The invention relates to a product carrier (21) for dough products, comprising a flat carrier plate (22) having an upper side for carrying dough products thereon, and a frame (23) surrounding the carrier plate (22), wherein an outer edge (232) of the frame (23) projects beyond an outer edge (222) of the carrier plate (22), characterised in that the upper side of the carrier plate (22) projects at a distance above an upper side of the frame (23), wherein the upper side of the frame (23) comprises an edge (231) extending to within the perimeter of the carrier plate (22). The invention furthermore relates to a dough processing device, particularly a proofing cabinet, comprising one or more of the products carriers described above.

**Title:** FLAT PRODUCT CARRIER FOR DOUGH PRODUCTS

**Abstract:**

The invention relates to a product carrier (21) for dough products, comprising a flat carrier plate (22) having an upper side for carrying dough products thereon, and a frame (23) surrounding the carrier plate (22), wherein an outer edge (232) of the frame (23) projects beyond an outer edge (222) of the carrier plate (22), characterised in that the upper side of the carrier plate (22) projects at a distance above an upper side of the frame (23), wherein the upper side of the frame (23) comprises an edge (231) extending to within the perimeter of the carrier plate (22). The invention furthermore relates to a dough processing device, particularly a proofing cabinet, comprising one or more of the products carriers described above.
Flat product carrier for dough products

BACKGROUND OF THE INVENTION

The invention relates to a flat product carrier for dough products, wherein the dough products can be slid from the product carrier. Such flat product carriers are also referred to by the English term "peelboard".

Apart from the known baker's shovel or peel in bakeries, in the industrial bakeries flat product carriers are used that comprise a rectangular circumferential frame in which a flat plate has been placed. Said plate is usually made of a synthetic material and optionally provided with a surface texture.

The known product carrier substantially acquires its firmness due to the circumferential frame made of steel, particularly stainless steel. A known device is shown in figure 1. In this cross-section of an edge area of a known product carrier 1, it is shown that the plate 2 is engaged all round by the stainless steel frame 3. The frame 3 is proportioned such that the plate 2 is placed in the frame 3 with some play. For instance a gap 4 has been arranged between the plate 2 and the frame 3 in order to absorb differences in the coefficient of expansion of the stainless steel frame 3 and the synthetic plate 2. Furthermore a gap 5 between the plate 2 and the frame 3 is necessary for assembly of the product carrier 1.

A drawback of the known product carrier 1 is that contamination may arise due to grinding and/or brushing the plate 2, wherein waste
products may end up in the gaps 4, 5, wherein the gaps are hard to clean.

It is an object of the invention to provide a product carrier wherein less, preferably no contamination occurs when brushing the plate.

SUMMARY OF THE INVENTION

According to a first aspect the invention for that purpose provides a product carrier for dough products, comprising a substantially flat carrier plate having an upper side for carrying dough products thereon and a frame surrounding the carrier plate, wherein an outer edge of the frame projects beyond an outer edge of the carrier plate, characterised in that an upper side of the carrier plate projects at a distance above an upper side of the frame, wherein the upper side of the frame comprises an edge extending to within the perimeter of the carrier plate.

The product carrier according to the invention can now be brushed at the upper side, wherein substantially only the carrier plate is brushed. Because the frame comprises an edge extending to within the perimeter of the carrier plate, waste which due to brushing is pushed over the edge of the carrier plate falls on the edge of the frame and not directly into a gap between the frame and the carrier plate. In that way contamination of the product carrier can at least be reduced in comparison with the known product carriers.

In one embodiment the carrier plate and the frame are substantially rectangular and attached one to the other by means of connecting elements, wherein the connecting elements are placed in or near the corners of the rectangular frame, wherein the connecting elements are placed within the frame or the outer edge thereof.

In one embodiment the carrier plate and the frame are made of different materials, and the connecting elements are adapted for allowing a displacement between the carrier plate and the frame in a plane that is substantially parallel to the upper side of the frame. In one embodiment the carrier plate is made of synthetic material, and the frame is made of metal such as stainless steel.
In one embodiment the connecting elements are substantially placed on a bisector of the corner in question, wherein the attachment between the carrier plate and the frame preferably is displaceable in a direction that is substantially parallel to said bisector.

In one embodiment the upper side extends substantially parallel to a lower side of the carrier plate that faces away from the upper side, wherein the edge of the upper side of the frame abuts the lower side of the carrier plate. In this case the carrier plate sits substantially on top of the frame and an optional gap between the carrier plate and the frame is situated near the lower side of the carrier plate, particularly situated near the circumferential edge of the carrier plate, which strongly reduces the risk of contamination.

In one embodiment the carrier plate is connected to the frame by means of attachment means that engage onto the lower side of the carrier plate. In one embodiment the attachment means are adapted for making a displacement of an attachment point on the carrier plate with respect to the frame possible. As a result differences in the coefficient of expansion of the carrier plate and the frame can be absorbed.

