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

(11) EP 1 657 182 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.05.2006 Bulletin 2006/20

(21) Application number: **05110690.4**

(22) Date of filing: **14.11.2005**

(51) Int Cl.:
B65D 81/34 *(2006.01)* ***B65D 5/42*** *(2006.01)*
B65D 5/66 *(2006.01)*

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **12.11.2004 NL 1027502**

(71) Applicant: **Farm Frites Nederland B.V.**
NL-3227 CD Oudenhoom (NL)

(72) Inventor: **de Knegt, Cees Cornelis**
3245 RH Sommelsdijk (NL)

(74) Representative: **van Westenbrugge, Andries et al**
Nederlandsch Octrooibureau
Postbus 29720
2502 LS Den Haag (NL)

(54) Container and method for cooking food

(57) A container for cooking a food product, such as a potato product for potato chips, by means of a stream of hot air, as in a hot air oven, has an interior space that is delimited by a base (3), walls (4,5) that are upright with respect to the base, as well as a lid (6). The base, walls and lid each have passages (10,11) for allowing the hot air to flow through the interior space.

EP 1 657 182 A1

Description

[0001] The invention relates to cooking food products, in particular in order to obtain potato chips. Potato chips are usually deep-fried in hot oil or fat to obtain a crisp end product. Furthermore it is known to prepare chips in an environment with hot air in a hot air oven. With this latter method of preparation in particular, additional care must be taken in respect of correct heating in order to obtain an end product that is uniformly crisp. For this purpose it is necessary that the hot air must be able to reach completely round the product and must be able to flow over this. This means that the product has to be turned several times in the oven.

[0002] Under certain conditions, such as on board aircraft, hot oil cannot be used because of the associated fire hazard and because of the development of odour. It is true that there are hot air ovens on board aircraft, but these are less suitable for heating products such as potato chips in the conventional manner, which, as stated above, is associated with multiple turning of the product. There is no time for this and, furthermore, the space in such ovens is too small to be able to turn the product.

[0003] The aim of the invention is, therefore, to provide a container that is suitable for such applications. Said aim is achieved by means of a container for cooking a food product, such as a potato product for potato chips, by means of a stream of hot air, such as in a hot air oven, comprising an internal space that is delimited by a base, walls that are upright with respect to the base, as well as a lid, which base, walls and lid each have passages to allow the hot air to flow through the internal space.

[0004] As a consequence of the fact that the internal space in the container is accessible on all sides, excellent heat transfer is obtained. As a result the food product can be browned well and cooked through. For potato chips this means that the desired crispness can be obtained, without soft, non-browned sections. Such a result can even be obtained if the chip sticks are in contact with one another to some extent.

[0005] The passages can be made in various ways, inter alia depending on the product that has to be accommodated in the container. In the case of potato chips, for example, passages that comprise elongated, slit-shaped openings are preferred. These slit-shaped openings can then, in particular, be in at least one of the walls and the lid. The base preferably has openings which are each of essentially the same size in mutually perpendicular directions, for example star-shaped openings. The base, walls and lid can be made of a cardboard material and can be in one piece.

[0006] The invention furthermore relates to a pack, comprising a container as described above that has an interior space that is delimited by a base, walls that are upright with respect to the base, as well as a lid, which base, walls and lid each have passages for allowing the hot air to flow through the interior space, as well as a quantity of elongated potato products accommodated in the space for the preparation of potato chips. In particular, the passages can be elongated, slit-shaped openings that are chosen such that the transverse dimension of the potato products is greater than the transverse dimension of the openings. The chip sticks are then, on the one hand, readily accessible to hot air, whilst, on the other hand, these sticks cannot fall out of the container.

[0007] A carrier can also be used in order to simplify handling of multiple containers containing potato products. By means of this carrier a number of containers can be placed in an oven at the same time and removed therefrom again after heating. The invention therefore relates to an assembly comprising at least one pack according to the invention, which comprises a container as described above, which container has an interior space that is delimited by a base, walls that are upright with respect to the base, as well as a lid, which base, walls and lid each have passages for allowing the hot air to flow through the interior space, a quantity of elongated potato products accommodated in the space for the preparation of potato chips, as well as a flat carrier, which carrier has at least one cut-out in which the container is accommodated leaving the base essentially free.

