Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
[0001] The present disclosure relates to the field of trays composed of corrugated fiberboard. In particular, it relates to such trays for fruit or vegetables.

BACKGROUND
[0002] Fruit and vegetables are transported long distances around the globe. Normally, the fruit or vegetables are placed in trays for the transport. Often, the trays are composed of corrugated fiberboard.

[0003] Today, Platform provided by International Paper is the leading design of trays for transport and display of fruit and vegetables. In the Platform design, the corrugated fiberboard in the bottom of the tray is arranged such that the panels extend in the longitudinal direction of the tray.

[0004] EP 1209087 discloses a cardboard box for the transport of perishable products. Flanges are emerging from the upper edge of the side walls of the box. Complementary cutouts are provided in the lower part of the side walls. The flanges and cutouts fit in a dovetailed manner when boxes are stacked to stabilize the stack.

[0005] FR 2584375 discloses a stackable tray made from a cardboard blank has a base portion and peripheral edge portions folded to define side walls, one pair of a single layer of cardboard, the other pair of double form. The region of the fold defines a support surface for an identical tray when stacked thereon. The outermost parts of the end walls have folded extensions at the corners of the tray, which define upstanding stacking projections and recesses. The innermost parts of the folded wall portions have extensions which extend diagonally across the corners to brace them.

[0006] FR 2682936 discloses a stacking container with reinforced corners in which the short sides have at each end extensions applied against each long side in order to constitute triple-layered corners in a folded configuration.

[0007] US 2003/0146272 discloses a tray including a bottom wall, longitudinally-extending outer side walls and laterally-extending end walls. The outer side walls and the end walls extend upwardly from the bottom wall to form an inner cavity. The outer side walls include a plurality of spaced-apart stacking tabs, and the bottom wall forms a plurality of spaced-apart apertures for receiving the stacking tabs of like or similar containers.

SUMMARY
[0008] The inventor has realized that a result of the direction of the panels of the corrugated fiberboard in the Platform design is that the long side walls are composed of board having horizontal panels, which is much less resistant to top to bottom load than side walls having vertical panels. Further, the inventor has found that the ventilation in stacks of Platform trays is insufficient.

[0009] The object of the present disclosure is to provide trays for fruit or vegetables that are strong and stable, stackable and cost efficient in the sense that they require relative small blanks of corrugated fiberboard and utilize the blanks efficiently. It is a further object to provide trays that allows for efficient ventilation and thus cooling of their contents when stacked, e.g. during transportation or storage. Another object is to provide a machine-erected tray (a tray formed in a machine).

[0010] Therefore, there is provided a tray for fruit or vegetables according to claim 1. The single piece of flat corrugated fiberboard from which the tray is folded is often referred to as a blank within the art.

[0011] In the tray of the present disclosure, all parts of the walls that carry weight when the tray is stacked, i.e. the side walls and the flanking sections of the end walls, comprises two layers of board having vertical panel. The only parts of the walls that is composed only of board having horizontal panel, i.e. the middle sections of the end walls, are not in contact with the tray above in a stack and carries substantially no weight. For a tray having a length of 600 mm, a width of 400 mm and a height of 170 mm, the walls are composed of 3380 mm (3140 mm with ventilation cut-outs according to Fig 2) of board having vertical panel according to the present disclosure compared to only 1500 mm according to the Platform design.

[0012] Another benefit of the design of the present disclosure compared to the Platform design or another design having the same direction of the bottom panels as the Platform design is that the bottom deflection is decreased.

[0013] The inventor has realized that when the middle sections are not necessary for carrying to top to bottom load, they may be designed to facilitate efficient ventilation instead. Therefore, the height of the middle section is less than the height of the flanking section such that air may be vented through the end wall. When stacks of trays are placed next to each other during transport, such ventilation is of particular importance as the temperature and humidity in the trays must be controlled for many products.

[0014] Another benefit of reducing the height of the middle section is that the length of the blank from which the tray is folded is reduced. If the height of the middle section would be the same as the height of the flanking sections, the total...
According to the invention, each flanking section further comprises a third layer of fiberboard having horizontal panel. In such an embodiment, the height of the third layer is preferably less than the height of the first and second layers. That means that a lower portion of the flanking sections consists of three layers and an upper portion of the flanking sections consists of two layers.

