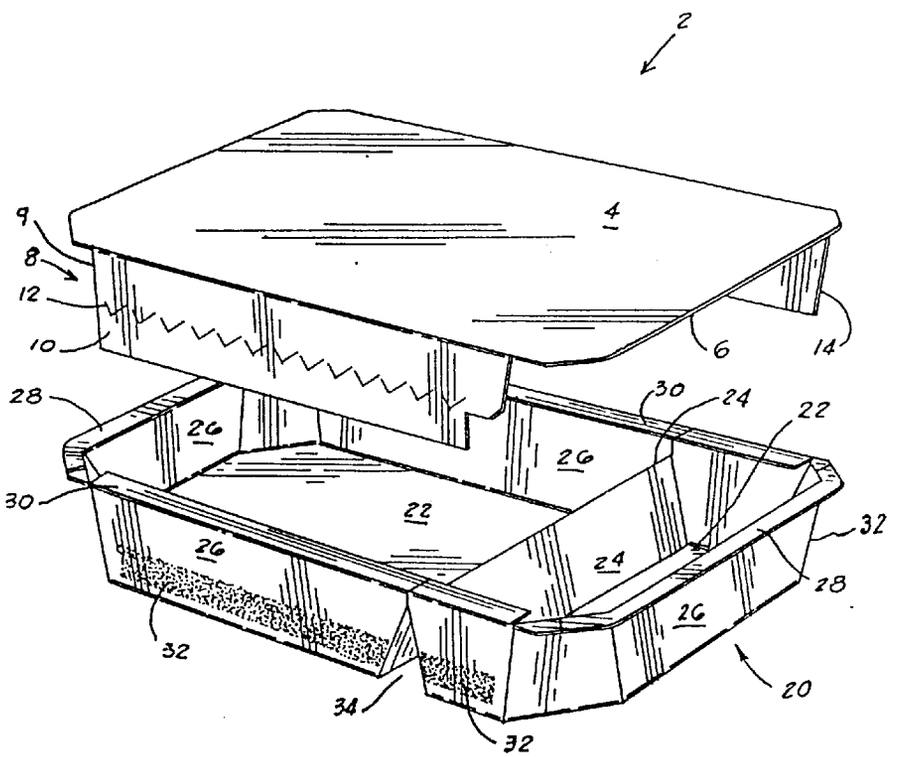

FIG. 1

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Description

This invention relates generally to the art of food packaging and more particularly to a container for packaging, storing and heating food. Such structures of this type, generally, are constructed with near vertical sidewalls and a separate lid such that the trays are easily nestable and remain stable when the lid is removed.

It is known, in paperboard food containers, to make use of sidewall panels. An adhesive is placed between the sidewall end portion areas of the sidewall panels in order to construct a partition. This maintains a space between the sidewalls and maintains heat insulation between the compartments in the event that one compartment contains warm food contents, while an adjacent compartment contains cool food contents.

Exemplary of such prior art is U. S. Patent No. 5,265,796 ('796) to R. Gulliver et al., entitled "Plural Compartment Carton Food Tray With Improved Corner Construction." While the sidewalls provide a partition between the various food contents of the tray, the structure of the sidewalls and the partition is such that the partition may not be stable after the lid is removed. If the partition is not stable after the lid is removed, the food contents within the tray may spill over during the consumption of the food from the tray.

Also, with respect to the ('796) reference, a plastic film such as polyester (PE), polypropylene (PP), or polyethylene terephthalate (PET) is laminated to the paperboard. It is well known that this laminated film is undesirable because when folded it contains pin holes in the areas adjacent to the corners of the tray and lid which are susceptible to contamination by outside influences. Therefore, a more advantageous container would be one which would remain stable after the lid is removed and included a more desirable food contact coating.

