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

(11) **EP 3 366 600 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.08.2018 Bulletin 2018/35

(51) Int Cl.:
B65D 1/34 *(2006.01)* ***B65D 81/26*** *(2006.01)*

(21) Application number: **18158276.8**

(22) Date of filing: **23.02.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

(30) Priority: **24.02.2017 IT 201700021404**

(71) Applicant: **Bianucci di Bianucci S. & C. SNC**
55100 Lucca (IT)

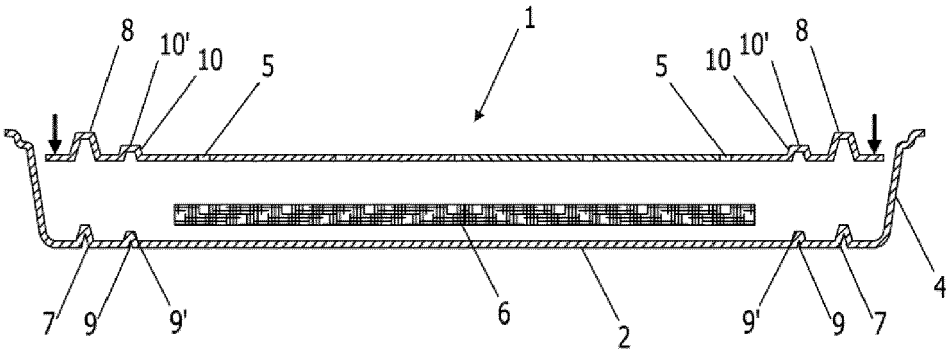
(72) Inventor: **BIANUCCI, Stefano**
55100 Lucca (IT)

(74) Representative: **Mari, Marco Giovanni et al**
Ing. Mari & C. S.r.l.
Via Garibotti, 3
26100 Cremona (IT)

(54) **IMPROVED DRAINING TRAY FOR CONTAINING FRESH FOOD**

(57) The invention is directed at the packaging sector of food products for human consumption. More in detail, the invention relates to an improved draining tray (1) for containing fresh food, comprising:
- a first bottom layer (2) and raised side walls (4);
- a second bottom layer (3) positioned in the inside part of said tray (1) and creating a hollow space with said first bottom layer (2), wherein said second bottom layer is provided with through holes (5);
- a layer of absorbent material (6) suitable for contact with foods arranged in said hollow space;
- retaining means of said second bottom layer (3) on said first bottom layer (2);
- vertical alignment means, adapted to guide the insertion of said second bottom layer (3) in said tray (1).

Fig. 1



EP 3 366 600 A1

Description

[0001] The invention is directed at the packaging sector of food products for human consumption. More in detail, the invention relates to an improved draining tray for containing fresh food, and is particularly (but not exclusively) directed at the packaging of meat, fish or cheese.

[0002] According to the prior art, draining trays for containing fresh food, such as meat, on sale on supermarket shelves, are generally made of expanded polystyrene, prevalently quadrangular in shape, and comprise a bottom layer and raised side walls for containing the product.

[0003] Patent no. 0001406149 by the same applicant discloses a draining tray comprising a first bottom layer and side walls, and a second bottom layer, positioned in the inside part of said tray and creating a hollow space with said first bottom layer, where said second bottom layer is provided with through holes for drainage of the liquids released from food products and an absorbent material is arranged in said hollow space for these liquids.

[0004] This tray also comprises retaining means to join said first bottom layer and said second bottom layer, adapted to maintain the two parts coupled in a stable and durable manner.

[0005] These retaining means are obtained by means of discontinuous structures, protruding from said first bottom layer towards the inside of the tray, and corresponding discontinuities, or holes, obtained on said second bottom layer, adapted to be engaged by said discontinuous structures.

[0006] These trays have some disadvantages.

[0007] The retaining means do not guarantee stable coupling and their structure does not facilitate the operations to assemble the tray.

[0008] To position the second bottom layer inside the tray great care must be taken to align it with the first bottom layer to allow the discontinuities to be centered with the discontinuous protruding structure.

[0009] If alignment is not precise, the second bottom layer might not be arranged perfectly parallel to the first, and can remain slightly tilted and therefore incorrectly positioned, compromising the stability of the coupling and the effect of draining the liquids released by the foods.

[0010] Moreover, when the trays are moved from one shelf to another or handled without holding them perfectly horizontal, or transported loosely in a shopping bag, the two bottom layers can become detached if they are not correctly coupled.

[0011] Finally, the technical solution used does not facilitate picking up of the two components to couple them in an automated packaging line.

