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(54) Ventilated stackable folded box

(57) A ventilated container (22) includes a rectangular bottom panel (24) and two end panels (26,28) connected to the bottom panel (24) which extend outwardly therefrom. There are two side panels (30,32) connected to the bottom panel (24) which also extend outwardly therefrom. The side panels (30,32) are connected to adjacent end panels (26,28). Each of the side panels (30,32) has a longitudinal passageway (36,38) extending therethrough from one end panel (26) to the other end panel (28) to permit air to pass from the one end panel (26) to the other end panel (28). When the containers (22) are stacked in two adjacent rows, air can pass through the passageways (36,38) from the first row to the second row to cool and ventilate contents of the containers (22). Alternatively the passageway (36,38) may be in an end panel (26,28).

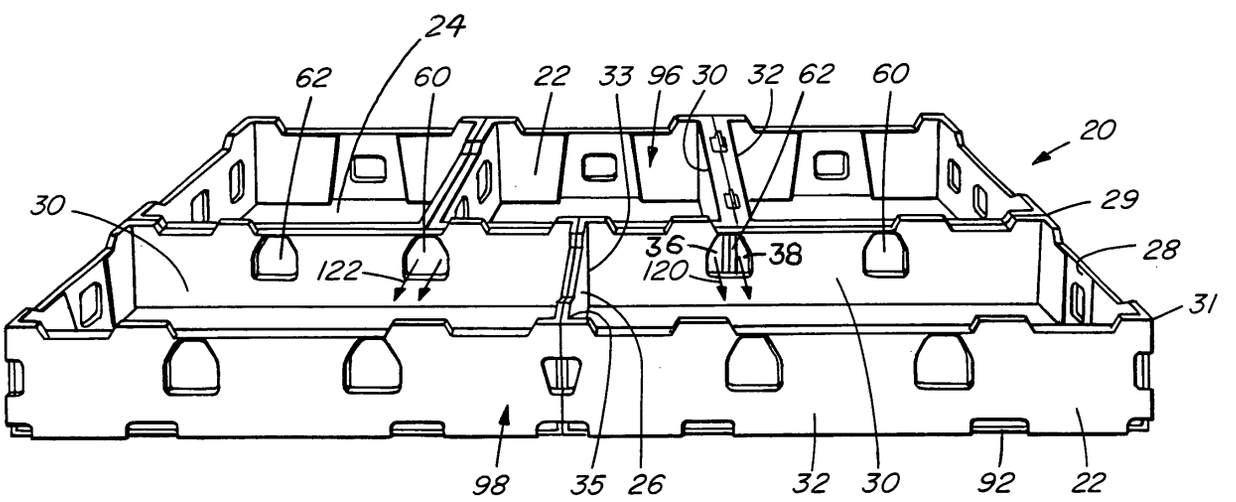

FIG. 1

EP 1 291 284 A1

Description

[0001] This invention relates to containers typically used for grapes, other types of produce or products which require ventilation or cooling.

[0002] Certain types of products, such as grapes, other types of produce or flowers, require cooling or ventilation prior to shipping or during shipping of the product. For example, grapes may be harvested at relatively high temperatures of 20° - 30° Celsius. However they would suffer considerable loss of quality or deterioration if shipped at that temperature. Consequently, the grapes may be cooled prior to shipment or during shipment to maintain the grapes in good condition until they reach the consumer.

[0003] For example, grapes are frequently shipped in containers typically made of plastics, wood or corrugated paperboard. The latter material is highly desirable from the point of view of recycling the containers. When the grapes reach the destination point, corrugated containers can be flattened and sent back to a recycling depot for repulping. However, in the past, corrugated paperboard containers have permitted less than optimal cooling rates. This may cause a significant bottleneck at the vineyards or packing houses where the grapes must be cooled after harvesting before shipment.

[0004] For example, one method of cooling the grapes is to stack the containers adjacent each other in a room. Cooling air is forced through the stack of containers containing grapes by large cooling fans. The stacked containers must remain in place until the grapes are cooled to a particular temperature. Grapes often are harvested rapidly when conditions are right. However additional containers of grapes cannot be cooled or subsequently shipped until the containers containing grapes already in the cooling room reach the desired temperature.

[0005] It has been recognized in the prior art that the cooling of grapes or other products can be facilitated by placing openings in the containers so as to promote circulation of the cooling air about the product. For example, US-A-4,770, 339 discloses a ventilated, stackable grape box. The sides and ends of the container have openings to facilitate venting.

[0006] US-A-5,593,087 discloses a container having an open top and stacking projections near the corners at the top which engage corresponding recesses in the bottoms of similar containers when stacked. Similar stacking tabs and recesses are employed in US-A-5,002,224.

[0007] A one-piece grape box is disclosed in US-A-5,370,303.

[0008] Other ventilated shipping containers are disclosed in US-A-4,709,852, US-A-5,458,283, US-A-5,690,275, US-A-5,947,292 and US-A-5,890,590.

[0009] However, while some prior art containers have a plurality of openings for ventilation, they do not ensure sufficient flow of air when the containers are stacked. For example, the containers may be stacked in an arrangement where adjacent rows have the containers arranged at right angles to each other. This is often done so that the containers fit on standard pallets required for shipment by truck or ship. When this occurs, the containers of the second row may block openings in the containers of the first row, which is the row closest to the source of ventilating air. The result is an inadequate flow of cooling air through the containers which considerably slows the cooling rate.

[0010] Accordingly, it is an object of the invention to provide an improved container for produce or the like with better ventilation than prior art containers.

[0011] It is another object of the invention to provide an improved corrugated paperboard container which can satisfactorily replace wooden containers used for grapes or other produce.

[0012] It is a further object of the invention to provide an improved corrugated paperboard container which is rugged and rigid in construction and economical to produce and sell.

[0013] According to one aspect of the present invention, there is provided,a ventilated container comprising a bottom panel, and first and second panels and panel means connected to the bottom panel and extending along respective edges thereof and also extending substantially vertically therefrom, said panel means having longitudinal passageway means and comprising a third panel having a longitudinal passageway extending from substantially one end of the third panel to substantially the other end of the third panel to permit air to flow therethrough.

[0014] In a preferred embodiment, the ventilated container has a rectangular bottom panel. First and second panels are connected to the bottom panel and extend outwardly therefrom. Third and fourth panels are also connected to the bottom panel and extend outwardly therefrom. The first and second panels are connected to the third and fourth panels. The third panel has a longitudinal passageway extending therethrough from the first panel to the second panel to permit air to pass from the first panel to the second panel.

[0015] Preferably, the first and second panels have apertures aligned with the passageway, whereby the passageway communicates through the first and second panels.

[0016] In one example, the fourth panel has a longitudinal passageway extending therethrough from the first panel to the second panel and the first and second panels have apertures aligned with that passageway whereby that passageway communicates outwardly through the first and second panels.

[0017] The passageways may be in end panels or in side panels of the container.

[0018] According to another aspect of the invention, there is provided, a blank for forming a container, said blank comprising a central panel for forming a bottom panel of said container and first and second outer panels

and outer panel means connected to the central panel along first and second fold lines and fold line means said panel means having first section means adjacent to the central panel, second section means located outwardly from the first section means and connecting section means extending between the first section means and the second section means the connecting section means being bounded by other fold line means on opposite sides thereof and between the connecting section means and the first section means and the second section means, respectively whereby, when the blank is folded along the fold line means to form said container, the panel means forms passageway means between the first section means and the second section means thereof.