According to the invention, a single end wall component constitutes the middle section and the third layer of the flanking sections of each end wall. In such an embodiment, the upper edge of the end wall component may be straight and horizontal, which means that the height of the middle section is the same as the height of the third layer of the flanking sections.

Preferably, such an end wall component extends from each of the end sides of the bottom section. Normally, a fold line separates each end wall component from the bottom section.

According to the invention, at least one of the first and second layers is arranged outside of the third layer in the flanking sections of the end walls. Thus, if two trays are placed such that their end walls meet, an empty space between the trays is formed at the middle sections. If trays are stacked in this manner, an uninterrupted "chimney" is formed, which facilitates ventilation of the stack. When both the first and the second layers are arranged outside the third layer, a wider chimney is formed.

When the third layer is sandwiched between the first and the second layer in the flanking sections, the first and the second layer, respectively, may be glued to the third layer. When the first and the second layers are both arranged outside of the third layer, only one of them may be glued to the third layer. In such case, the first and the second layer may be glued together.

In the tray of the present disclosure, the width of a middle section may for example be 0.25-0.50 times the width of an end wall.

The tray of the present disclosure comprises handles provided at the end walls of the tray. For example, handles may be formed by providing a cut-out in the middle section of each end wall. The cut-outs are typically 7-14 cm, such as 8-11 cm wide. In one embodiment, the width of the cut-out is less than the width of the middle section of the end wall. The height of the cutouts is typically 2-5 cm, such as 2-4 cm. The shape of the cut-outs may for example be rectangular or elliptical. The end-portions/corners of the rectangle may be rounded. For example, the end portions may be half circles.

In the tray of the present disclosure, the cut-out extends into the bottom section over a fold line between the bottom section and the middle section of the end wall. When such a cut-out is provided, a portion of the edge between the middle section of the end wall and the bottom section is thus removed. Such placement of the cut-out/handle facilitates ventilation of a stacked tray, in particular when a chimney if formed by arranging one or both of the first and second layers outside the third layer in the flanking sections.

The cut out extends between 0.5 and 5 cm into the bottom section. In one embodiment, it extends between 1 and 3 cm into the bottom section.

As the cut-out extends into the bottom section, a vertical channel is formed at the inside of the middle sections of the trays in a stack. Such a vertical channel is only interrupted by the contents of the trays. If the contents are not closely packed, which is normally not the case with larger fruits and vegetables, such a vertical channel provides for efficient ventilation.

The cut-outs of the present disclosure are preferably positioned centrally in the end walls. That is, the distance from the middle of the cut-out to each edge between the end wall and the side walls is preferably the same. Thereby, the trays are balanced when carried.

In one embodiment of the present disclosure, ventilation holes are provided in the bottom section at the long sides. Such ventilation holes may be matched by ventilation cut-outs in the side walls at approximately the same position along the long sides of the bottom section. Preferably, such ventilation cut-outs are positioned at the top of the side walls such that they are in close proximity to the ventilation holes of an overlying tray in a stack. When the ventilation cut-outs have such positions, a part of the upper edge of each side walls is removed. The proximity between the ventilation cut-outs and the overlying ventilation holes facilitate the ventilation of the trays when stacked.

At each long side, one or two or more ventilation holes may be provided in each side wall. In one embodiment, the positions along the long side of the bottom section of the ventilation holes and the ventilation cut-outs are matched.

In one embodiment, the ventilation holes in the bottom section extend into the side walls. In another embodiment, the shortest distance from the edge of each ventilation hole to one of the long sides 1-4 cm, such as 1-3 cm.

In one embodiment of the present disclosure, the height of the middle section of is approximately the same as or less than the width of each flanking section. This means that in the blank from which the tray is formed, the portion that corresponds to the middle section of the end wall, e.g. the single end wall component discussed above, does not contribute to the total length of the blank. In other words, by keeping the height of the middle section approximately the
same as or less than the width of a flanking section, the total length of the blank is reduced, which saves material and thus costs. This is also discussed above.