In an apparent attempt to alleviate some of the problems associated with the ('796) reference, the invention disclosed in U. S. Patent No. 5,267,686 ('686) to R. Gulliver et al., entitled, "Food Package Containing Separate Trays Connected Together By A Single Lid Structure" was developed. The ('686) patent illustrates an adhesively adhered and inter-arranged relation between the flange-engaging portions and the lower portions of the top flaps with the portions of the trays represented by the flanges and the lower portions of the sidewalls retaining the assembly in a unitary package suitable for transportation and handling. While the package is suitable for transportation and handling, the package cannot be nestable due to the construction of the sidewalls. Also, the coating is laminated as discussed earlier with respect to the ('796) patent. Therefore, a further advantageous container would be one which is stable, nestable, and contains a continuous food contact coating.

With respect to the use of a continuous coating, commonly assigned U. S. Patent No. 5,356,070 ('070) to W. R. Rigby, entitled "Partitioned Paperboard Food Tray" depicts a continuous coating which is blow molded into a partitioned paperboard food tray. However, the food tray includes interior walls which form a partition that may render the food tray unstable. Also, flanges located around the perimeter of the food tray do not allow the food tray to be pushed through a conventional plate freezer without the food tray shingling and/or jamming in the freezer. Therefore, a still further advantageous food container would be one which included the continuous coating but at the same time provided a stable structure which allowed the packages to be easily pushed through conventional freezers.

It is apparent from the above that there is a need in the art for a partitioned paperboard container which includes a continuous, blow molded coating, and which is nestable, but which at the same time can remain stable after the lid is removed. It is the purpose of this invention to fulfill this and other needs in the art in a manner more apparent to the skilled artisan once given the following disclosure.

Generally, speaking, this invention fulfills these needs by providing a partitioned paperboard food container, wherein the container is comprised of: a partitioned tray means including a paperboard sheet material tray base having an interior surface lined with a continuous and unlapped layer of a food contact coating applied to the interior surface, wherein the base is formed into at least two bottom panel areas; at least two internal wall panels materially integral with each of the at least two bottom panel areas such that the internal wall panels form a partition in the tray; at least two external wall panels materially integral with each of the at least two bottom panel areas; a first and second top flange means located adjacent to the at least two external wall panels; and a lid means releasably attached to the tray means and including a paperboard sheet material lid base having an interior surface lined with a continuous and unlapped layer of a food contact coating applied to the interior surface, wherein the lid base includes a first and second wall closure flap means operatively connected to the lid base and adapted to overlap the first flange means wherein the first wall closure flap means is operatively connected to one of the at least two external wall panels and the second wall closure flap means is operatively connected to another of the at least two external wall panels and further includes a first and second flap panel means located substantially across an end of the partition for releasing the lid means from the tray means such that the first flap panel means remains with the second wall closure flap means when the lid means is released from the tray means and the second flap panel means remains substantially across the end of the partition when the lid means is released from the tray means.

In certain preferred embodiments, the base is formed into three bottom panel areas which requires three partitions. Also, the wall closure flap means may extend down over all of the exterior wall panels. Finally, the wall closure flap means are attached to the external

wall panels by an adhesive.

In another further preferred embodiment, the location of the wall closure flaps provides stability to the container both before and after the lid is removed.

The preferred container, according to this invention, offers the following advantages: ease of assembly; excellent stability; good durability; and excellent economy. In fact, in many of the preferred embodiments, these factors of stability and economy are optimized to an extent that is considerably higher than heretofore achieved in prior, known paperboard containers.

The above and other features of the present invention which will become more apparent as the description proceeds are best understood by considering the following detailed description in conjunction with the accompanying drawings, wherein like characters represent like parts throughout the several views and in which:

FIGURE 1 is a pictorial view of a divided food tray container with the lid unattached, according to the present invention;

FIGURE 2 is a pictorial view of the divided food tray with the lid attached and released in the front, according to the present invention;

FIGURE 3 is a pictorial view of another embodiment of a divided food tray container with the lid unattached, according to the present invention; and

FIGURE 4 is a pictorial view of another embodiment of the divided food tray container with the lid unattached, according to the present invention.