[0019] In a preferred embodiment, the blank has a central panel. First and second panels are connected to opposite edges of the central panel along parallel fold lines. Third and fourth panels are connected to opposite sides of the central panel along parallel fold lines. Each of the third and fourth panels has a first section adjacent to the central panel, a second section located outwardly therefrom and a connecting section extending between the first section and the second section. When the blank is folded along the fold lines of the third and fourth panels, each of the latter panels becomes double-walled with a passageway between the first section and second section thereof. The panels with the first and second sections, may be end panels or side panels in the formed container.

[0020] According to a further aspect of the invention, there is provided, apparatus comprising a plurality of containers, each of said containers having a bottom, first and second substantially vertical panels and panel means, longitudinal passageway means extending through the panel means, the containers being arranged in a first row and a second row adjacent to the first row, whereby air passing through the passageway means of the containers of the first row can enter the containers of the second row through openings in at least some of the first and second panels and the panel means.

[0021] In a preferred embodiment, the apparatus is for assisting cooling of produce and comprises a plurality of containers. Each container has a bottom panel, and first, second, third and fourth upright panels, with a longitudinal air passageway extending through the third panel from the first panel to the second panel. The containers are arranged in a first row and a second row which is adjacent to the first row. The first row is arranged with the third and fourth panels of the containers adjacent to each other and the second row is arranged with the first and second panels of the containers adjacent to each other and with third and fourth panels thereof adjacent to the first or second panels of the containers of the first row. The third and fourth panels of the containers of the second row have openings aligned with the passageways of the containers of the first row, whereby air passing through the passageways of the containers of the first row can enter the containers of the second row through the openings. The passageways may be in the sides or the ends of the containers.

[0022] According to a still further aspect of the invention, there is provided a method of folding a paperboard blank to form a ventilated container, said blank having a central panel for forming a bottom panel, and first and second outer panels and outer panel means connected to the central panel along first and second fold lines and fold line means, the method comprising folding said outer panel means to form passageway means through said outer panel means.

[0023] A preferred embodiment of the method comprises folding a corrugated paperboard blank having a bottom panel, opposite side panels and opposite end panels, the side panels and the end panels being connected to the bottom panel. The method comprises folding at least one of the side panels to form a passageway therethrough extending between the end panels. Alternatively, at least one of the end panels may be folded to form a passageway extending between the side panels.

[0024] According to a still further aspect of the invention, there is provided a method of stacking containers comprising stacking containers so as to provide a plurality of apparatus each as aforesaid stacked one upon another such that the respective first rows are stacked one upon another and the respective second rows are stacked one upon another.

[0025] Advantageously, each container has a bottom panel and first to fourth upright panels connected to the bottom panel, the third and fourth panels having longitudinal passageways extending therethrough. The containers are stacked vertically in a first stack of horizontal rows and a second stack of horizontal rows, the first stack having third and fourth panels of the containers adjacent to each other, the second stack having first and second panels of the containers adjacent to each other with the third panels of the containers of the second stack being adjacent to the second panels of the containers of the first stack and with the openings in the third panels of the containers of the second stack being aligned with the passageways of the containers of the first stack. Alternatively, the passageways may be in the first and second panels of the containers and the containers stacked so that the passageways in the first stack align with openings in the first and second panels of the second stack.

[0026] According to a still further aspect of the invention, there is provided a method for assisting cooling of produce. The method includes stacking a plurality of produce containers in first and second stacks. Each container has a bottom panel, and first to fourth upright panels connected to the bottom panel, the third and fourth panels having longitudinal passageways extending therethrough. The containers are stacked vertically in a first stack of horizontal rows and a second stack of horizontal rows, the first stack having third and fourth panels of the containers adjacent to each other, the sec-

ond stack having first and second panels of the containers adjacent to each other with the third and fourth panels of the containers of the second stack being adjacent to the second panels of the containers of the first stack and with openings in the third panels of the containers of the second stack being aligned with the passageways of the containers of the first stack. Alternatively, the passageways may be in the first and second panels of the containers and the containers stacked so that the passageways in the first stack align with openings in the first and second panels of the second stack.

[0027] In order that the invention may be clearly and completely disclosed, reference will now be made, by way of example, to the accompany drawings in which:-

Figure 1 is a perspective view of an apparatus for cooling grapes or other produce comprising a plurality of containers according to a first embodiment of the invention;

Figure 2 is a perspective view of the apparatus of Figure 1, shown from the opposite side thereof;

Figure 3 is a fragmentary, enlarged end view of two of the containers thereof;

Figure 4 is an enlarged, fragmentary view showing portions of four of the containers thereof;

Figure 5 is a plan view of a blank of corrugated paperboard for forming one of the containers of the apparatus;

Figure 6 is an end view of one of the containers of the apparatus;

Figure 7 is a plan view thereof;

Figure 8 is a side view thereof;

Figure 9 is a sectional view taken along line 9-9 of Figure 7;

Figure 10 is a side view of two adjacent stacks of containers according to Figures 1 to 9, the front stack being partly broken away to show part of the stack behind; and

Figure 11 is a plan view of a blank of corrugated paperboard for forming a container according to a further embodiment of the invention.

[0028] Referring to the drawings and firstly to Figures 1 to 4, these show an apparatus 20 for assisting the cooling or ventilating of grapes, other produce or other perishable items. The apparatus includes a plurality of identical containers 22, five of which are shown in Figures 1 and 2. As shown also in Figures 6 to 9, each of the containers has a rectangular bottom panel 24, a first upright panel 26, a second upright panel 28, a third upright panel 30 and a fourth upright panel 32. In this example panels 30 and 32 are side panels while panels 26 and 28 are end panels. The upright panels in this example are perpendicular to the bottom panel but they may extend at a different angle in other embodiments. The side panels 30 and 32 are connected to the panels 26 and 28 at corners 29, 31, 33 and 35 of the container as shown for the right, front container of Figure 1. The container 22 is open-topped though the invention is applicable as well to containers with tops. In this context, "rectangular" with reference to the bottom also includes square bottoms.

[0029] Each side panel of this embodiment has a longitudinal passageway extending therethrough. Side panel 30 has a passageway 36, while side panel 32 has a passageway 38. The passageways extend from the end panel 26 to the end panel 28 to permit air to pass from the panel 26 to the panel 28 through each side of the container. In this example each side panel has a passageway although in alternative embodiments only a single side panel may have a passageway. The passageways in this embodiment are triangular as seen in Figure 9. However, the passageways could be alternative shapes in other embodiments. Also the passageway or passageways may be in one or more end panels instead of, or in addition to, passageways in one or more side panels.

[0030] As shown best in Figures 3 and 6, each end panel has an aperture 42 which is aligned with passageway 38 of side panel 32 and an aperture 40 aligned with the passageway 36. In this manner, the passageways communicate outwardly through the end panels.

[0031] As shown best in Figure 9, each of the side panels 30 and 32 includes an inner wall 48 and an outer wall 50 as shown for side panel 32. These are spaced-apart to form the passageways 36 and 38. Each of the side panels has an upper edge 52. The inner wall 48 and the outer wall 50 are spaced-apart adjacent the upper edge. There is a connecting wall 54 which connects the inner wall 48 and the outer wall 50 adjacent to the upper edge. This connecting wall forms the third side of the triangular passageways 36 and 38.