[0008] In order to make it possible to be able to treat several carriers, each with a number of containers, properly in a hot air oven, a specific type of oven can be used, such as, for example, is customary in aviation. In this context the invention also relates to the combination of an assembly with several containers which each have an interior space that is delimited by a base, walls that are upright with respect to the base, as well as a lid, which base, walls and lid each have passages for allowing the hot air to flow through the interior space, a quantity of elongated potato products accommodated in the space for the preparation of potato chips, several flat carriers, which carriers each have at least one cut-out in which the container is accommodated leaving the base essentially free, as well as a hot air oven provided with a heating chamber in which there are several supports one above the other, on which supports the carriers, each with at least one container, can be supported above one another leaving the base of the containers free.

[0009] The invention furthermore relates to a method for the preparation of potato chips, comprising the following steps:

- provision of a pack that has an interior space that is delimited by a base, walls that are upright with respect to the base, as well as a lid, which base, walls and lid each have passages for allowing the hot air to flow through the interior space, as well as a quantity of elongated potato products accommodated in the space for the preparation of potato chips,
- generation of a stream of hot air,
- making the stream of hot air flow through passages in the container.

[0010] In particular with this arrangement care can be

taken that the container is supported such that the base thereof remains free, such that the hot air is able to flow through the passages in the base, walls and lid.

[0011] The invention will be explained in more detail below on the basis of an illustrative embodiment shown in the figures.

Figure 1 shows a perspective view of a container according to the invention.
Figure 2 shows a plan view of a carrier for use with the container according to Figure 1.
Figure 3 shows the view III of the container according to Figure 2.
Figure 4 shows a plan view of an assembly with a carrier and four containers.
Figure 5 shows the view V of the assembly according to Figure 4.
Figure 6 shows the detail VI according to Figure 5.
Figure 7 shows the combination of a hot air oven with a number of assemblies according to Figure 4 one above the other.

[0012] The container 1 according to the invention shown in Figure 1 has an interior space 2 that is delimited by a base 3, longitudinal walls 4 and transverse walls 5. Furthermore, a lid 6 is articulated on one of the longitudinal walls 4 such that it can pivot. The opposing longitudinal wall 4 has a closure cut-out 7, with which the closing lip of the lid 6 is able to interact when the lid is closed. This closure cut-out 7 is in the ridge 9 that protrudes to some extent with respect to the transverse walls 5. The closed position of the lid 6 can be improved by means of this ridge 9.

[0013] The longitudinal walls 4, transverse walls 5 and the lid 6 all have elongated slit-shaped openings 10. The base 3 has star-shaped openings 11. Such an embodiment of the container according to the invention is particularly suitable for accommodating elongated sticks of potato product therein for the preparation of potato chips. The star-shaped openings 11 are so shaped that such sticks cannot fall out of the container. The slit-shaped openings 10 have a width such that these sticks are also not able to pass through these. All openings 10, 11 make it possible to allow hot air to pass into the container 1 in such a way that the potato chip sticks are properly cooked through and are well browned and crisp on all sides.

[0014] The carrier 12 shown in Figures 2 and 3 is used in order to facilitate the handling of a number of containers 1. This carrier 12 consists of a piece of cardboard material, which, incidentally, can be provided with reinforcing ribs and the like (not shown). The carrier 10 has four cut-outs 13, in each of which a container 1 can be accommodated.

[0015] Such an assembly of four containers 1 and the carrier according to Figures 2 and 3 is shown in Figures 4 and 5. To ensure that the containers 1 remain properly in position in the cut-outs 13 in the carrier 12, the longitudinal walls 4 and side walls 5 diverge to some extent. Furthermore, notches 14 have been made at the corners of the container 1, whilst the corners of the cut-outs 13 have filleting 15. When a container 1 is placed in a cut-out 13 these fillets 15 drop into the notches 14, as a result of which good fixation is ensured. This is shown on a somewhat enlarged scale in Figure 6. Other fixation means are, of course, also conceivable.