The basic substrate material for the present invention is a machine made paperboard which may range in thickness from 0.1778 mm to 0.889 mm (0.007 to 0.035 inches). In some cases, it may be desirable to coat the paperboard web stock on that web side to be formed to the interior of the tray with a film of extruded press-applied polymer selected on the basis of chemical and adhesive receptivity in those cases where the interior surface is subsequently applied with a blow molded polymer. However, due to the fact that extruded blow molded polymers of the type and nature anticipated by the present invention are applied to paperboard blank mold liners at various temperatures, viscosities and pressures, many tie films of paperboard substrates become unnecessary. In this manner, the blow molded polymer bonds deeply and securely to the paperboard surface.

Those of ordinary skill in the art understand the economic value to consumer packaging arising from the qualities of graphics that may be press-applied to a paperboard web. Moreover, the web may be printed and die cut into individual tray blanks in a continuous machine feed operation. Resultantly, display shelf graphics may be directly applied to the exterior side wall surface of the package that is opposite the interior side wall surface in direct contact with the package contents. For such an application, no outer packaging or post-fill labeling is required.

Proceeding from the foregoing understandings, Figure 1 illustrates container 2 which includes, in part, lid 4 and divided tray 20. More particularly, a lid 4 includes, conventional polymeric coating 6, wall closure flap 8, panels 9 and 10 and tear line 12.

With respect to tray 20, tray 20 includes, bottom panels 22, internal walls 24, external walls 26, flanges 28 and 30, patterned adhesive area 32, and partition 34. It should be noted that flanges 28 extend away from internal walls 24 while flanges 30 extend toward internal walls 24. Also, another patterned adhesive area 32 is located on the back of tray 20.

With respect to Figure 2, Figure 2 shows that lid 4 is attached to tray 20 by wall closure flap 14 and adhesive area 32 (in back of tray 20). Also, as shown in Figure 2, wall closure flap 8 has been released from tray 20 in that tear line 12 has been activated according to conventional techniques and panel 10 remains on tray 20. In this manner, panel 10 spans across an end of partition 34 to add structural rigidity to tray 20. The location of panel 10 across the end of partition 34 acts as a "brace" such that tray 20 cannot bend and/or flex along internal walls 24 at partition 34 either before or after the tray is opened.

Figure 3 shows container 50. In particular, container 50 includes, in part, lid 4 and tray 52. Lid 4, preferably, is constructed in the same manner as the lid 4 shown in the Figures 1 and 2.

Tray 52 includes, in part, bottom panels 54, internal walls 56, external walls 58, flanges 60 and 62, patterned adhesive areas 64, and partition 66. Also, another patterned adhesive area 64 is located on the back of tray 52.

As discussed earlier, with respect to Figure 2, lid 4 is adhered to tray 52 along adhesive areas 64 (located on the back of tray 52). In this manner, wall closure flap 8 spans across an end of partition 66 to add structural rigidity to container 50.

After the food contents in container 50 are heated by conventional heating techniques, tear line 12 on lid 4 is conventionally activated such that lid 4 is released from tray 52. Upon the release of lid 4 from tray 52, lid 4 and panel 9 are raised above tray 52. However, panel 10 remains adhered to tray 52 such that panel 10 extends across an end of partition 66 found between internal walls 56 in order to add structural rigidity to tray 52 during the consumption of the food contents within tray 52.

With the respect to Figure 4, there is illustrated container 100. In particular, container 100 includes, in part, lid 104 and tray 52. Tray 52, preferably, is constructed in the same manner as tray 52 in Figure 3, except that flange 60 is folded inward towards internal walls 56.

Lid 104 includes in part, conventional polymer coating 106 and wall closure flaps 108. In particular, wall flaps 108 include, panels 109 and 110 and conventional tear lines 112.

With respect to the construction of container 100,

after the food contents within container 100 are heated by conventional heating techniques, the consumer removes lid 104 along tear line 112. After tear lines 112 are activated, panels 110 remain adhered to tray 52 across an end of partition 66 such that panels 110 add structional rigidity to tray 52 while the food contents within tray 52 are being consumed.