[0032] As seen best in Figure 8, each of the side walls has a pair of apertures 60 and 62 extending through both the inner wall and the outer wall thereof. In alternative embodiments there may be fewer or more such apertures. Bottom 24 has a plurality of apertures 66, shown in Figure 7, which likewise assist in cooling. There are four such apertures in this embodiment although the number can vary. Similarly each of the end panels has an aperture 68 as seen for end panel 28 in Figure 9 and for end panel 26 in Figure 2.

[0033] The container has an upward projection 70 at each corner which is L-shaped when seen in plan in Figure 7. Each of these projections has a pair of sloped edges 72 and 74 in this example as shown in Figures 6 and 8. There are corresponding, similarly shaped recesses 78 at each corner of each container below each projection 70. The recesses have similar shapes to the projections so that the containers lock together when stacked upon each other. Each of the recesses 78 has sloped edges 80 and 82, shown in Figures 6 and 8, corresponding to sloped edges 72 and 74 of the projections 70. The sloped edges assist in fitting the containers together when they are stacked one upon the other as shown in Figure 10.

[0034] Each side of the container has a pair of upward

projections 86 and 88, shown in Figure 8, which are generally rectangular in shape with rounded corners. There are similar shaped recesses 90 and 92 on each side below the projections 86 and 88. These mating projections and recesses also assist in locking the containers together when they are stacked one upon the other.

[0035] Figure 10 shows a plurality of containers 22 which are arranged in two stacks 96 and 98, each stack having in this example three horizontal rows 100, 102 and 104 of containers. The containers of stack 96 are arranged with sides 30 and 32 of the containers adjacent to each other and with their ends 26 facing outwardly. The second stack 98, located behind the first stack 96, is arranged with ends 26 and 28 of the containers adjacent to each other and with sides 30 thereof adjacent to the ends 28 (not shown in Figure 10) of the containers of the first row.

[0036] Figure 1 shows three containers of a single row of stack 96 and two containers of a single row of stack 98. These are shown in Figure 2 from the opposite side. Ends 26 of the containers of stack 96 face the source of ventilating air, typically a cooling fan. This air enters each of the containers 22 in stack 96 through the opening 68 in end panels 28 as indicated by arrows 110. However, more significantly, cooling air enters passageways 36 and 38 of the sides 30 and 32 through apertures 40 and 42 in each of the end panels 26. This is illustrated by arrows 114 and 116 in Figure 3. The cooling air passes through the passageways towards the ends 28 of the containers as illustrated by arrows 120 and 122 in Figure 2.

[0037] As may be seen in Figure 1, each of the side panels has apertures 60 and 62 positioned so that one of these apertures aligns with apertures 40 and 42 in the end panels and accordingly with the passageways 36 and 38 in the side panels of the containers of stack 96. The apertures 40 and 42 are not seen in Figure 1, but it may be seen that aperture 62 in the right container 22 is aligned with side panels 30 and 32 of the two right end containers 22 of stack 96. Thus air passing through the passageways in the side panels 30 and 32 of these containers can pass through the aperture 62 as indicated by arrows 120 in Figure 1. Likewise arrows 122 illustrate the flow of air out of aperture 60 in panel 30 of the left container in stack 98.

[0038] The ventilating air entering the passageways 36 and 38 of the containers of stack 96 is permitted to enter the containers 22 of the stack through the apertures 60 and 62 as indicated by arrows 130 in Figure 2.

[0039] Figure 5 shows a corrugated paperboard blank 132 for forming each container 22. Each blank has a rectangular bottom panel 134 which forms the bottom 24 of the container as shown in Figure 6. There are end panels 136 and 138 which are connected to opposite ends of the bottom panel along parallel fold lines 140 and 142. In this example the fold lines are formed by spaced apart slits in the layers of paper of the corrugated paperboard forming blank 132.

[0040] There are side panels 148 and 150 connected to opposite sides of the bottom panel along parallel fold lines 152 and 154. Each of the side panels has a first section 160, as shown for panel 148, defined by fold line 152 and another fold line 162. A second section 161 is defined by fold line 164 and outer side edge 166 of the blank. It may be seen that the first and second sections of each side panel are spaced apart by a connecting section 170 located between sections 160 and 161. When the blank is folded along the fold lines 152, 162 and 164, the first section 160 and the second section 161 of each of the side panels forms outer wall 50 and inner wall 48 of the side panels of the container as shown in Figure 9.

[0041] Each of the side panels, for example side panel 150 of Figure 5, has a pair of first end flaps 180 and 182 at opposite ends of the first section 160. These are defined by fold lines 184 and 186 which are parallel to the fold lines 140 and 142 of the end panels. These flaps have openings 188 and 190 which form the openings 40 and 42 shown in Figure 3.

[0042] The first section of each side panel has openings 196 and 198 while the second section has aligned openings 200 and 202. These form openings 60 and 62 in the side panels when the container is folded along the fold lines to form the container as shown in Figure 8.

[0043] The second section 161 of each of the panels has second end flaps 210 and 212 which are connected to the second section along fold lines 214 and 216 which are parallel to fold lines 184 and 186, but are spaced inwardly therefrom.

[0044] Each of the end panels has cut-aways 220 and 222, shown for panel 138 in Figure 5, which align with passageways 36 and 38 when the carton is folded as shown in Figure 9. These allow air to pass through the end panels into the passageways.

[0045] When the blank is folded to form the containers, the flaps 180 and 182 extend along the exterior of the end panels to strengthen the end walls as shown for flap 182 in Figure 7. The flaps 210 and 212 extend along the insides of the end panels to strengthen the end panels as shown for flap 212 in Figure 7.

[0046] The flaps are held in position in this embodiment by hot glue although other adhesives or fasteners could be employed. Likewise the inner walls 48 of the side panels, shown in Figure 9, could be held in place at the bottoms by hot glue although glue or other fastening means is not used in the illustrated embodiment. Also other means such as adhesives, fasteners, tabs and slots or friction could be used.

[0047] Figure 11 shows a paperboard blank 300, according to an alternative embodiment of the invention, which is generally similar to the previous one and thus will be described only in relation to the differences. In this example, it is end panels 302 and 304 which have inner and outer sections 306 and 308 with connecting section 310 therebetween. Thus, when folded up, the passageways are in the end panels rather than the side

panels as in the previous embodiment. The end panels are connected to bottom panel 312 along with side panels 314 and 316. Also there is but a single central, upward projection 320 on each end panel and a single corresponding recess 322. The openings 330 in the side panels are in the form of recesses extending inwardly from the top edges 332 thereof. Otherwise the structure is similar to the previous embodiment.

Claims

1. A ventilated container comprising a bottom panel (24), and first and second panels and panel means (26-32) connected to the bottom panel (24) and extending along respective edges thereof and also extending substantially vertically therefrom, said panel means. (30,32) having longitudinal passageway means (36,38) and comprising a third panel (30) having a longitudinal passageway (36) extending from substantially one end of the third panel (30) to substantially the other end of the third panel (30) to permit air to flow therethrough.

2. A container as claimed in claim 1, wherein said longitudinal passageway means communicates at its ends, with respective volume-form spaces defined in the first and second panels (26,28) to permit air to pass from the first panel (26) to the second panel (28).

3. A container as claimed in claim 2, wherein the volume-form spaces are constituted by apertures (40,42) aligned with the passageway means (36,38), whereby the passageway means (36,38) communicates through the first and second panels (26,28).