[0016] In Figure 4 a number of stick-shaped products 16 are shown that are accommodated in the container. For this purpose the lid 6 of the container concerned has been shown somewhat cut away.

[0017] Figure 7 shows a combination of a number of assemblies 18, each consisting of a carrier 12 and several containers 1, and a hot air oven 19. This hot air oven has a heating chamber 20 in which several supports 21 extend one above the other. A carrier 12 is supported on each two supports 21. The height of the containers 1 and the distances between the supports 21 in the height direction are so chosen that the bases 3 of the containers 1 remain free from the lids 6 located beneath them. As a result it is ensured that the hot air flowing in the heating chamber 20, as shown by the arrows, can reach the containers 1 well. The hot air can flow into the containers through the base 3, the walls 4, 5 as well as the lid 6. As a result good preparation of the product in the containers 1 is ensured.

Claims

1. Container (1) for cooking a food product, such as a potato product for potato chips (16), by means of a stream of hot air, such as in a hot air oven (19), comprising an internal space (2) that is delimited by a base (3), walls (4, 5) that are upright with respect to the base, as well as a lid (6), which base (3), walls (4, 5) and lid (6) each have passages (10, 11) to allow the hot air to flow through the internal space (2).

2. Container (1) according to Claim 1, wherein the passages comprise elongated, slit-shaped openings (10).

3. Container (1) according to Claim 2, wherein the slit-shaped openings (10) are in at least one of the walls (4, 5) and the lid (6).

4. Container (1) according to Claim 2 or 3, wherein the slit-shaped openings (10) are parallel to the base (3).

5. Container (1) according to one of the preceding claims, wherein the passages comprise openings (11), which are each of essentially the same size in mutually perpendicular directions.

6. Container (1) according to Claim 5, wherein the openings (11) are star-shaped.

7. Container (1) according to Claim 5 or 6, wherein the openings (11) are lobe-shaped, for example four-lobed.

8. Container (1) according to one of the preceding claims, wherein the base (3), walls (4, 5) and lid (6) are made of a cardboard material.

9. Container (1) according to one of the preceding claims, wherein base (3), walls (4, 5) and lid (6) are in one piece.

10. Container (1) according to one of the preceding claims, wherein the walls (4, 5) diverge from the base (3).

11. Container (1) according to one of the preceding claims, wherein the lid (6) is joined to one (4) of the walls such that it can pivot.

12. Container according to Claim 11, wherein closure means (7) are provided on a wall (4) other than that to which the lid (6) is joined, for keeping the lid (6) in the closed position.

13. Container according to one of the preceding claims, where longitudinal walls (4) are provided as well as transverse walls (5), which longitudinal walls (4) have a larger dimension in the direction parallel to the base (6) than the transverse walls (5).

14. Pack (22), comprising a container (1) according to one of Claims 1 - 13, which container (1) has an interior space (2) that is delimited by a base (3), walls (4, 5) that are upright with respect to the base (3), as well as a lid (6), which base (3), walls (4, 5) and lid (6) each have passages (10, 11) for allowing the hot air to flow through the interior space (2), as well as a quantity of elongated potato products (16) accommodated in the space (2) for the preparation of potato chips.

15. Pack (22) according to Claim 14, wherein passages comprise elongated slit-shaped openings (10) and the transverse dimension of the potato products (16) is greater than the transverse dimension of the openings (10).

16. Assembly (18) comprising at least one pack (22) according to Claim 14 or 15, which pack (22) comprises a container (1) according to one of Claims 1 - 13, which container (1) has an interior space (2) that is delimited by a base (3), walls (4, 5) that are upright with respect to the base (3), as well as a lid (6), which base (3), walls (4, 5) and lid (6) each have passages (10, 11) for allowing hot air to flow through the interior space (2), a quantity of elongated potato products (16) accommodated in the space (2) for the preparation of potato chips, as well as a flat carrier (12), which carrier (12) has at least one cut-out (13) in which the container (1) is accommodated leaving the base (2) essentially free.