[0030] To distribute the top-to-bottom load on stacked trays, the height of the side walls may be approximately the same as the height of the flanking sections of the end walls.

[0031] The bottom section is normally rectangular, but may be some embodiments be square. For example, the length of each long side may be 1.1-1.9, such as 1.3-1.7, 1.4-1.6 or 1.5, times the length of each end side. Each long side may for example be 300-1100 mm, such as 400-800 mm and each end side may for example be 200-700 mm, such as 250-550 mm.

[0032] The skilled person understands that in the normal case, both end walls have the same dimensions and configuration and both side walls have the same dimensions and configurations. Likewise, the length of both long sides of the bottom section is normally the same and the length of both end sides of the bottom section is normally the same.

[0033] The corrugated fiberboard of the present disclosure may have one or two or more corrugated (flute) layers. For example, it may have a BC-profile. Further, the corrugated fiberboard of present disclosure may comprise an outside liner and/or an inside liner and possibly a center liner.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0034] The invention is now described, by way of example, with reference to the accompanying drawings, in which:

Fig 1 shows an example of a blank that may be folded to form a tray according to an embodiment of the present disclosure.

Fig 2 shows a tray according to an embodiment of the present disclosure in a folded configuration.

In Fig 3, a blank that may be folded to a tray according to the present disclosure having a length of 600 mm, a width of 400 mm and a height of 170 mm (Fig 3A) is compared to a blank that may be folded to a tray according to the Plateform design having the same dimensions (Fig 3B).

**DETAILED DESCRIPTION**

[0035] The invention will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout the description.

[0036] Figure 1 shows a blank 1 from which a tray 20 according to an embodiment of the present disclosure may be formed. Figure 2 shows the tray 20 in the folded configuration.

[0037] The blank 1 comprises a bottom section 10, which will constitute the bottom of the folded tray 20. The bottom section 10 comprises opposed long sides 11a, 11b and opposed end sides 12, 12b, which are defined by folding lines in the blank 1.

[0038] Outside the folding lines defining long sides 11a, 11b, the first side wall layers 13a, 13b, which will constitute the outer layer of each side wall 21a, 21b of the folded tray 20, are found.

[0039] The outer borders of the first side wall layers 13a, 13b are, in addition to the folding lines defining the long sides 11a, 11b of the bottom section 10, defined by side wall edge folding lines 18a, 18b and opposed first side wall end folding lines 19a, 19b. Thus, in the first side wall layers 13a, 13b, the folding lines defining the long sides 11a, 11b are opposed to the side wall edge folding lines 18a, 18b, which will form the upper edge 25a, 25b of the side walls 21a, 21b.

[0040] Outside the side wall edge folding lines 18a, 18b, the second side wall layers 14a, 14b, which will constitute the inner layer of each side wall 21a, 21b of the folded tray 20, are found.

[0041] The outer borders of the second side wall layers 14a, 14b are, in addition to the side wall edge folding lines 18a, 18b, defined by the short ends 101a, 101b of the blank 1 and opposed second side wall end folding lines 19c, 19d. Thus, in the second side wall layers 14a, 14b, the side wall edge folding lines 18a, 18b are opposed to the blank short ends 101a, 101b, which will meet the bottom section 10 at the long sides 11a, 11b in the folded tray 20.

[0042] Outside the folding lines defining the end sides 12a, 12b of the bottom section, end wall components 15a, 15b are found. The end wall components 15a, 15b will constitute the middle section 23a, 23b of each end wall 22a, 22b in the folded tray 20. Further, the end wall components 15a, 15b will constitute the third layer of each flanking section 24 a, 24b of the end walls 22a, 22b of the folded tray 20.

[0043] Each end wall component 15a, 15b is normally rectangular and only one of its sides is defined by a folding line (i.e. the folding lines defining the end sides 12a, 12b of the bottom section 10). The other three sides are edges
Outside the first side wall end folding lines 19a, 19b, the first flanking section layers 16a, 16b, which will constitute the first (and normally outer) layer of the flanking sections 24a, 24b of the end walls 22a, 22b, are found. Each first flanking section layer 16a, 16b is normally rectangular and only one of its sides is defined by a folding line (i.e. the first side wall end folding lines 19a, 19b). The other three sides are edges defined by cuts.