4. A container as claimed in any preceding claim, wherein panel means (30,32) includes inner wall means (48) and outer wall means (50), the passageway means (36,38) being bounded by the inner wall means (48) and the outer wall means (50).

5. A container as claimed in claim 4, wherein said panel means (30,32) has upper edge means (52), the inner wall means (48) and outer wall means (50) of the panel means (30,32) being spaced apart at the upper edge means (52), said panel means (30,32) having upper connecting wall means (54) extending between the inner wall means (48) and the outer wall means (50).

6. A container as claimed in claim 5, wherein the inner wall means (48) and outer wall means (50) have apertures (60,62) extending therethrough.

7. A container as claimed in any preceding claim, wherein the passageway means (36,38) is tubular.

8. A container according to any preceding claim, wherein said panel means further comprises a fourth panel (32), and said longitudinal passageway means (36,38) comprises a longitudinal passageway (38) of said fourth panel (32) and extending from substantially one end of the fourth panel (32) to substantially the other end thereof to permit air to flow therethrough.

9. A container as claimed in claim 8, wherein said bottom panel (24) is rectangular.

10. A container as claimed in claim 9, wherein the third and fourth panels (30,32) are side panels and the first and second panels (26,28) are end panels.

11. A container as claimed in claim 9, wherein the third and fourth panels (30,32) are end panels and the first and second panels (26,28) are side panels.

12. A container as claimed in any one of claims 9 to 11 as appended to claim 6 as appended to claim 3, wherein the apertures (60,62) extending through the inner walls (48) and the outer walls (50) of the third and fourth panels (30,32) are positioned on the third and fourth panels (30,32) such that, when a plurality of containers is arranged in a first row having a plurality of adjacent said containers aligned with their third and fourth panels (30,32) in contact with each other and a second row having a plurality of adjacent said containers aligned with their first and second panels (26,28) in contact with each other, the first row having first or second panels (26,28) in contact with third or fourth panels (30,32) of the containers of the second row, the apertures in the first and second panels (26,28) of the first row align with the apertures in the third or fourth panels (30,32) in contact therewith.

13. A blank for forming a container (22), said blank (132) comprising a central panel for forming a bottom panel (134) of said container (22) and first and second outer panels (136,138) and outer panel means (148,150) connected to the central panel (134) along first and second fold lines (140,142) and fold line means (152,154) said panel means (148,150) having first section means (160) adjacent to the central panel (134), second section means (161) located outwardly from the first section means (160) and connecting section means (170) extending between the first section means (160) and the second section means (161) the connecting section means (170) being bounded by other fold line means (162, 164) on opposite sides thereof and between the connecting section means (170) and the first section means (160) and the second section

means (161), respectively whereby, when the blank (132) is folded along the fold line means (140,142,152,154,162,164) to form said container (22), the panel means (148,150) forms passageway means (36,38) between the first section means (160) and the second section means (161) thereof.

14. A blank as claimed in claim 13, wherein the first and second panels (136,138) have cut-aways (220,222) positioned to align with the passageway means (36,38) when the first and second panels (136,138) and the panel means (148,150) are folded along the fold line means so that the passageway means (36,38) communicates through the first and second panels (136,138).

15. A blank as claimed in claim 14, wherein the panel means (148,150) has flaps (180,182) at opposite ends thereof bounded by fold lines (184,186) transverse to the panel means (148,150), said flaps having openings (188,190) therein arranged to become aligned with the passageway means (36,38) and the cut-aways (220,222) when the first and second panels (136,138) and the panel means (148,150) are folded to form the container (22), so that the passageway means (36,38) communicates with the cut-aways (220,222).

16. A blank as claimed in claim 15, wherein the openings (184,186) are adjacent to the fold lines (184,186) of the flaps (180,182).

17. A blank as claimed in claim 15 or 16, wherein the flaps (180,182) are on the first section means (160), the second section means (161) having other flaps (210,212) at opposite ends thereof, the other flaps (210,212) being connected to the second section means (161) along other fold lines (214,216) which are substantially parallel to the fold lines (184,186) for the first-mentioned flaps (180,182), but spaced inwardly therefrom.

18. A blank as claimed in any one of claims 13 to 17, wherein said outer panel means comprises third and fourth outer panels (148,150), said first section means (160), said second section means (161) and said connecting section means (170) comprise respective first sections (160), respective second sections (161) and respective connecting sections (170) of said third and fourth panels (148,150).

19. A blank as claimed in claim 18, wherein said central panel is rectangular.

20. A blank as claimed in claim 19 as appended to claim 14, wherein said third and fourth panels (148,150) have cut-outs (196) therein which are positioned to align with said cut-aways (220,222) when a plurality of said containers (22) are arranged in a first row with first and second panels (136,138) of adjacent containers (22) in contact and a plurality of said containers (22) are arranged in a second row with third and fourth panels (148,150) of adjacent containers (22) in contact, the third or fourth panels (148,150) of the containers (22) of the first row abutting the first or second panels (136,138) of the containers (22) of the second row.

21. Apparatus comprising a plurality of containers (22), each of said containers (22) having a bottom (24), first and second substantially vertical panels and panel means (26-32), longitudinal passageway means (36,38) extending through the panel means (30,32), the containers (22) being arranged in a first row and a second row adjacent to the first row, whereby air passing through the passageway means (36,38) of the containers (22) of the first row can enter the containers (22) of the second row through openings (40,42,60,62) in at least some of the first and second panels and the panel means (26-32).

22. Apparatus as claimed in claim 21, wherein the panel means of each of said containers (22) comprises third and fourth panels, the first and second panels (26,28) being parallel to each other and perpendicular to the third and fourth panels (30,32), said passageway means (36,38) comprising a longitudinal passageway (36) extending through the third panel (30) from the first panel (26) to the second panel (28) and extending through the first and second panels (26,28), the first row being arranged with the third and fourth panels (30,32) of adjacent containers (22) being adjacent to each other and the second row being arranged with the first and second panels (26,28) of adjacent containers (22) being adjacent to each other and with first or second panels (30,32) thereof being adjacent to the second panels (28) of the containers (22) of the first row, the third or fourth panels (30,32) of the containers (22) of the second row having said openings (40,42,60,62) aligned with the passageways (36,38) of the containers (22) of the first row, whereby air passing through the passageways (36,38) of the containers of the first row can enter the containers (22) of the second row through said openings (40,42,60,62).

23. A method of folding a paperboard blank to form a ventilated container (22), said blank (132) having a central panel (134) for forming a bottom panel, and first and second outer panels (136,138) and outer panel means (148,150) connected to the central panel (134) along first and second fold lines (140,142) and fold line means (152,154), the method comprising folding said outer panel means (148,150) to form passageway means (36,38)

through said outer panel means (148,150).

24. A method as claimed in claim 23, wherein said panel means (148,150) is folded to form outer substantially vertical section means (50), inner substantially vertical section means (48) spaced apart from the outer section means (50), and top section means (52) extending between the inner section means (48)and the outer section means (50).

25. A method as claimed in claim 23 or 24, wherein said passageway means (36,38) formed from the folded panel means (148,150) is triangular in cross-section.

26. A method as claimed in any one of claims 23 to 25, wherein said outer panel means (148,150) comprises third and fourth outer panels (148,150) and said passageway means (36,38) comprises a longitudinal passageway (36,38) of said third and fourth outer panels (148,150) extending from substantially one end of each of the third and fourth panels (148, 150) to substantially the other end thereof to permit air to flow therethrough.