17. In combination, an assembly (18) according to Claim 16, comprising several containers (1) according to one of Claims 1 - 13, which containers (1) each have an interior space (2) that is delimited by a base (3), walls (4, 5) that are upright with respect to the base (3), as well as a lid (6), which base (3), walls (4, 5) and lid (6) each have passages (10, 11) for allowing the hot air to flow through the interior space (2), a quantity of elongated potato products (16) accommodated in the space for the preparation of potato chips, several flat carriers (12), which carriers (12) have at least one cut-out (13) in which the container (1) is accommodated leaving the base (3) essentially free, as well as a hot air oven (19) provided with a heating chamber (20) in which there are several supports (21) one above the other, on which supports (21) the carriers (12), each with at least one container (1), can be supported above one another leaving the base (3) of the containers (1) free.

18. Method for the preparation of potato chips, comprising the following steps:

- provision of a pack (22) according to Claim 16 or 17, which pack (22) has an interior space (2) that is delimited by a base (3), walls (4, 5) that are upright with respect to the base (3), as well as a lid (6), which base (3), walls (4, 5) and lid (6) each have passages (10, 11) for allowing the hot air to flow through the interior space (2), as well as a quantity of elongated potato products (16) accommodated in the space (2) for the preparation of potato chips,
- generation of a stream of hot air,
- making the stream of hot air flow through passages (10, 11) in the container (1).

19. Method according to Claim 18, comprising the following steps:

- supporting the container (1) in such a way that the base (7) remains free therefrom,
- as well as making the hot air flow through the passages (10, 11) in the base (3), walls (4, 5) and lid (6).