With respect to the construction of containers 2, 50, and 100 there are several important features to keep in mind. First, flanges 30 (Figure 1), 62 (Figure 3), and 60 and 62 (Figure 4) are folded inwardly towards their respective internal side walls such that the containers 2, 50 and 100, respectively, when completely constructed, can be pushed through a conventional plate freezer on their near vertical sides. Second, this construction allows the containers to be stacked on a shelf on their near vertical sides. Third, the location of the panels 10 and 110 across ends of partitions 34 and 66, respectively, provide improved structional rigidity to the containers. In particular, without the panels 10 and 110 being located across ends of the partitions, the trays 20 and 52 could easily bend or twist at the partitions. Even when the trays lids are removed, the panels, which are adhesively attached to the external side walls, remain in place to provide the desired tray rigidity.

Once given the above disclosure, many other features, modifications or improvements will become apparent to the skilled artisan. Such features, modifications or improvements are therefore, considered to be a part of this invention, the scope of which is to be determined by the following claims.

Claims

1. A partitioned paperboard food container, wherein said container (2,50) is comprised of:

   a partitioned tray means (20;52) including a paperboard sheet material tray base having an interior surface lined with a continuous and unlapped layer of a food contact coating applied to said interior surface , wherein said base is formed into at least two bottom panel areas (22;54);

   at least two internal wall panels (24;56) materially integral with each of said at least two bottom panel areas (22;54) such that said internal wall panels (24;56) form a partition (34;66) in said tray (20);

   at least two external wall panels (26;58) materially integral with each of said at least two bottom panel areas (22;54);

   a first and second top flange means (28,30;60,62) located adjacent to said at least two external wall panels (26;58) and

   a lid (4) releasably attached to said tray means (20;52) and including a paperboard sheet material lid base having an interior surface lined with a continuous and unlapped layer of a food contact coating (6) applied to said interior surface, wherein said lid base includes a first and second wall closure flap means (8,14) operatively connected to said lid base and adapted to overlap said first flange means (30,62) wherein said first wall closure flap means (14) is operatively connected to one of said at least two external wall panels (26;58) and said second wall closure flap means (8) is operatively connected to another of said at least two external wall panels (26;58) and further includes a first and second flap panel means (9,10) located substantially across an end of said partition (34;66) for releasing said lid means (6) from said tray means (20;52) such that said first flap panel means (9) remains with the second wall closure flap means (8) when said lid means (6) is released from said tray means (20;52) and said second flap panel means (10) remains substantially across said end of said partition (34;66) when the lid means (6) is released from the tray means (20;50).

2. The container, as in claim 1, wherein said base is further comprised of:

   at least three bottom panel areas (54).

3. The container as in claim 1, wherein said tray is further comprised of:

   at least six internal wall panels (56).

4. The container, as in claim 3, wherein said internal wall panels (56) form at least three partitions (66) in said tray.

5. The container, as in claim 1, wherein said first flange means (30;62) is located substantially towards said at least two internal wall panels (24).

6. The container, as in claim 1, wherein said second flange means (28;60) is located substantially away from said at least two internal wall panels (24).

7. The container, as in claim 1, wherein said first and second flange means (88,30;60,62) are located substantially towards said at least two internal wall panels (24).

8. The container, as in claim 1, wherein said lid base (104) is further comprised of:

   at least two side extensions (108) adapted to overlap said second flange means (60).

9. The container, as in claim 3, wherein said lid base (104) is further comprised of:

   a third wall closure flap means (108) opera-

tively connected to said lid base (104) and adapted to overlap said second flange means (60).

10. The container, as in claim 9, wherein said third wall closure flap means (108) is further comprised of:

a third and fourth flap panel means (109,110) located substantially across an end of said partition (66) for releasing said lid means (104) from said tray means (52) such that said third flap panel means (109) remain with said third wall closure flap means (108) when said lid means (104) is released from said tray means (52) and said fourth flap panel means (110) remains substantially across said end of said partition (66) when the lid means (104) is released from the tray means (52).