27. A method of stacking containers comprising stacking containers (22) so as to provide a plurality of apparatus each according to claim 21 or 22 stacked one upon another such that the respective first rows are stacked one upon another and the respective second rows are stacked one upon another.

28. A method as claimed in claim 27 and serving to assist cooling of produce in the containers (22).

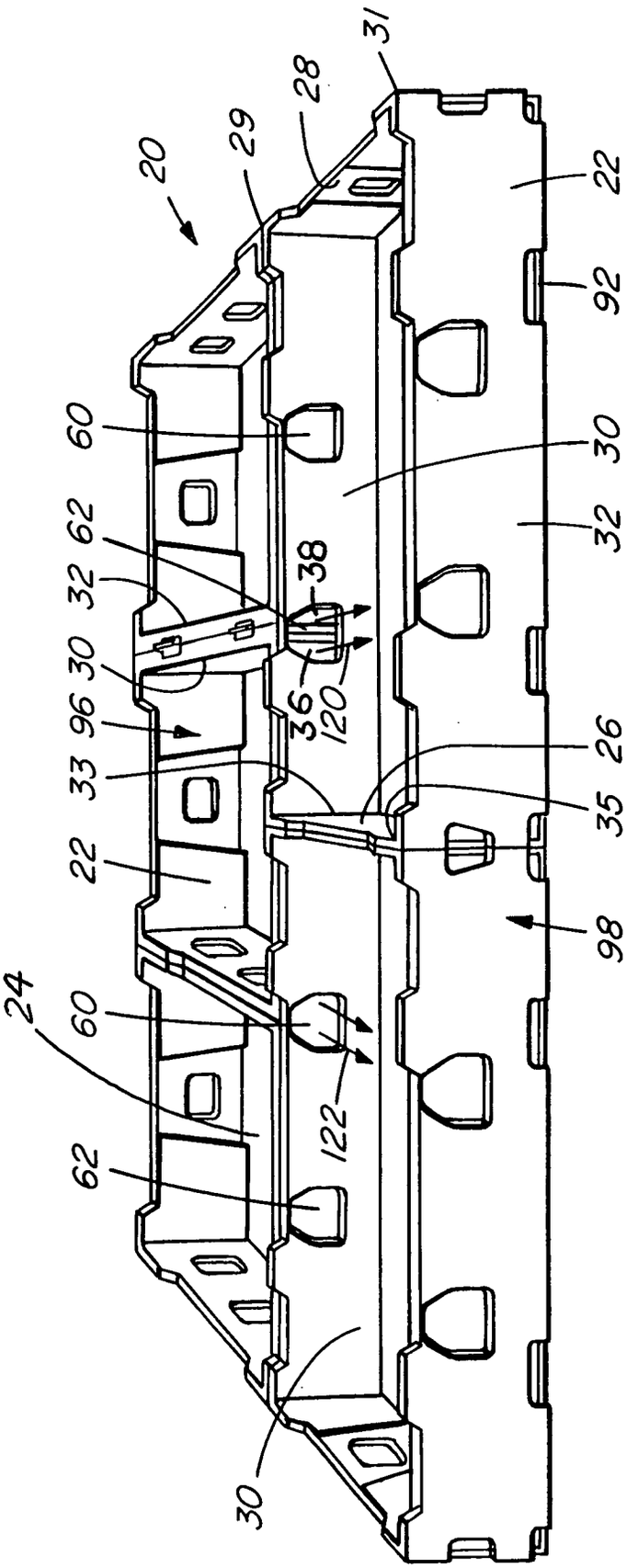
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FIG. 1

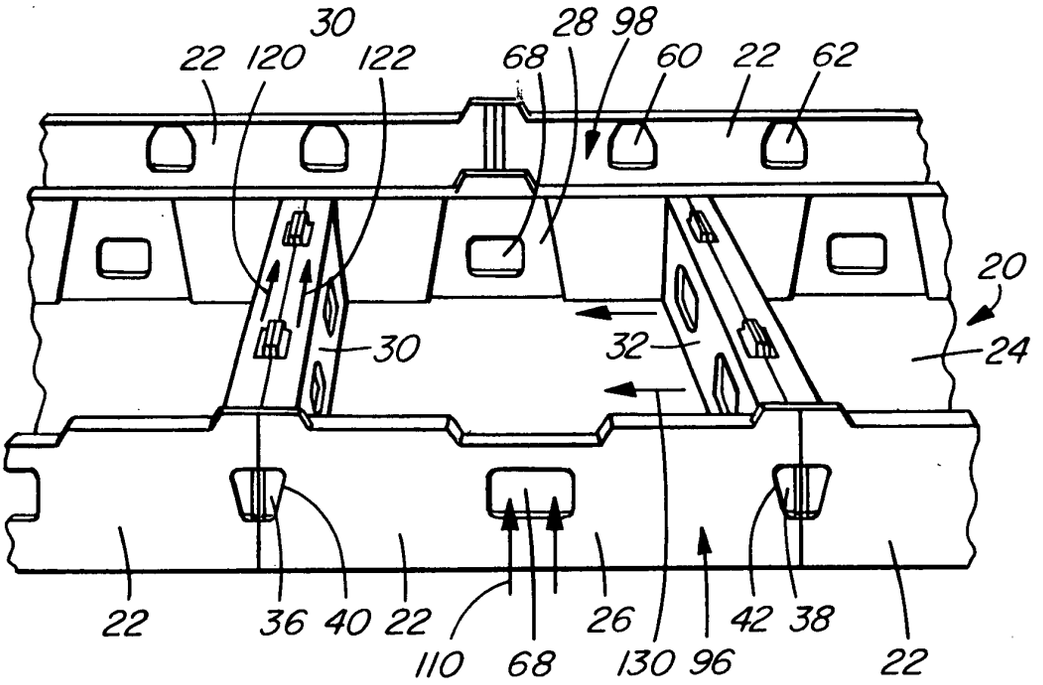
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FIG. 2

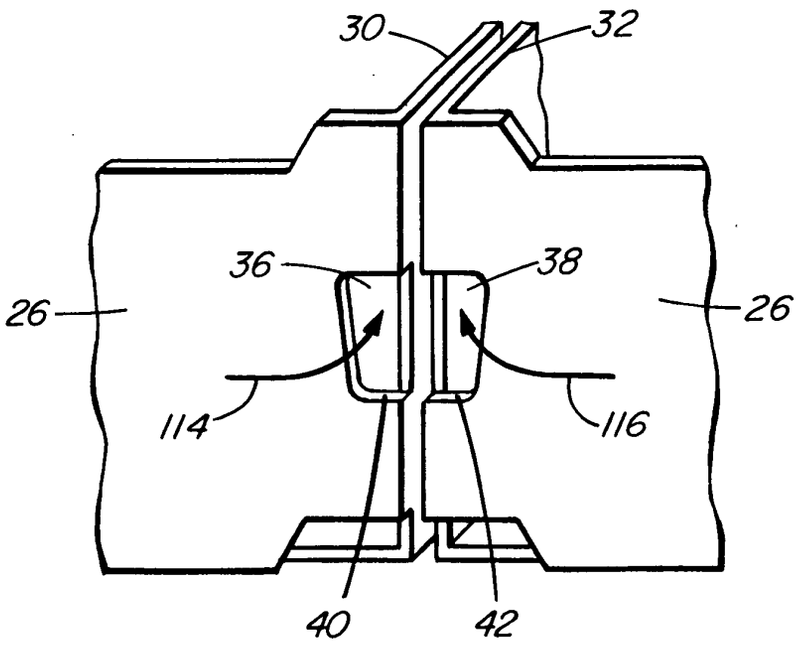
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FIG. 3