In one embodiment the edge of the upper side of the frame is inserted in a groove in a circumferential side of the carrier plate. In this case the carrier plate is substantially confined by the frame, particularly the edge of the upper side of the frame, and an optional gap between the carrier plate and the frame is situated in the circumferential edge of the carrier plate, as a result of which the risk of contamination is reduced. A further advantage of this embodiment is that no extra attachment means are necessary for connecting the carrier plate and the frame one to the other.

In one embodiment the upper side of the frame, particularly the edge of the upper side of the frame facing the carrier plate, extends substantially parallel to the groove in the circumferential side of the carrier plate. In one embodiment the edge of the upper side of the frame is substantially snugly placed in the groove. As a result it can be further prevented that waste may end up in the groove.
In one embodiment an end of the edge of the upper side of the frame, which end is placed in the groove, is spaced apart from an end wall of the groove. In this way differences in the coefficient of expansion of the frame and the carrier plate can be absorbed, without this leading to mechanical tensions in the product carrier.

In one embodiment the frame extends underneath the bottom wall of the carrier plate. In that way the frame may serve as support for the product carrier.

According to a second aspect the invention provides a dough processing device, particularly a proofing cabinet, comprising one or more product carriers as described above.

The aspects and measures described in this description and the claims of the application and/or shown in the drawings of this application may where possible also be used individually. Said individual aspects may be the subject of divisional patent applications relating thereto. This particularly applies to the measures and aspects that are described per se in the sub claims.

SHORT DESCRIPTION OF THE DRAWINGS

The invention will be elucidated on the basis of a number of exemplary embodiments shown in the attached drawings, in which:

Figure 1 shows a view in schematic cross-section of a known product carrier;

Figure 2 shows a schematic top view of a first exemplary embodiment of a device according to the invention;

Figure 3 shows a schematic cross-section of figure 2, along the line A-A and B-B;

Figure 4 shows a schematic bottom view of a second exemplary embodiment of a device according to the invention;
Figure 5 shows a detail of the schematic bottom view of figure 4;

Figure 6 shows a schematic cross-section of figure 5, along the line C-C;

Figure 7 shows a schematic cross-section of figure 5, along the line D-D;

Figure 8 shows a schematic bottom view of a third exemplary embodiment of a device according to the invention; and

Figure 9 shows a schematic cross-section of figure 8, along the line E-E.

DETAILED DESCRIPTION OF THE DRAWINGS

A first exemplary embodiment of a product carrier 21 according to the invention is shown in figures 2 and 3. Figure 2 shows a top view of the product carrier 21, having a carrier plate 22 and a frame 23 surrounding the carrier plate 22.

As shown in the view in cross-section of figure 3, the carrier plate 22 at a circumferential wall thereof is provided with a groove 221 extending substantially parallel to the upper side of the carrier plate 22.

At its upper side the frame 23 is provided with an edge 231 extending to within the perimeter of the carrier plate 22, particularly to within the groove 221. The edge 231 does not fully fill the groove 221 so that room is left for expansion of the edge 231 with respect to the carrier plate 22.

It is furthermore clear from figure 3 that an outer edge 232 of the frame 23 extends beyond an outer edge 222 of the carrier plate 22. As a result the circumferential edge of the carrier plate 22 can be protected by the frame 23.
The frame 23 extends underneath the bottom wall 223 of the carrier plate 22, and is provided with a flanged edge 233 that abuts the bottom wall 223 of the carrier plate 22. The lower side 234 of the frame 23 thus forms a foot for the product carrier 21, suitable for supporting the product carrier 21.

A second exemplary embodiment of a product carrier 51 according to the invention is shown in figures 4, 5, 6 and 7. Figure 4 shows a bottom view of the product carrier 41, having a carrier plate 42 and a frame 43 surrounding the carrier plate 42.

As shown in figure 4, and in more detail in figure 5, the carrier plate 42 at its lower side is provided with slotted holes 421 which are placed near the corners of the carrier plate 42. A longitudinal axis 422 of the slotted holes 421 is placed at an angle a which divides the corner of the carrier plate 42 into two substantially equal parts.

Each of the slotted holes 421 comprises a first opening 423 for arranging therein an attachment device 61 provided with a head (see figure 6), and a second part 424 which has a narrower opening so that the head of the attachment device 61 is confined here within the slot 421.

As shown in the view in cross-section of figure 6, the attachment device 61 is furthermore provided with a pin 62 having a smaller diameter than the head. The pin 62 is able to extend through the narrower opening of the second part 424, and through an opening in an attachment part 431 of the frame 43 which part is placed near the slotted holes 421. At its end the pin is provided with external thread.

By placing a nut 63 over said thread, the plate 42 is attached to the frame 43. Due to said attachment by means of an attachment device 61 placed in the slotted holes 421, a difference in expansion due to temperature changes between the frame 43 and the carrier plate 42 can be absorbed.

It is furthermore clear from figure 7 that an outer edge 432 of the frame 43 projects beyond an outer edge 425 of the carrier plate 42. In
that way the circumferential edge of the carrier plate 42 can be protected by the frame 43.