[0012] The invention intends to overcome these limits by providing a draining tray for containing fresh food that is easily produced, simple and fast to assemble either manually or automatically, and has a structural composition that is stable and therefore more durable and reliable.

[0013] These objects are achieved with an improved draining tray for containing fresh food, comprising:

- a first bottom layer and raised side walls;
- a second bottom layer positioned in the inside part of said tray and creating a hollow space with said first bottom layer, wherein said second bottom layer is provided with through holes;
- a layer of absorbent material suitable for contact with foods arranged in said hollow space;
- retaining means of said second bottom layer on said first bottom layer,

characterized by also comprising vertical alignment means, adapted to guide the insertion of said second bottom layer in said tray.

[0014] According to a first aspect of the invention, said vertical alignment means comprise:

- discontinuous truncated cone shaped protruding structures, obtained on said first bottom layer and projecting towards the inside of said tray;
- discontinuous truncated cone shaped hollow structures, obtained on said second bottom layer, having the cavity facing towards the inside of said tray,

wherein said discontinuous protruding structures and said discontinuous hollow structures are substantially complementary to each other and their progressive shape coupling guides the insertion of said second bottom layer in said tray.

[0015] In a possible variant of embodiment, said tray is substantially rectangular in shape, said discontinuous protruding structures are four arranged at the four corners of said first bottom layer, and said hollow discontinuous structures are four, arranged at the four corners of said second bottom layer.

[0016] Advantageously, said discontinuous protruding structures are offset from one another along a direction of extension of said tray.

[0017] In particular, said discontinuous hollow structures have a lower conicity with respect to said discontinuous protruding structures so that their coupling takes place with friction interference fit.

[0018] According to a further aspect of the invention, said retaining means comprise:

- at least one ridge projecting from said first bottom layer towards the inside of the tray, arranged at least along one section of the contour of said first bottom layer;
- at least one corresponding channel obtained on said second bottom layer, with the cavity facing towards the inside of said tray,

wherein said ridge and said channel are substantially complementary to each other and their shape coupling facilitates the stable coupling of said first bottom layer and said second bottom layer.

[0019] In a preferred variant, said at least one ridge comprises of discontinuities.

[0020] Moreover, said at least one ridge comprises a flat upper profile and said at least one a channel comprises a flat bottom layer.

[0021] The invention presents numerous advantages.

[0022] The coupling between said first and second bottom layer takes place only by means of press fitting and with the aid of the retaining means obtained directly from said first and second bottom layer, without undercuts, facilitated by said vertical alignment means, which are adapted to guide the insertion of said second bottom layer in said tray: as the hollow structures are lowered gradually onto the projecting structures, said second bottom layer is arranged centered in the tray and press fitting of the retaining means is facilitated.

[0023] The lower conicity of the hollow structures with respect to the structures protruding from first bottom layer makes alignment more precise, as the shape coupling between the two structures takes place with friction interference fit. The friction also makes the coupling more stable.

[0024] The misaligned arrangement of the discontinuous protruding structures, and respectively of the hollow structures, means that, during the production stages of the tray, when the components are stored stacked in piles, if they are placed one on top of the other rotated through 180° they do not become packed together but remain at the useful distance for the grippers of the machines to lift each single component part.

[0025] The advantages of the invention will be made clearer below with the description of a preferred embodiment, provided by way of non-limiting example, and with the aid of the drawings wherein:

Fig. 1 represents a generic exploded cross section of an improved draining tray for containing fresh food according to the invention;

Figs. 2 and 3 represent, in an axonometric top view, two components of the tray of Fig. 1;

Fig. 4 represents, in a top plan view, the tray assembled according to the invention;

Fig. 5 represents a detail of the section of Fig. 1, wherein the proportions are changed for clarity of representation;

[0026] With reference to the figures, there is shown a draining tray 1 for containing fresh food with a rectangular plan, comprising a first bottom layer 2, a second bottom layer 3 and raised retaining side walls 4 projecting from said first bottom layer 2.

[0027] Said first bottom layer 2 and second bottom layer 3 are maintained at a distance from each other, defining a hollow space.

[0028] Said second bottom layer 3 is provided with through holes 5, adapted to place the area of the tray 1 for containing the fresh food in communication with said hollow space, and to allow the liquids produced by the foods to percolate.

[0029] On the inside of said hollow space there is arranged a sheet of absorbent material 6 for food usage, for example made of cellulose, adapted to retain said liquids permanently.

[0030] Said tray 1 comprises retaining means of said first bottom layer 2 and said second bottom layer 3.

[0031] Said retaining means comprise:

- at least one ridge 9 projecting from said first bottom layer 2 towards the inside of the tray 1, arranged at least along one section of the contour of said first bottom layer 2;
- at least one corresponding channel 10 obtained on said second bottom layer 3 with the cavity facing towards the inside of said tray 1.