Outside the second side wall end folding lines 19c, 19d, the second flanking section layers 17a, 17b, which will constitute the second layer of the flanking sections 24a, 24b of the end walls 22a, 22b, are found. Each second flanking section layer 17a, 17b is normally rectangular and only one of its sides is defined by a folding line (i.e. the second side wall end folding lines 19c, 19d). The other three sides are edges defined by cuts.

The second flanking section layers 17a, 17b may be the inner layer of the flanking sections 24a, 24b of the end walls 22a, 22b. In such case, the third layer of flanking sections 24a, 24b of the end walls 22a, 22b, e.g. the end wall component 15a, 15b, is normally the middle (sandwiched) layer. Alternatively, the end wall component 15a, 15b may constitute the inner layer, while the second flanking section layers 17a, 17b are sandwiched. This is further discussed below.

The direction of the corrugation panels in the blank is parallel with the end sides 12a, 12b of the bottom section 10. As the first side wall layers 13a, 13b are folded along the long sides 11a, 11b of the bottom section 10 to a standing orientation, the panels in the first side wall layer will be standing/vertical. Further, when the second side wall layers 14a, 14b are folded inwardly along the side wall edge folding lines 18a, 18b such that the blank short ends 101a, 101b meet the bottom section 10 at the long sides 11a, 11b and the upper edge 25a, 25b of the side walls 21a, 21b is formed at the side wall edge folding lines 18a, 18b, the panels in the second side wall layers 14a, 14b will also be standing.

Further, it follows from the above that the panels of the first 16a, 16b and second 17a, 17b flanking section layers will be standing in the folded configuration of the tray 20. Thus, there will be double layers of standing panels in the side walls 21a, 21b and the flanking sections 24a, 24b of the end walls 22a, 22b. The only parts of the walls that lack standing panel is the middle section 23a, 23b of the end walls 22a, 22b; each middle section 23a, 23b of the end walls consists of a single layer having vertical panels in the embodiment of figure 2.

In each end wall 22a, 22b, the height of the middle section 23a, 23b is less that the height of the flanking sections 24a, 24b. To achieve this, the width w of the end wall components 15a, 15b is less than the height h of the first 16a, 16b and second 17a, 17b flanking section layers.

In the folded tray 20, the width w of the end wall components 15a, 15b become the height of the middle section 23a, 23b of the end walls 22a, 22b. Further, the height h of the of the flanking section layers 16a, 16b, 17a, 17b becomes the width of the flanking sections 24a, 24b of the end walls end the folded tray 20.

The machine direction of the board of the blank 1 is perpendicular to the direction of the panels (see Fig 3a). In figure 1, it is seen that the width w of the end wall components 15a, 15b is selected such that they are not extending the length of the blank 1 in the machine direction. To obtain a tray in which the height of the middle sections 23a, 23b is the same as the flanking sections 24a, 24b in the end walls 22a, 22b, the width w of the end wall components 15a, 15b would need to be the same as the height h of the flanking section layers 16a, 16b, 17a, 17b, which would increase the length in the machine direction of the blank by 8 % for some typical dimensions of the tray.

Handle cut-outs 102a, 102b are provided at the folding line defining the end sides 12a, 12b of the bottom section 10. Each handle cut-out 102a, 102b extends into the bottom section 10 and the part of the end wall component 15a, 15b that constitutes the middle section 23a, 23b of the end walls 22a, 22b of the folded tray 20.

Ventilation holes 103a, 103b are provided in the bottom section 10 at a shorter distance, e.g. 0.5-6 cm, from each long side 11a, 11b. Further, ventilation cut-outs 104a, 104b are provided at the side wall edge folding lines 18a, 18b such that parts of the upper edge 25a, 25b of the side walls 21a, 21b of the folded tray are removed. Each ventilation hole 103a, 103b is aligned with a ventilation cut-out 104a, 104b such that a line through them is parallel with the end sides 12a, 12b of the bottom section in the blank 1 and with the plane of the end walls 22a, 22b in the folded tray 20.