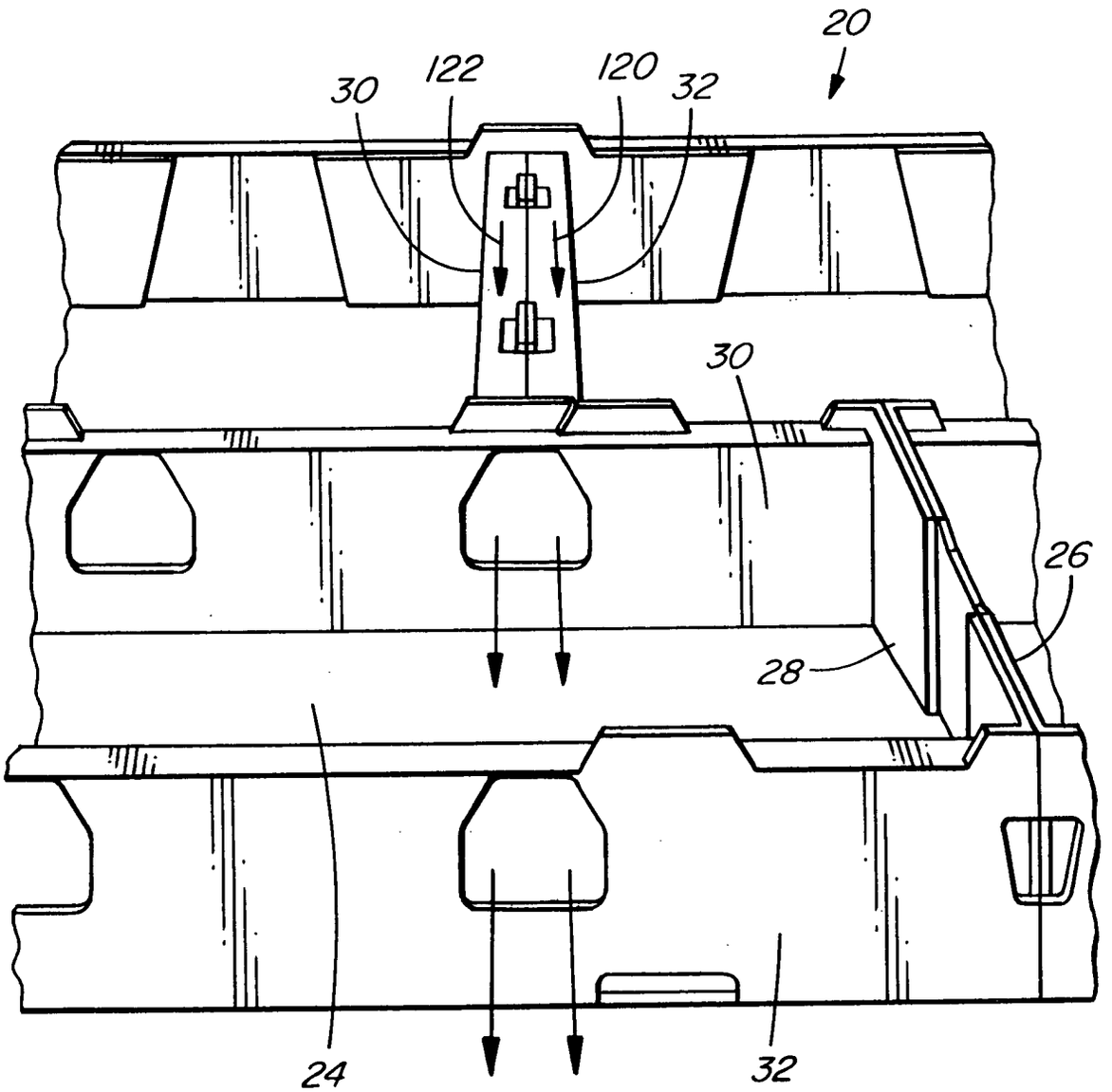

FIG. 4

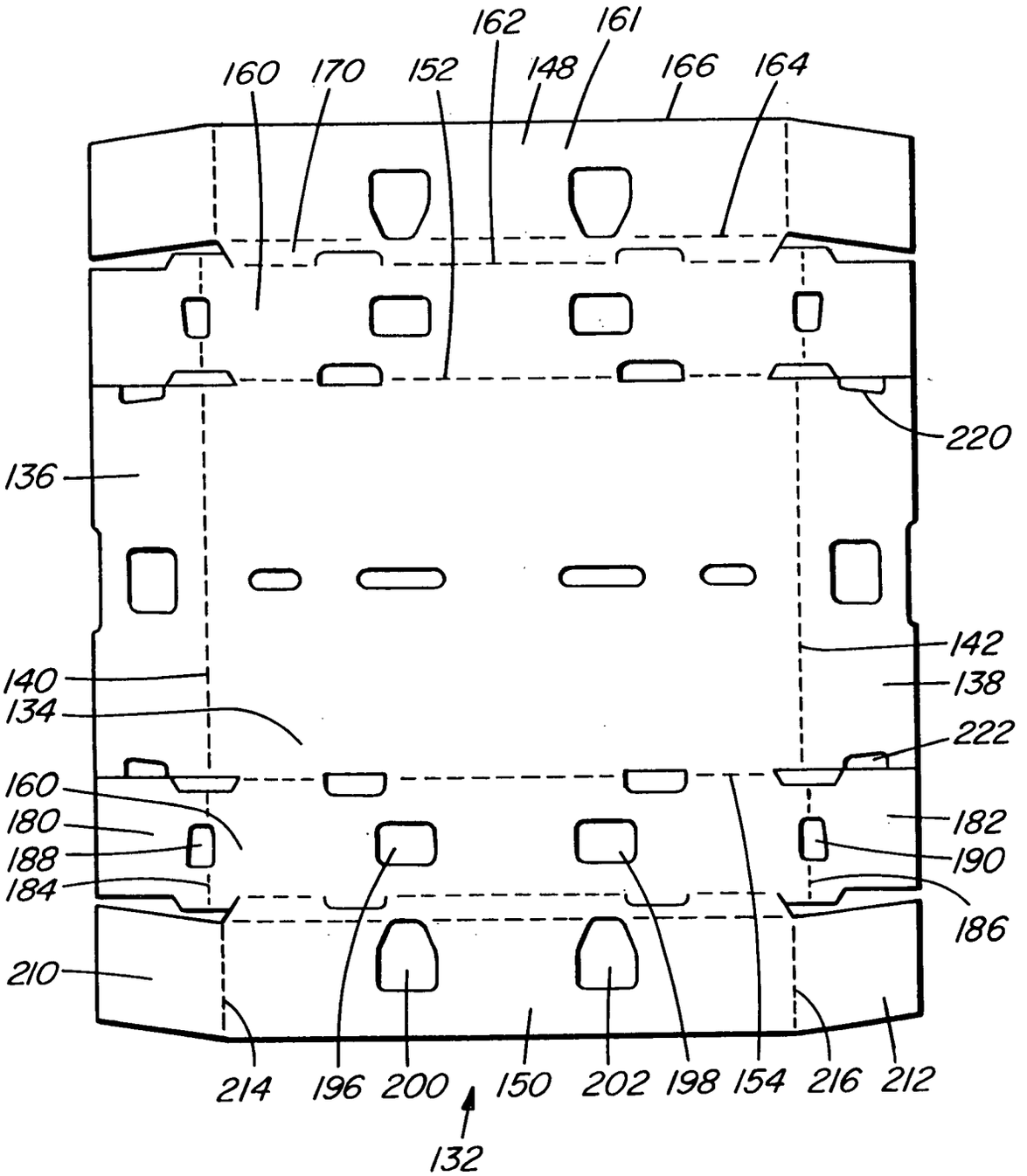
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FIG. 5