[0032] In the variant illustrated, said retaining means comprise two ridges 9, arranged parallel to each other along two side walls 4 of said tray 1, and two corresponding channels 10, also parallel to each other, arranged along two sides of said second bottom layer 3.

[0033] Each ridge 9 and the respective channel 10 have substantially complementary cross sections, so that their shape coupling produces the stable coupling of said first 2 and said second 3 bottom layer.

[0034] To ensure greater stability and to increase the contact surface between ridge 9 and channel 10, both comprise a flat portion: the ridge 9 comprises a flat upper profile 9' and the channel 10 comprises a flat bottom 10'.

[0035] In a variant not illustrated, said retaining means comprise a single ridge and a single channel arranged along a closed line.

[0036] In this case, said ridge comprises lowered points, adapted to allow any liquids that have seeped out along the edge of the second bottom layer to return into the hollow space and be absorbed permanently by the cellulose.

[0037] The coupling between said first 2 and second 3 bottom layer, and therefore the insertion of said ridges 9 in said channels 10, takes place by interference, by press fitting thereof.

[0038] Said tray 1 also comprises vertical alignment means, adapted to guide the insertion of said second bottom layer 3 in said tray 1, so as to facilitate centering of the ridges 9 with the respective channels 10 during press fitting of the two bottom layers 2, 3.

[0039] Said vertical alignment means comprise:

- discontinuous truncated cone shaped protruding structures 7, obtained on said first bottom layer 2 and projecting towards the inside of said tray 1;
- discontinuous truncated cone shaped hollow structures 8, obtained on said second bottom layer 3, with the cavity facing towards the inside of said tray 1,

[0040] In the variant illustrated, said discontinuous protruding structures 7 are six and are arranged along the

perimeter of said first bottom layer 2.

[0041] In the same way, said hollow discontinuous structures 8 are also six, arranged along the perimeter of said second bottom layer 3.

[0042] Said discontinuous protruding structures 7 and said discontinuous hollow structures 8 are substantially complementary to each other and their progressive shape coupling guides the insertion of said second bottom layer 3 in said tray 1.

[0043] As can be seen from Fig. 4, which represents a variant of the tray 1 particularly suitable for automated production lines, said discontinuous protruding structures 7, and consequently said hollow discontinuous structures 8, are misaligned with each other by a distance d along a direction of extension of said tray 1.

[0044] As can be seen from Fig. 5, said discontinuous hollow structures 8 have a lower conicity with respect to said discontinuous protruding structures 7 so that their coupling takes place with friction interference fit.

[0045] Said discontinuous protruding structures 7, said discontinuous hollow structures 8, said ridges 9 and said channels 10 are obtained by relief molding of the two bottom layers 2 and 3, ensuring continuity of the material and facilitating production.

[0046] Finally, all the components that form the tray according to the invention are made of natural materials, biodegradable, and above all suitable for food usage.

Claims

1. Improved draining tray (1) for containing fresh food, comprising:

   - a first bottom layer (2) and raised side walls (4);
   - a second bottom layer (3) positioned in the inside part of said tray (1) and creating a hollow space with said first bottom layer (2), wherein said second bottom layer is provided with through holes (5);
   - a layer of absorbent material (6) suitable for contact with foods arranged in said hollow space;
   - retaining means of said second bottom layer (3) on said first bottom layer (2),

   characterized by also comprising vertical alignment means, adapted to guide the insertion of said second bottom layer (3) in said tray (1).

2. Improved draining tray (1) according to claim 1, **characterized in that** said vertical alignment means comprise:

   - discontinuous truncated cone shaped protruding structures (7), obtained on said first bottom layer (2) and projecting towards the inside of said tray (1);
   - discontinuous truncated cone shaped hollow structures (8), obtained on said second bottom layer (3), having the cavity facing towards the inside of said tray (1),

   wherein said discontinuous protruding structures (7) and said discontinuous hollow structures (8) are substantially complementary to each other and their progressive shape coupling guides the insertion of said second bottom layer (3) in said tray (1).

3. Improved draining tray (1) according to claim 2, **characterized in that** said tray (1) has a substantially rectangular shape, said discontinuous protruding structures (7) are four, arranged at the four corners of said first bottom layer (2), and said discontinuous hollow structures (8) are four, arranged at the four corners of said second bottom layer (3).

4. Improved draining tray (1) according to claim 3, **characterized in that** said discontinuous protruding structures (7) are offset from one another along a direction of extension of said tray (1).