Tab cut-outs 105a, 105b may be provided in the bottom section 10 at the long sides 11a, 11b. In such case, corresponding tab cut-outs 107a, 107b are preferably provided in the second side wall layers 14a, 14b at the blank short ends 101a, 101b as well. Further, tabs 106a, 106b may be provided by cuts at the side wall edge folding lines 18a, 18b. Such tabs 106a, 106b are aligned with the tab cut-outs such that they, in the folded configuration of the tray 20, may lock with the tab cut-outs 105a, 105b, 107a, 107b of an identical overlaying tray 20 in a stack. The tabs 106a, 106b are preferably provided as extension of the second side wall layers 14a, 14b such that they extend from the inner layer of the side walls 21a, 21b in the folded configuration of the tray 20. Further, the above positioning of the tab cut-outs 105a, 105b, 107a, 107b provides tab holes 26 extending into the inner layer of the side walls 21a, 21b in the folded configuration of the tray 20 that provide for excellent stability in a stack.

In figure 2, the end wall components 15a, 15b are sandwiched between the first flanking section layers 16a, 16b and the second flanking section layers 17a, 17b in the flanking sections 24a, 24b of the end walls 22a, 22b. Alternatively, all flanking section layers 16a, 16b, 17a, 17b are arranged outside the end wall components 15a, 15b. In such case, the free space between the middle sections 23a, 23b of two trays 20 that are placed such that their end walls
22a, 22b meet is doubled.

[0056] In the shown in Fig 2, the first 16a, 16b and the second 17a, 17b flanking sections layers are glued to the end wall component 15a, 15b. When all flanking section layers are instead arranged outside the end wall component 15a, 15b, the first flanking section layers 16a, 16b are glued to the respective second flanking section layers 17a, 17b, which in turn are glued to the end wall components 15a, 15b.

[0057] Also, the first side wall layers 13a, 13b may be glued to the second side wall layers 14a, 14b for increased strength as movements of the layers 13a, 13b, 14a, 14b relative each other in such case are prevented (or at least reduced).

[0058] The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended claims.

EXAMPLE

[0059] A tray according to the present disclosure (see Fig 3a) was compared to a tray according to the Platorm design (see Fig 3b). Both trays had a length of 600 mm, a width of 400 mm and a height of 170 mm.

[0060] Both trays were composed a corrugated board in BC-profile, see Table 1.

<table>
<thead>
<tr>
<th>Construction</th>
<th>Substance</th>
<th>Grade and producer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Liner</td>
<td>170 gsm</td>
<td>Pure White, Billerud</td>
</tr>
<tr>
<td>Flute B</td>
<td>140 gsm</td>
<td>Billerud Flute, Billerud</td>
</tr>
<tr>
<td>Centre Liner</td>
<td>140 gsm</td>
<td>Billerud Flute, Billerud</td>
</tr>
<tr>
<td>Flute C</td>
<td>140 gsm</td>
<td>Billerud Flute, Billerud</td>
</tr>
<tr>
<td>Inside Liner</td>
<td>200 gsm</td>
<td>Petaliner, Peterson Moss</td>
</tr>
</tbody>
</table>

Table 1. Basic properties corrugated board

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliper [mm]</td>
<td>6,66</td>
<td>--</td>
</tr>
<tr>
<td>ECT [kN/m]</td>
<td>15,25</td>
<td>ISO 3037</td>
</tr>
<tr>
<td>Sb MD [Mn]</td>
<td>43,42</td>
<td>ISO 5628</td>
</tr>
<tr>
<td>Sb CD [Nm]</td>
<td>25,3</td>
<td>ISO 5628</td>
</tr>
<tr>
<td>Sb GEO [Nm]</td>
<td>33,1</td>
<td>ISO 5628</td>
</tr>
</tbody>
</table>

[0061] Blanks were produced in corrugated board (table 1) using a cutting table, Kongsberg XL 20 Power head. They were glued and assembled by hand and conditioned 48 hours in 20°C and 90% RH prior to test. Box compression tests, BCT, were carried out according to ISO 12048 (1994) with one platen remained horizontal at all time during the test and the other platen were held by a universal joint at its center and free to tilt in any direction. To measure the ability of force transfer between bottom and top two boxes was placed in column when performing a BCT and is denoted as BCT ½. Bottom deflection was measured in accordance with UNE 49706.