11. The container, as in claim 1, wherein said food contact coating is further comprised of:

a blow-molded polymer.

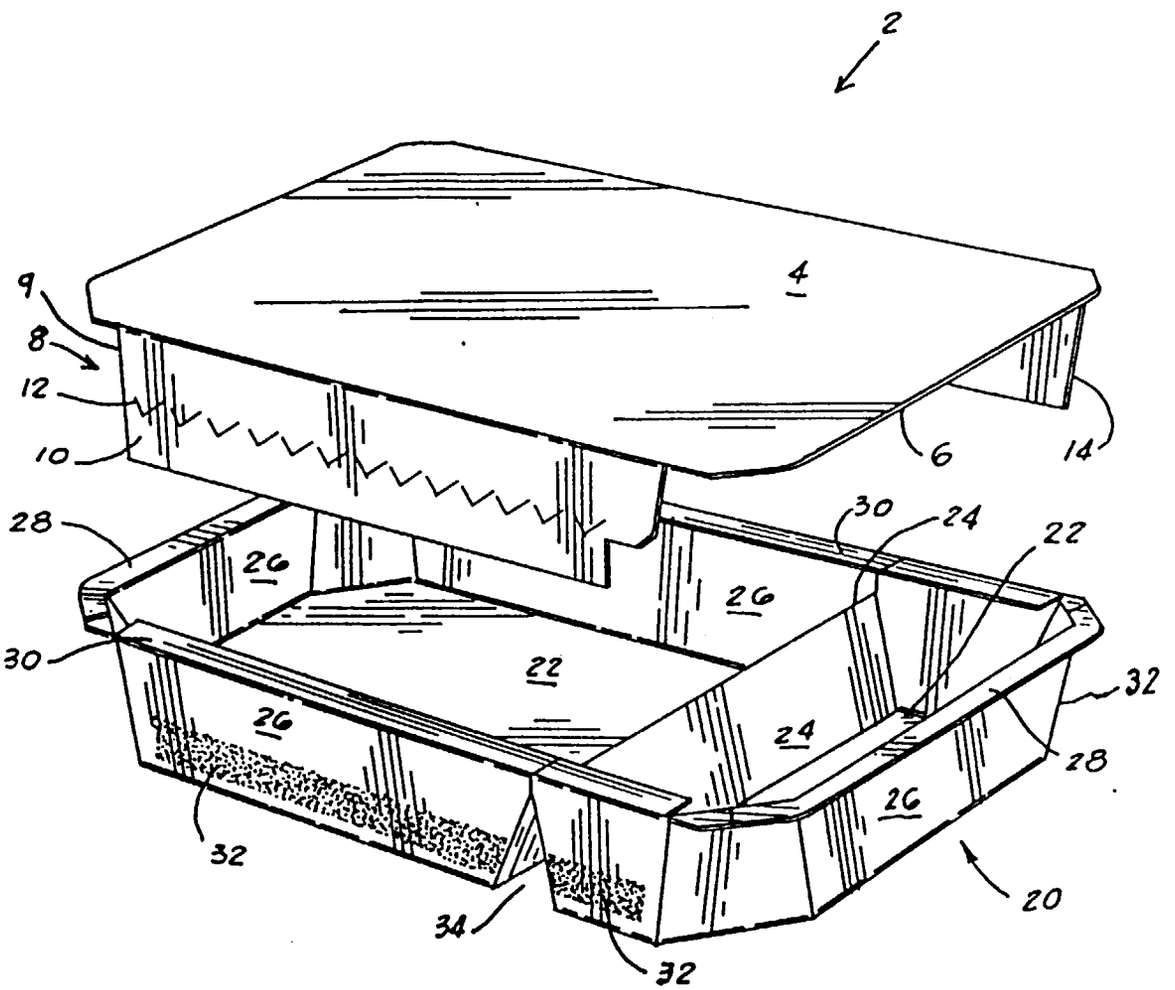


FIG. 1