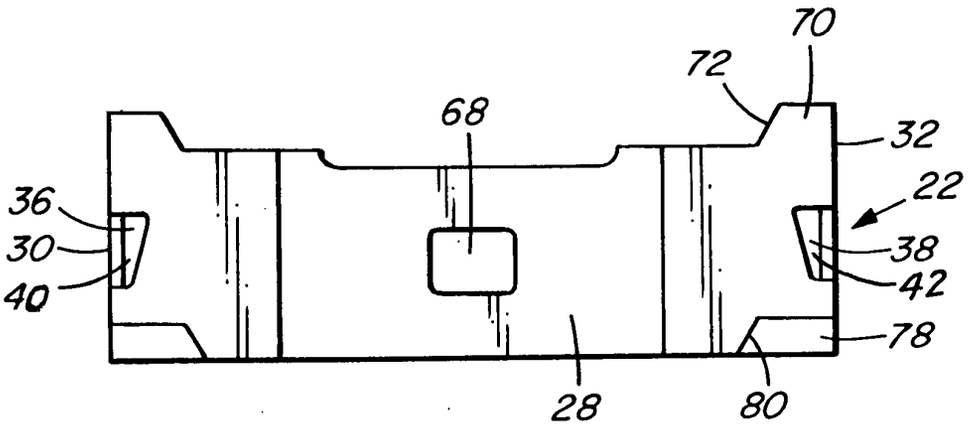
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FIG. 6

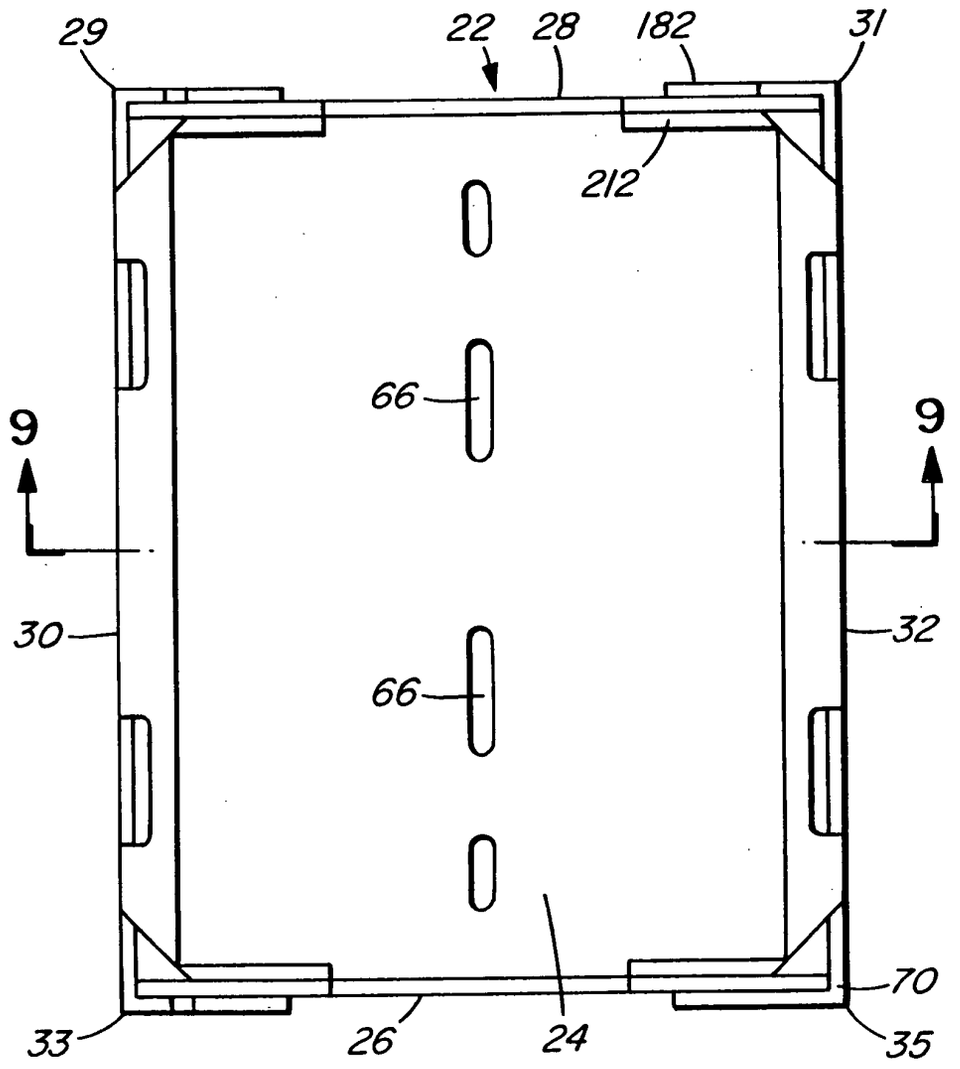
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FIG. 7