[0062] The results are shown Table 2 below.

<table>
<thead>
<tr>
<th>Property</th>
<th>PLATFORM® tray</th>
<th>Tray acc. to the present discl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCT$_{90%\text{RH}}$ [kg]</td>
<td>748</td>
<td>1271</td>
</tr>
<tr>
<td>BCT ½$_{90%\text{RH}}$ [kg]</td>
<td>571</td>
<td>1093</td>
</tr>
<tr>
<td>Bottom Deflection [mm]</td>
<td>9,1</td>
<td>8,0</td>
</tr>
<tr>
<td>Material [gram]</td>
<td>686</td>
<td>824</td>
</tr>
</tbody>
</table>

[0063] The results show that the tray design according to the present disclosure results in a BCT$_{90\%\text{RH}}$ that is 70 % higher than for the Plafom design. Further, the BCT$_{90\%\text{RH}}$ and in a simulated stack is 90 % higher for the tray design according to the present disclosure than for the Plafom design. Bottom deflection is 12% lower for the tray design according to the present disclosure, which is beneficial. Further, the tray design according to the present disclosure only
consumes 20% more material (area) and is thus more material effective than the Plaform design.

**Claims**

1. A tray (20) for fruit or vegetables being foldable from a single piece of flat corrugated fiberboard (1), comprising:
   - a bottom section having two long sides (11a, 11b) and two end sides (12a, 12b), wherein the panels of the corrugated fiberboard of the bottom section are parallel with the end sides;
   - two opposed side walls (21a, 21b) extending from the long sides of the bottom section; and
   - two opposed end walls (22a, 22b) extending from the end sides of the bottom section, wherein each side wall comprises two layers (13a, 13b, 14a, 14b) of corrugated fiberboard having vertical panels, each end wall comprises a middle section (23a, 23b) and two flanking sections (24a, 24b) flanking the middle section, said middle section being composed of a single layer (15a, 15b) of corrugated fiberboard having horizontal panels and each flanking section comprising first (16a, 16b) and second layers (17a, 17b) of fiberboard having vertical panels, the height of the middle section is less than the height of the two flanking sections, each flanking section (24a, 24b) further comprises a third layer (15a, 15b) of fiberboard having horizontal panel and the height of the third layer is less than the height of the first and second layers (16a, 16b, 17a, 17b), a single end wall component (15a, 15b) constitutes the middle section (23a, 23b) and the third layer of the flanking sections (24a, 24b) of each end wall (22a, 22b) and at least one of the first and second layers (16a, 16b, 17a, 17b) are arranged outside of the third layer (15a) in the flanking sections (24a, 24b) of the end walls (22a, 22b), characterized in that a cut-out (102a, 102b) is provided in the middle section (23a, 23b) of each end wall (22a, 22b) such that handles are formed, which cut-out (102a, 102b) extends between 0.5 and 5 cm into the bottom section (10) over a fold line between the bottom section and the middle section (23a, 23b) of the end wall (22a, 22b).

2. The tray (20) of claims 1, wherein the first (16a, 16b) and/or the second (17a, 17b) layer is/are glued to the third layer (15a, 15b) in the flanking sections (24a, 24b) of each end wall (22a, 22b).

3. The tray (20) of any one of the preceding claims, wherein the width of the cut-out (102a, 102b) is less than the width of the middle section (23a, 23b).

4. The tray (20) of any one of the preceding claims, wherein the height of the middle section (23a, 23b) is approximately the same or less than the width of each flanking section.

5. The tray (20) of any one of the preceding claims, wherein the height of the side walls (21a, 21b) is approximately the same as the height of the flanking sections (23a, 23b) of the end walls (22a, 22b).