The frame 43 is placed substantially underneath the bottom wall 426 of the carrier plate 42, and is provided with a substantially circumferential tube 43 that abuts the bottom wall 426 of the carrier plate 42. The lower side 434 of the frame 43 thus forms a foot for the product carrier 41, suitable for supporting the product carrier 41.

A third exemplary embodiment of a product carrier 81 according to the invention is shown in figures 8 and 9. Figure 8 shows a bottom view of the product carrier 81, having a carrier plate 82 and a frame 83 surrounding the carrier plate 82.

As shown in the view in cross-section of figure 9, the carrier plate 82 is placed on top of the frame 83.

At its upper side the frame 83 is provided with an edge 831 extending to within the perimeter of the carrier plate 82. The edge 831 is placed particularly in the corners of the frame 83. In that case said edges 831 that fill the corners may also provide the corners of the frame 83 with additional firmness.

It is furthermore clear from figure 9 that an outer edge 832 of the frame 83 projects beyond an outer edge 822 of the carrier plate 82. In that way the circumferential edge of the carrier plate 82 can be protected by the frame 83.

The frame 83 is placed underneath the bottom wall 823 of the carrier plate 82, and at least the edge 831 abuts said bottom wall 823. The carrier plate 82 is provided with a retaining block 824 that is connected to the bottom wall 823, for instance by means of a glue connection. Between the retaining block 824 and the bottom wall 823, slot 825 is formed extending substantially parallel to the bottom wall 823 of the carrier plate 82.

At its upper side the frame 83 is provided with an edge 831 extending to within the perimeter of the carrier plate 82, particularly to within the
slot 825. The edge 831 in that case does not fully fill the slot 825, so that room is left for expansion of the frame 83 including the edge 831 with respect to the carrier plate 82.

The lower side 834 of the frame 83 thus forms a foot for the product carrier 81, suitable for supporting the product carrier 81.

In a further exemplary embodiment the carrier plate 22, 42, 82 can be made of a polypropylene (PP) foamed material.

The above description is included to illustrate the operation of preferred embodiments of the invention and not to limit the scope of the invention. Starting from the above explanation many variations that fall within the spirit and scope of the present invention will be evident to an expert.
Claims

1. Product carrier for dough products, comprising
   a substantially flat carrier plate having an upper side for carrying dough products thereon, and
   a frame surrounding the carrier plate, wherein an outer edge of the frame projects beyond an outer edge of the carrier plate,
   characterised in that the upper side of the carrier plate projects at a distance above an upper side of the frame, wherein the upper side of the frame comprises an edge extending to within the perimeter of the carrier plate.

2. Product carrier according to claim 1, wherein the carrier plate and the frame are substantially rectangular and attached one to the other by means of connecting elements, wherein the connecting elements are placed in or near the corners of the rectangular frame, wherein the connecting elements are placed within the frame or the outer edge thereof.

3. Product carrier according to claim 2, wherein the carrier plate is placed on the frame.

4. Product carrier according to claim 2 or 3, wherein the carrier plate and the frame are made of different materials, and wherein the connecting elements are adapted for allowing a displacement between the carrier plate and the frame in a plane that is substantially parallel to the upper side of the frame.

5. Product carrier according to claim 4, wherein the connecting elements are substantially placed on a bisector of the corner in
question, and wherein the attachment between the carrier plate and the frame is displaceable in a direction that is substantially parallel to said bisector.

6. Product carrier according to claim 4 or 5, wherein the carrier plate is made of synthetic material, and the frame is made of metal such as stainless steel.

7. Product carrier according to any one of the preceding claims, wherein the upper side of the frame extends substantially parallel to a lower side of the carrier plate that faces away from the upper side, wherein the edge of the upper side of the frame abuts the lower side of the carrier plate.

8. Product carrier according to any one of the preceding claims, wherein the edge of the upper side of the frame is inserted in a groove in a circumferential side of the carrier plate.

9. Product carrier according to claim 8, wherein the upper side of the frame extends substantially parallel to the groove in the circumferential side of the carrier plate.

10. Product carrier according to claims 8 or 9, wherein the edge of the upper side of the frame is substantially snugly placed in the groove.

11. Product carrier according to any one of the claims 8, 9 or 10, wherein an end of the edge of the upper side of the frame, which end is placed in the groove, is spaced apart from an end wall of the groove.

12. Product carrier according to any one of the preceding claims, wherein the frame extends at least partially underneath the bottom wall of the carrier plate.

13. Dough processing device, particularly a proofing cabinet, comprising one or more product carriers according to any one of the preceding claims.
14. Product carrier provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

15. Dough processing device provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

16. Method provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.
A. CLASSIFICATION OF SUBJECT MATTER.
INV. A21B3/15 A21C9/08

According to International Patent Classification (IPC) or to both national classification and IPC:

A21B A21C A470

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols):
A21B A21C A470

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched:

Electronic data base consulted during the international search (name of data base and, where practical, search terms used):
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search: 1 July 2009

Date of mailing of the international search report: 08/07/2009

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