Fig 1

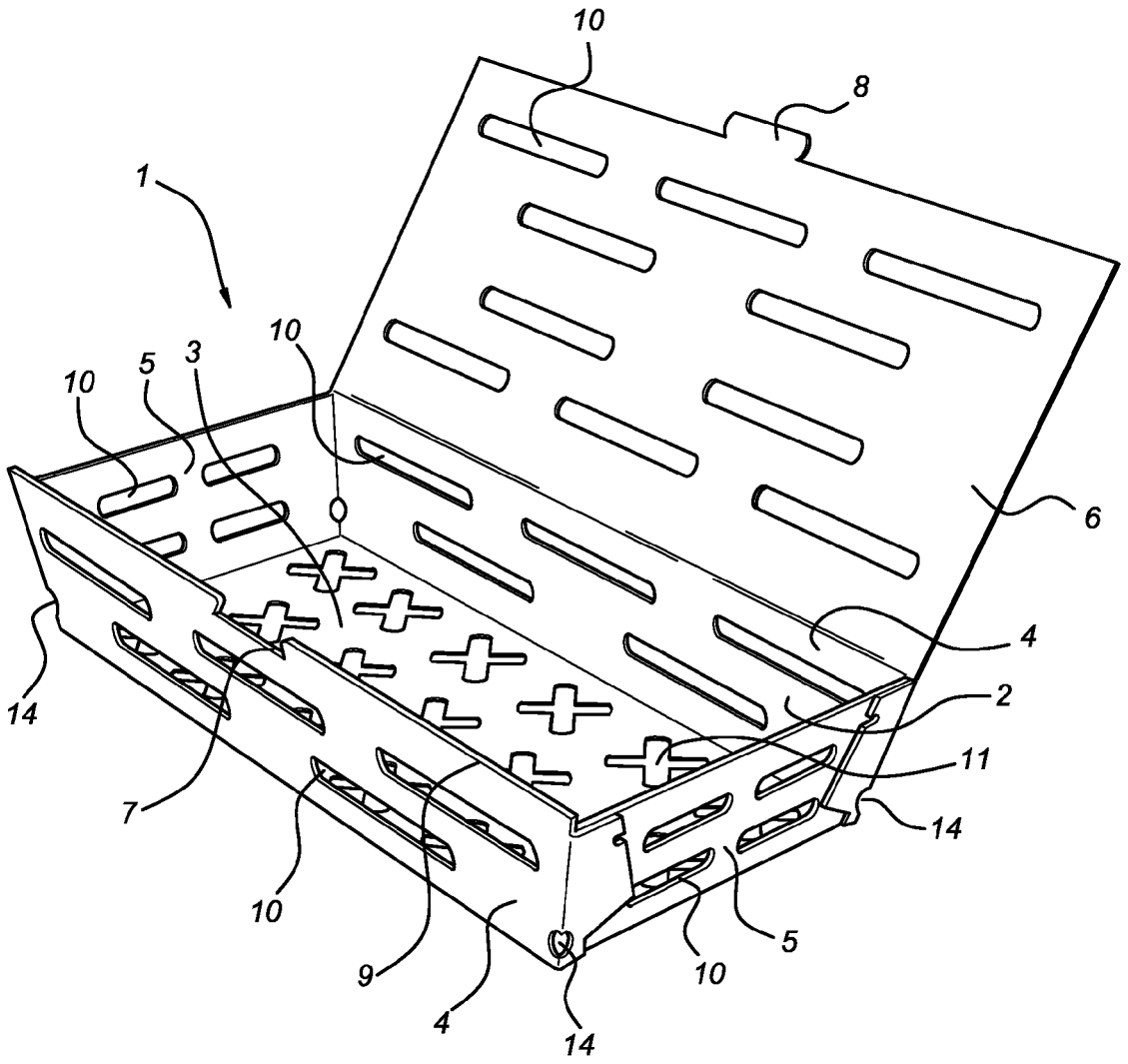


Fig 2

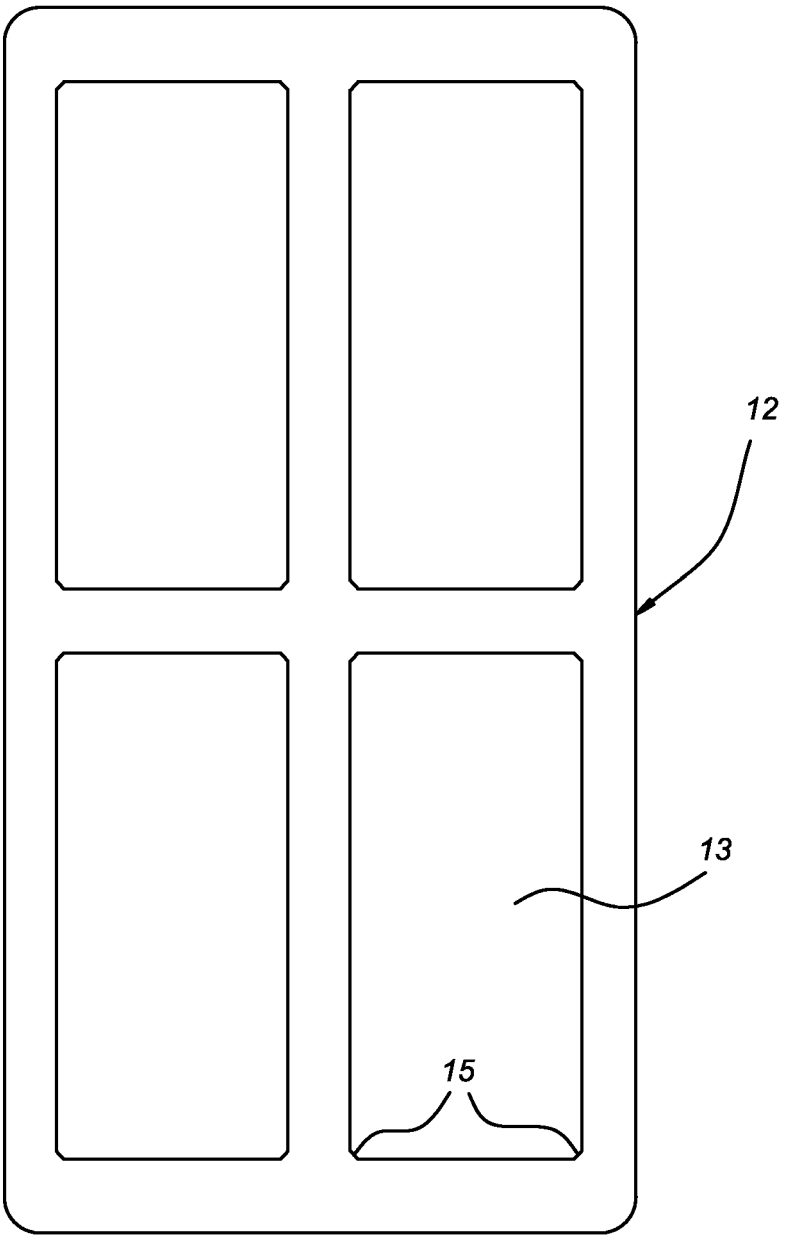


Fig 3