6. The tray (20) of any one of the preceding claims, wherein the length of each long side (11a, 11b) is 1.1-1.9, such as 1.3-1.7, times the length of each end side (12a, 12b).

7. The tray (20) of any one of the preceding claims, wherein a ventilation hole (103a, 103b) is provided in the bottom section (10) at each of long sides (11a, 11b).

8. The tray (20) of any one of the preceding claims, wherein a ventilation cut-out (104a, 104b) is provided in each side wall (21a, 21b).

9. The tray (20) according to claim 7 in combination with claim 8, wherein the ventilation hole (103a, 103b) at each long side (11a, 11b) is positioned at the same distance from the plane of one of the end walls (22a, 22b) as the ventilation cut-out (104a, 104b) in the associated side wall (21a, 21b).

10. Use of a tray (20) according to anyone of claims 1-9 for transporting and/or displaying fruit or vegetables.
Patentansprüche

1. Schale (20) für Obst oder Gemüse, welche aus einem einzelnen Stück ebener Wellfaserplatte (1) faltbar ist, umfassend:

   einen Bodenabschnitt mit zwei langen Seiten (11a, 11b) und zwei Endseiten (12a, 12b), wobei die Felder der Wellfaserplatte des Bodenabschnitts parallel zu den Endseiten sind;
   zwei gegenüberliegende Seitenwände (21a, 21b), welche sich von den langen Seiten des Bodenabschnitts aus erstrecken; und
   zwei gegenüberliegende Endwände (22a, 22b), welche sich von den Endseiten des Bodenabschnitts aus erstrecken, wobei
ein Ausschnitt (102a, 102b) im Mittelabschnitt (23a, 23b) jeder Wand (22a, 22b) vorgesehen ist, so dass Handgriffe ausgebildet werden, wobei der Ausschnitt (102a, 102b) sich zwischen 0,5 und 5 cm in den Bodenabschnitt (10) über eine Faltlinie zwischen dem Bodenabschnitt und dem Mittelabschnitt (23a, 23b) der Endwand (22a, 22b) hinweg erstreckt.

2. Schale (20) nach Anspruch 1, wobei die erste (16a, 16b) und/oder die zweite (17a, 17b) Lage mit der dritten Lage (15a, 15b) in den flankierenden Abschnitten (24a, 24b) jeder Endwand (22a, 22b) verklebt ist/sind.

3. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei die Breite des Ausschnitts (102a, 102b) geringer ist als die Breite des Mittelabschnitts (23a, 23b).

4. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei die Höhe des Ausschnitts (102a, 102b) geringer ist als die Breite des Mittelabschnitts (23a, 23b).

5. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei die Breite des Mittelabschnitts (23a, 23b) ungefähr gleich oder geringer ist als die Breite jedes flankierenden Abschnitts.

6. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei die Länge jeder langen Seite (11a, 11b) das 1,1-1,9, wie 1,3-1,7, -fache der Länge jeder Ende (12a, 12b) beträgt.

7. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei ein Belüftungsloch (103a, 103b) im Bodenabschnitt (10) an jeder der langen Seiten (11a, 11b) vorgesehen ist.

8. Schale (20) nach einem beliebigen der vorangehenden Ansprüche, wobei ein Belüftungsausschnitt (104a, 104b) in jeder Seitenwand (21a, 21b) vorgesehen ist.

9. Schale (20) nach Anspruch 7 in Kombination mit Anspruch 8, wobei das Belüftungsloch (103a, 103b) an jeder langen Seite (11a, 11b) im selben Abstand von der Ebene von einer der Endwände (22a, 22b) positioniert ist wie der Belüftungsausschnitt (104a, 104b) in der beigefügten Seitenwand (21a, 21b).