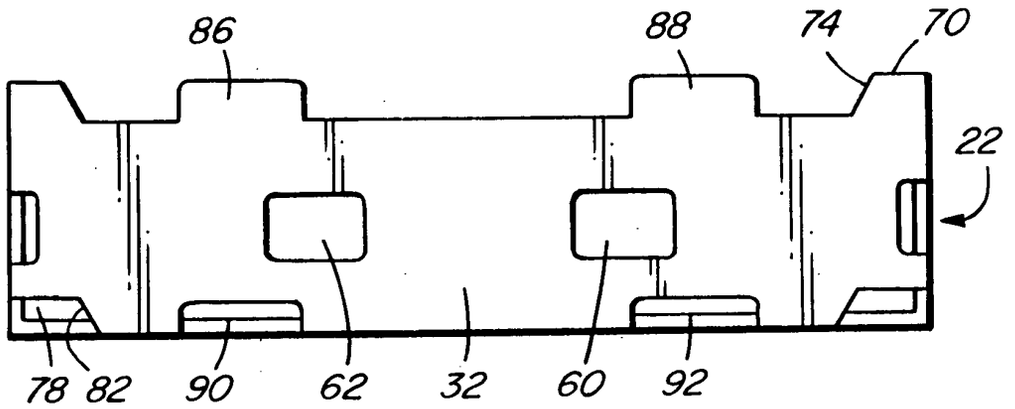

FIG. 8

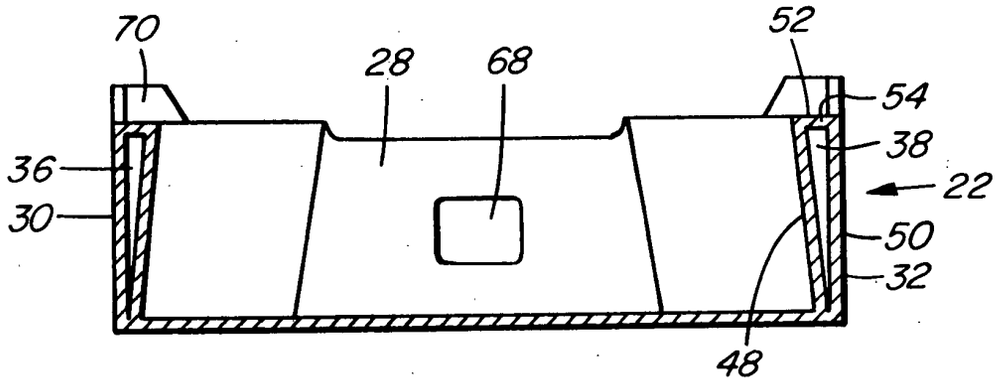

FIG. 9

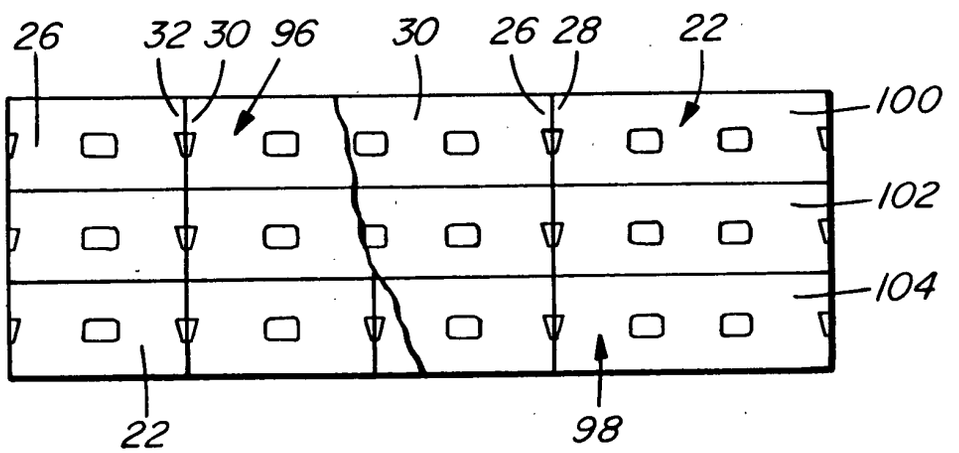

FIG. 10

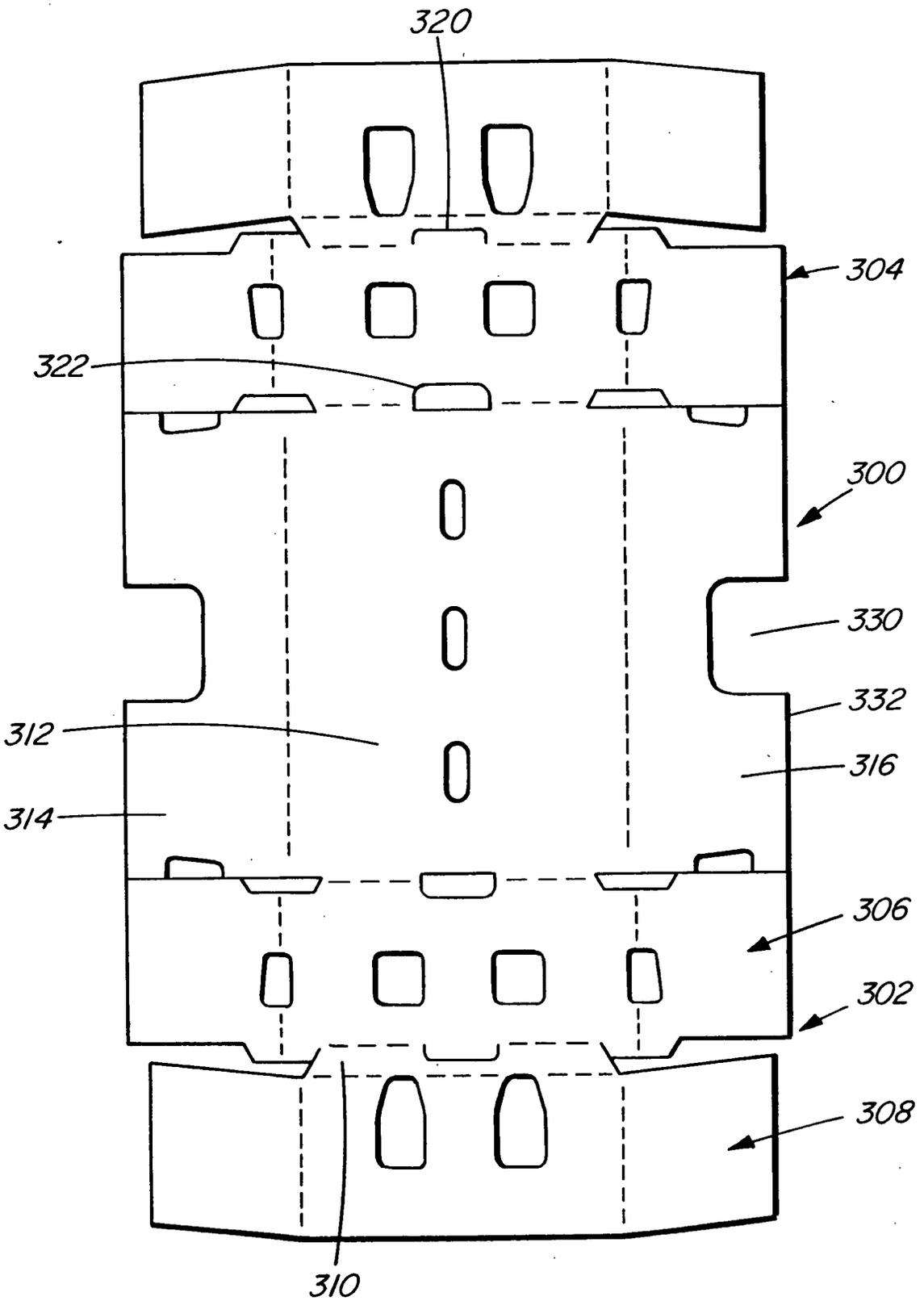

FIG. 11

European Patent Office

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Application Number
EP 01 12 1448

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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Y A	* column 2, line 59 - column 3, line 59 * * column 5, line 4 - line 34; figures 1,5,9-12 *	6 12,13, 22,23	
X A	US 2 532 085 A (CARTER) 28 November 1950 (1950-11-28) * column 3, line 71 - column 4, line 16; figures 1-4 *	1-3, 7-11,21 4,5,12, 13,22,23	
A	US 2 749 011 A (LEBOW) 5 June 1956 (1956-06-05) * column 1, line 30 - line 40 * * figures *	1-5, 7-11,13, 23,28	
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Y A	US 2 021 208 A (STOUFFER) 19 November 1935 (1935-11-19) * page 1, right-hand column, line 7 - line 32 * * page 2, left-hand column, line 61 - page 2, right-hand column, line 4; figures 4,7 *	6 12	B65D
A	US 1 993 112 A (PATTERSON) 5 March 1935 (1935-03-05) * page 1, left-hand column, line 46 - right-hand column, line 13; figures *	12,22	
A	US 5 494 214 A (FLEURY) 27 February 1996 (1996-02-27) * figure 8 *	12,22	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 March 2002	Newell, P

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European Patent Office

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Application Number
EP 01 12 1448

DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 6 158 652 A (RUIZ) 12 December 2000 (2000-12-12) * the whole document *	13,23	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 March 2002	Newell, P

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01-03-2002

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