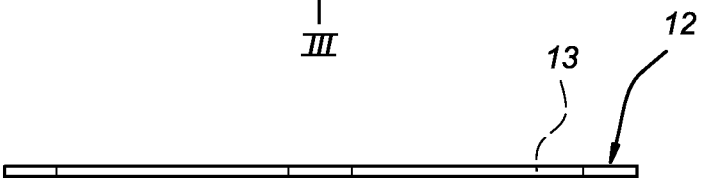


Fig 4

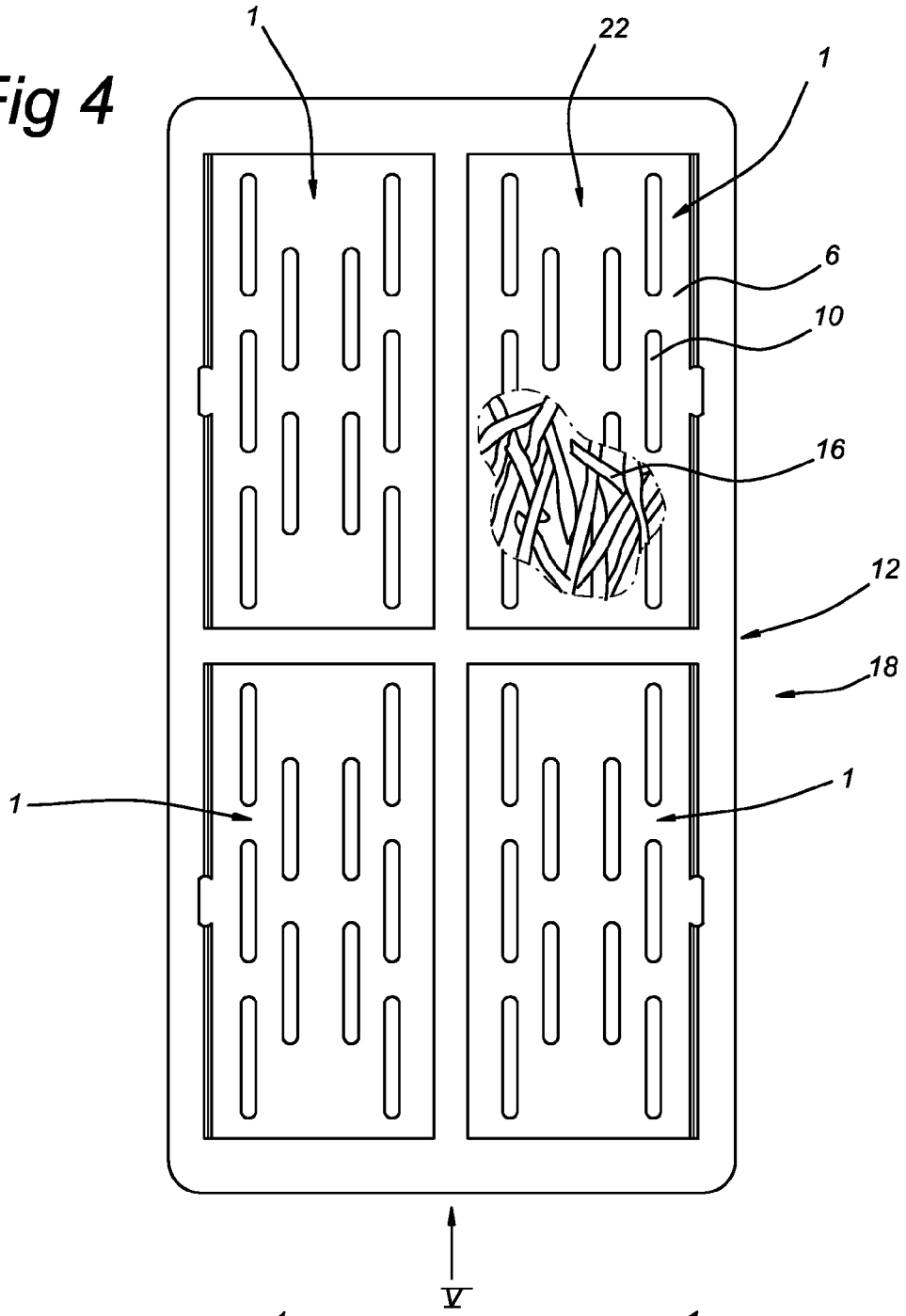


Fig 5