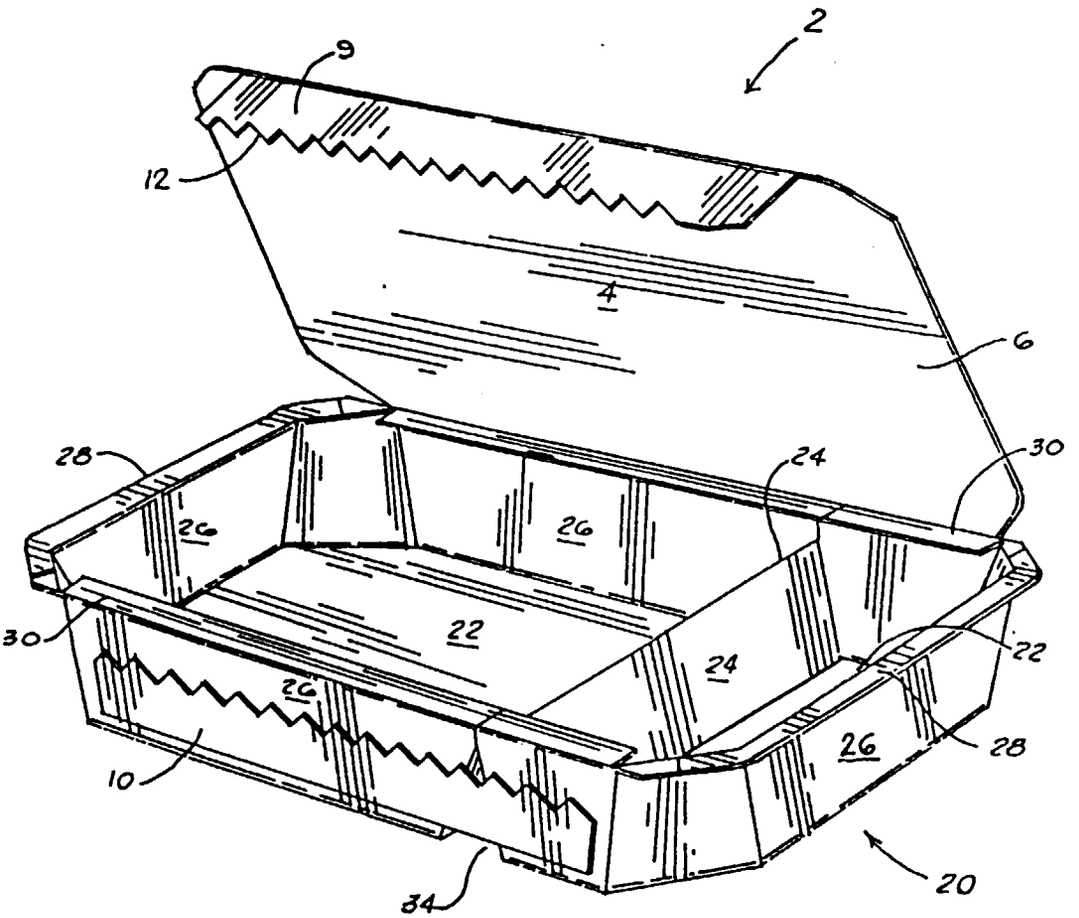
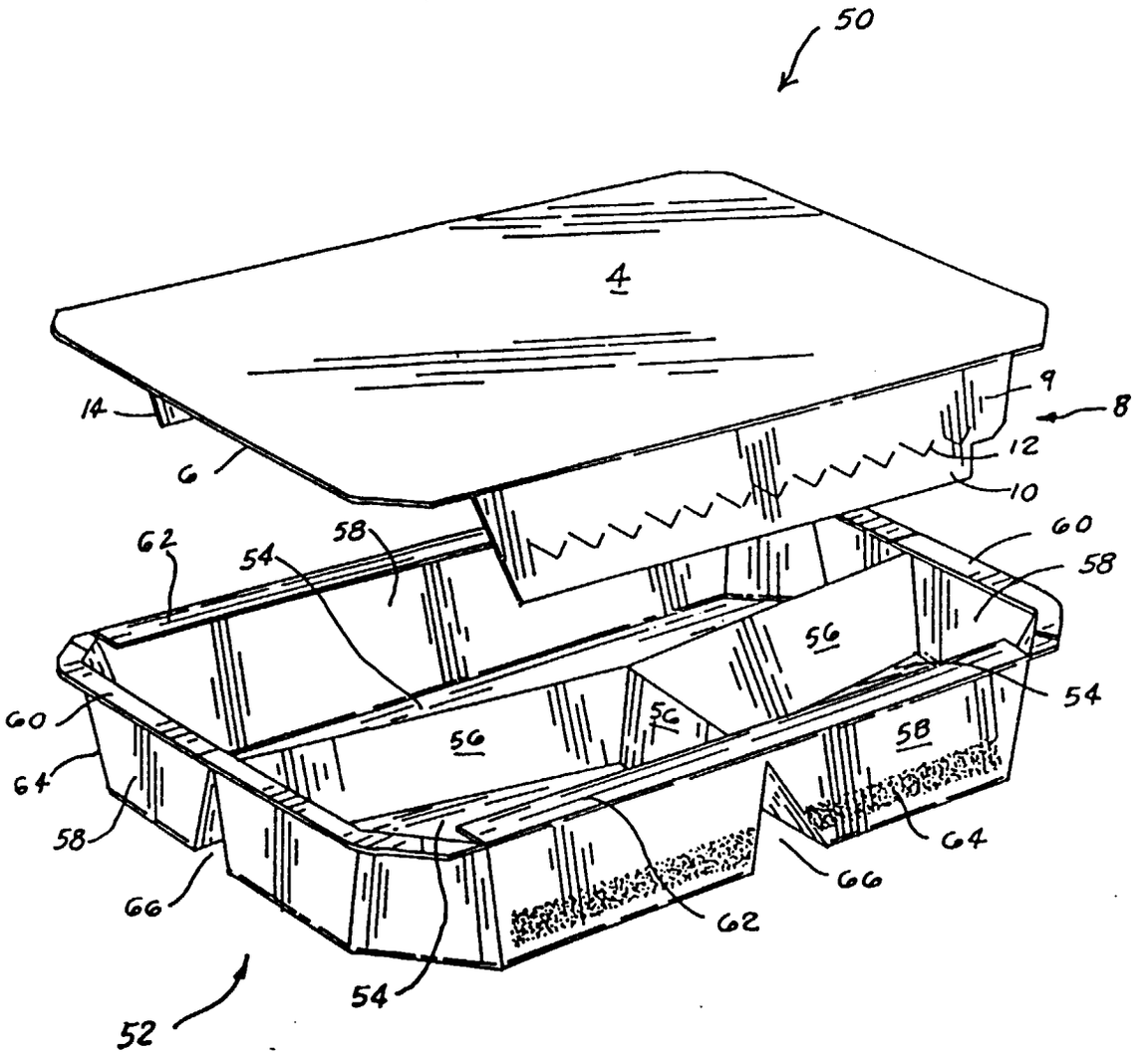