10. Einsatz einer Schale (20) gemäß einem beliebigen der Ansprüche 1-9 zum Transportieren und/oder Ausstellen von Obst oder Gemüse.
Revendications

1. Plateau (20) pour fruits ou légumes, apte à être plié à partir d’une seule pièce de carton ondulé plat (1), comprenant :
   une section inférieure présentant deux côtés longitudinaux (11a, 11b) et deux côtés terminaux (12a, 12b), les panneaux de carton ondulé de la section inférieure étant parallèles aux côtés terminaux ;
   deux parois latérales opposées (21a, 21b) s’étendant à partir des côtés longitudinaux de la section inférieure ;
   et deux parois terminales opposées (22a, 22b) s’étendant à partie des côtés terminaux de la section inférieure,
   dans lequel
   chaque paroi latérale comprend deux couches (13a, 13b, 14a, 14b) de carton ondulé présentant des panneaux verticaux,
   chaque paroi terminale comprend une section centrale (23a, 23b) et deux sections de bord (24a, 24b) bordant la section centrale, ladite section centrale étant constituée d’une seule couche (15a, 15b) de carton ondulé présentant des panneaux horizontaux, et chaque section de bord comprenant une première (16a, 16b) et une deuxième couche (17a, 17b) de carton présentant des panneaux verticaux,
   la hauteur de la section centrale est inférieure à la hauteur des deux sections de bord,
   chaque section de bord (24a, 24b) comprend en outre une troisième couche (15a, 15b) de carton présentant un panneau horizontal, et la hauteur de la troisième couche est inférieure à la hauteur des premières et deuxièmes couches (16a, 16b, 17a, 17b),
   un seul composant de paroi terminale (15a, 15b) constitue la section centrale (23a, 23b) et la troisième couche des sections de bord (24a, 24b) de chaque paroi terminale (22a, 22b), et
   au moins l’une des premières et deuxièmes couches (16a, 16b, 17a, 17b) est agencée à l’extérieur de la troisième couche (15a) dans les sections de bord (24a, 24b) des parois terminales (22a, 22b),
   caractérisé en ce qu’un découpage (102a, 102b) est prévu dans la section centrale (23a, 23b) de chaque paroi terminale (22a, 22b), de manière à former des poignées, ledit découpage (102a, 102b) s’étendant sur 0,5 à 5 cm dans la section inférieure (10), sur une ligne de pliage entre la section inférieure et la section centrale (23a, 23b) de la paroi terminale (22a, 22b).

2. Plateau (20) selon la revendication 1, dans lequel la première (16a, 16b) et/ou la deuxième couche (17a, 17b) est/sont collée(s) à la troisième couche (15a, 15b) dans les sections de bord (24a, 24b) de chaque paroi terminale (22a, 22b).

3. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel la largeur du découpage (102a, 102b) est inférieure à la largeur de la section centrale (23a, 23b).

4. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel la hauteur de la section centrale (23a, 23b) est approximativement égale ou inférieure à la largeur de chaque section de bord.

5. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel la hauteur des parois latérales (21a, 21b) est approximativement égale à la hauteur des sections de bord (23a, 23b) des parois terminales (22a, 22b).

6. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel la longueur de chaque côté longitudinal (11a, 11b) mesure 1,1 à 1,9, par exemple 1,3 à 1,7 fois la longueur de chaque côté terminal (12a, 12b).

7. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel un trou d’aération (103a, 103b) est prévu dans la section inférieure (10) de chacun des côtés longitudinaux (11a, 11b).

8. Plateau (20) selon l’une quelconque des revendications précédentes, dans lequel un découpage d’aération (104a, 104b) est prévu dans chaque paroi latérale (21a, 21b).

9. Plateau (20) selon la revendication 7 en combinaison avec la revendication 8, dans lequel le trou d’aération (103a, 103b) dans chaque côté longitudinal (11a, 11b) est positionné à la même distance du plan de l’une des parois terminales (22a, 22b) que le découpage d’aération (104a, 104b) dans la paroi terminale (21a, 21b) associée.

10. Utilisation d’un plateau (20) selon l’une quelconque des revendications 1 à 9, pour le transport et/ou l’étalage de fruits ou de légumes.
Fig. 1
REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader’s convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1209087 A [0004]
- FR 2584375 [0005]
- FR 2682936 [0006]
- US 20030146272 A [0007]