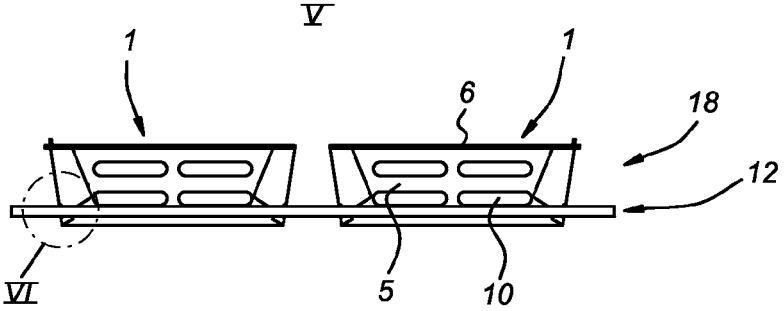


Fig 6

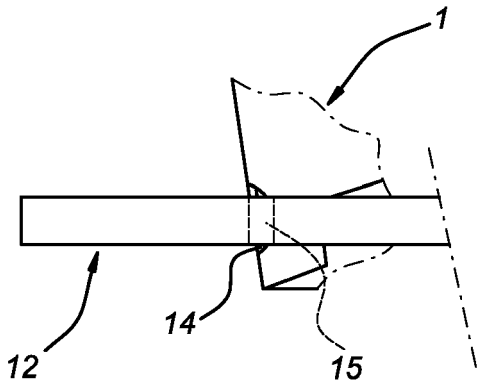
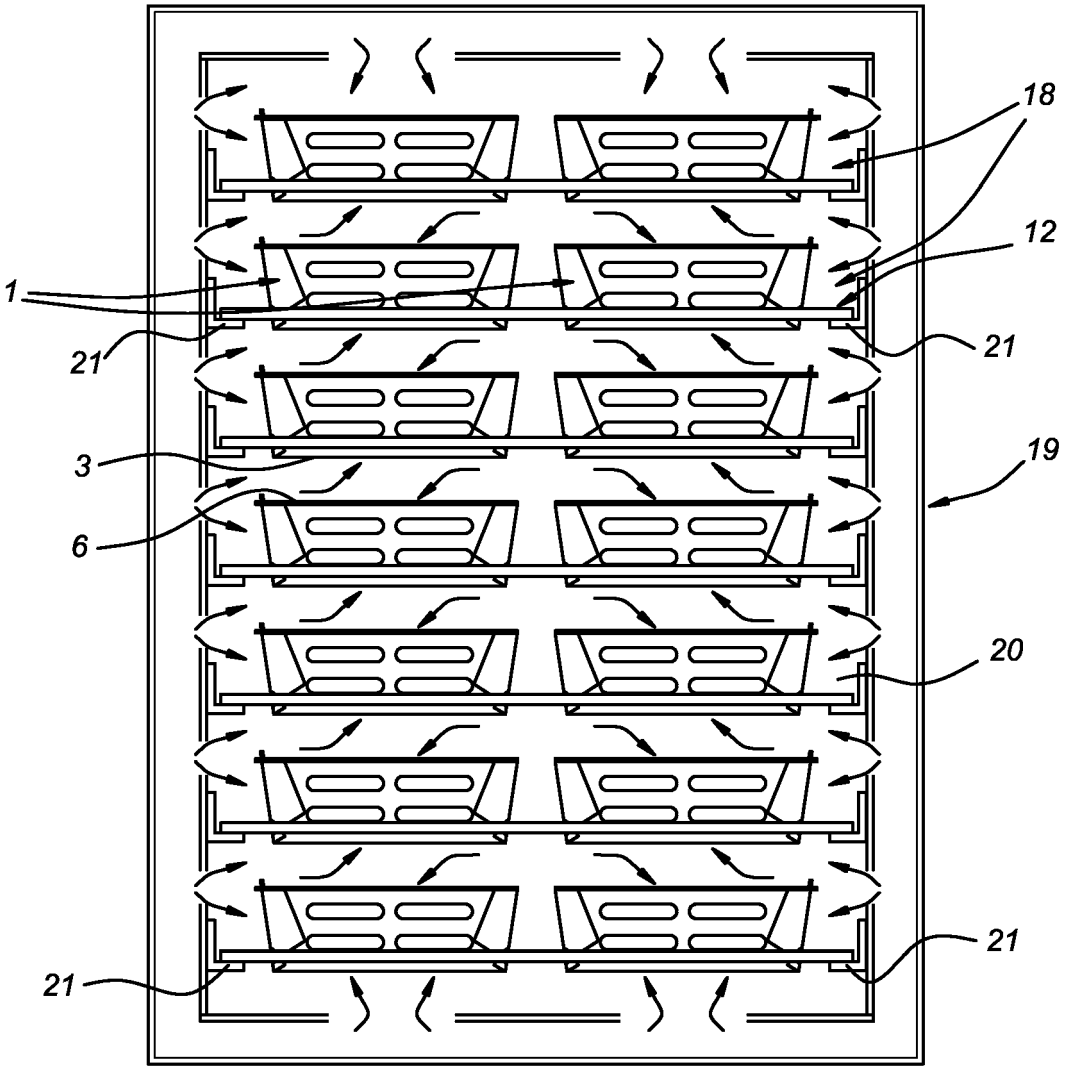