FIG. 2


50
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12
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FIG. 3

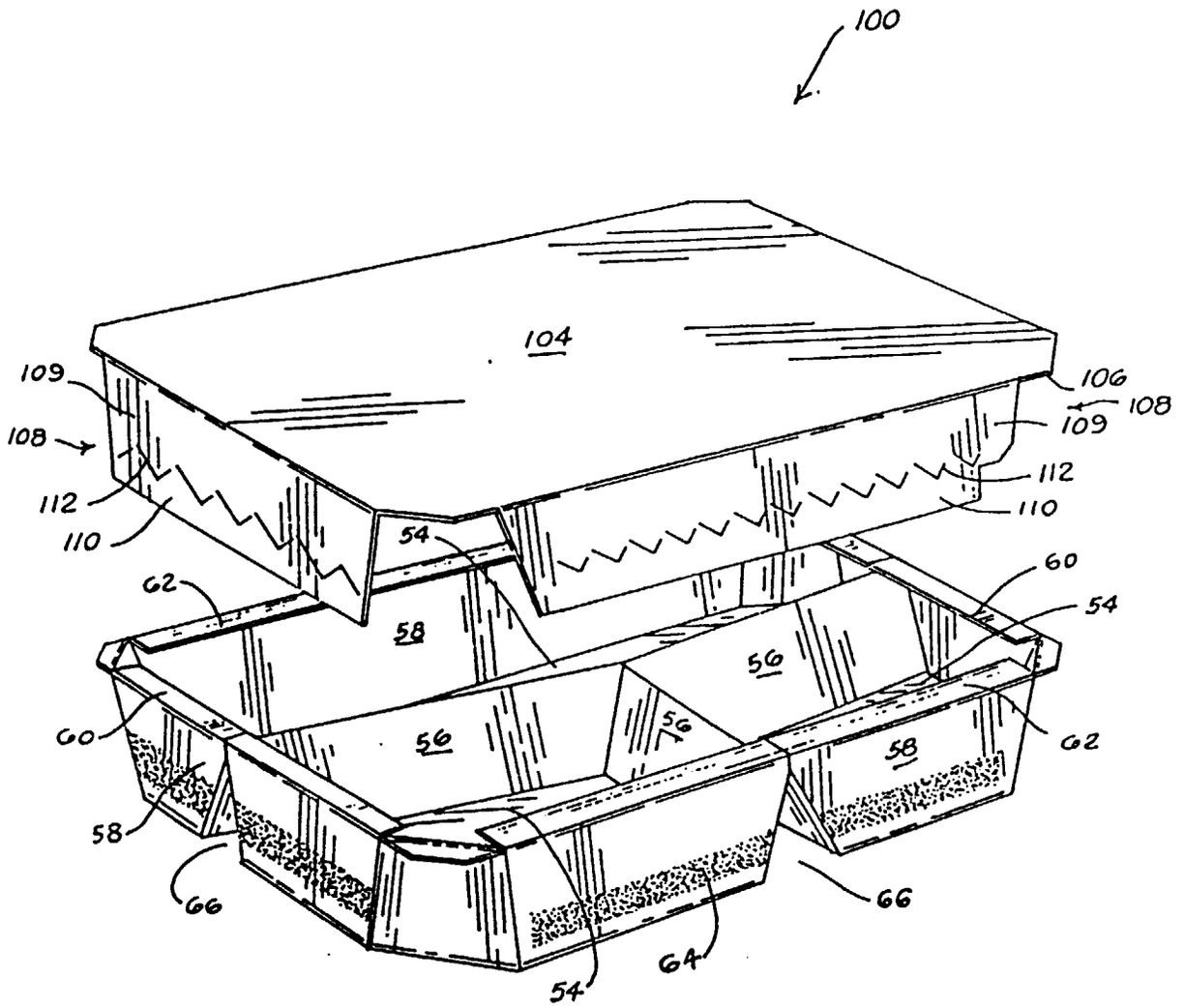

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 40 0117

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	US-A-5 267 686 (R. GULLIVER) * abstract; figure 15 *	1	B65D81/32 B65D81/34
A	US-A-4 804 137 (C. HARBY) * abstract; figure 19 *	1	
A	WO-A-80 02132 (J. MELO) * figures 1,2 *	1	
A	US-A-5 326 017 (YUAN-SHIN LIU)		
A	US-A-3 197 115 (F. PETER)		
A	EP-A-0 576 863 (WESTVACO CORP.)		
A	US-A-3 502 241 (E. SMITH)		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	15 April 1996	Korth, C-F

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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