Fig 7



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 11 0690

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	NL 1 024 631 C1 (SUPPLAIR B.V) 30 September 2004 (2004-09-30)	1-4, 8-14,18, 19	B65D81/34 B65D5/42 B65D5/66
A	* the whole document *	15,17	
Y	FR 2 782 069 A (MC CAIN ALIMENTAIRE) 11 February 2000 (2000-02-11)	1-4, 8-14,18, 19	
A	* the whole document *	15,17	
Y	US 5 326 022 A (GREEN ET AL) 5 July 1994 (1994-07-05) * figures 1,2 *	10	
A	US 6 311 842 B1 (MINERICH PHILLIP L ET AL) 6 November 2001 (2001-11-06) * the whole document *	1,16	
A	WO 01/81200 A (MCCAIN FOODS LIMITED; POPE, SIMON) 1 November 2001 (2001-11-01) * the whole document *	1-15,18, 19	
			TECHNICAL FIELDS SEARCHED (IPC)
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28 June 1996 (1996-06-28) & JP 08 034481 A (TOMOYASU SUGIYAMA), 6 February 1996 (1996-02-06) * abstract *	1-15,18, 19	B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 February 2006	Pernice, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

2

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 11 0690

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-02-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 1024631 C1	30-09-2004	EP 1608570 A1	28-12-2005
		WO 2004085285 A1	07-10-2004
FR 2782069 A	11-02-2000	NONE	
US 5326022 A	05-07-1994	NONE	
US 6311842 B1	06-11-2001	NONE	
WO 0181200 A	01-11-2001	AT 276166 T	15-10-2004
		AU 5852501 A	07-11-2001
		CA 2387077 A1	01-11-2001
		DE 60105575 D1	21-10-2004
		EP 1274632 A1	15-01-2003
		NZ 521729 A	30-04-2004
		US 2002179697 A1	05-12-2002
JP 08034481 A	06-02-1996	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82