5. Improved draining tray (1) according to claim 3, **characterized in that** said discontinuous hollow structures (8) have a lower conicity with respect to said discontinuous protruding structures (7) so that their coupling takes place with friction interference fit.

6. Improved draining tray (1) according to claim 1, **characterized in that** said retaining means comprise:

   - at least one ridge (9) projecting from said first bottom layer (2) towards the inside of the tray (1), arranged at least along one section of the contour of said first bottom layer (2);
   - at least one corresponding channel (10) obtained on said second bottom layer (3), with the cavity facing the inside of said tray (1),

   wherein said ridge (9) and said channel (10) are substantially complementary to each other and their shape coupling facilitates the stable coupling of said first bottom layer (2) and said second bottom layer (3).

7. Improved draining tray (1) according to claim 6, **characterized in that** said at least one ridge (9) comprises discontinuities.

8. Improved draining tray (1) according to claim 6, **characterized in that** said at least one ridge (9) comprises a flat upper profile (9') and said at least one channel (10) comprises a flat bottom (10').

Fig. 1

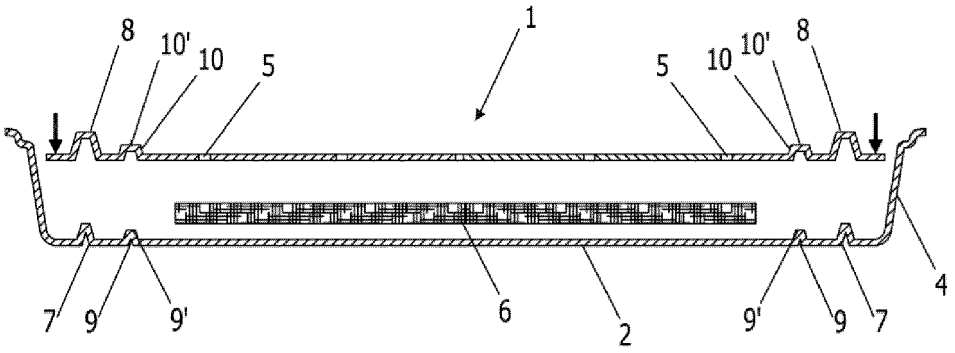


Fig. 2

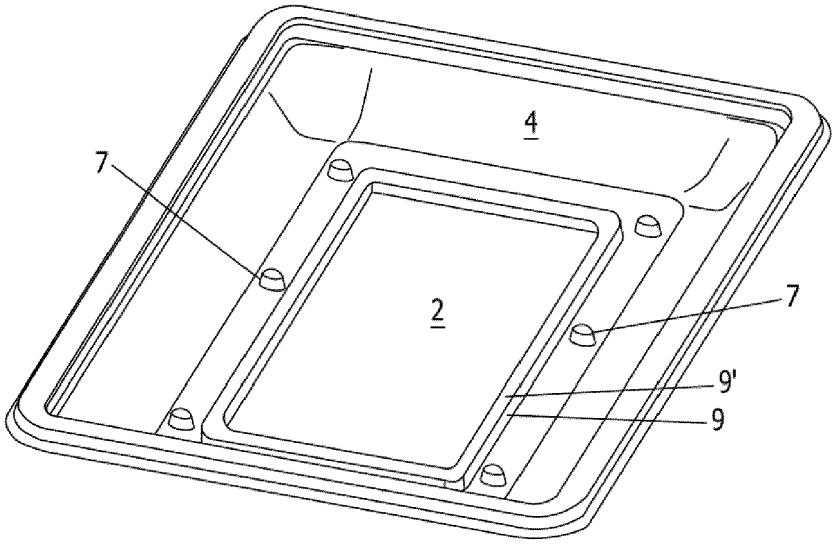


Fig. 3

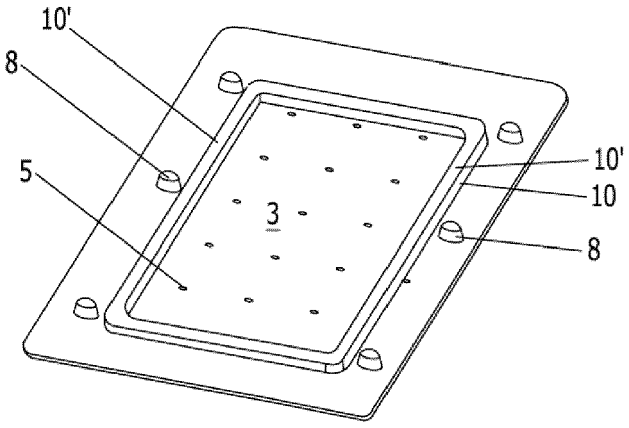


Fig. 4

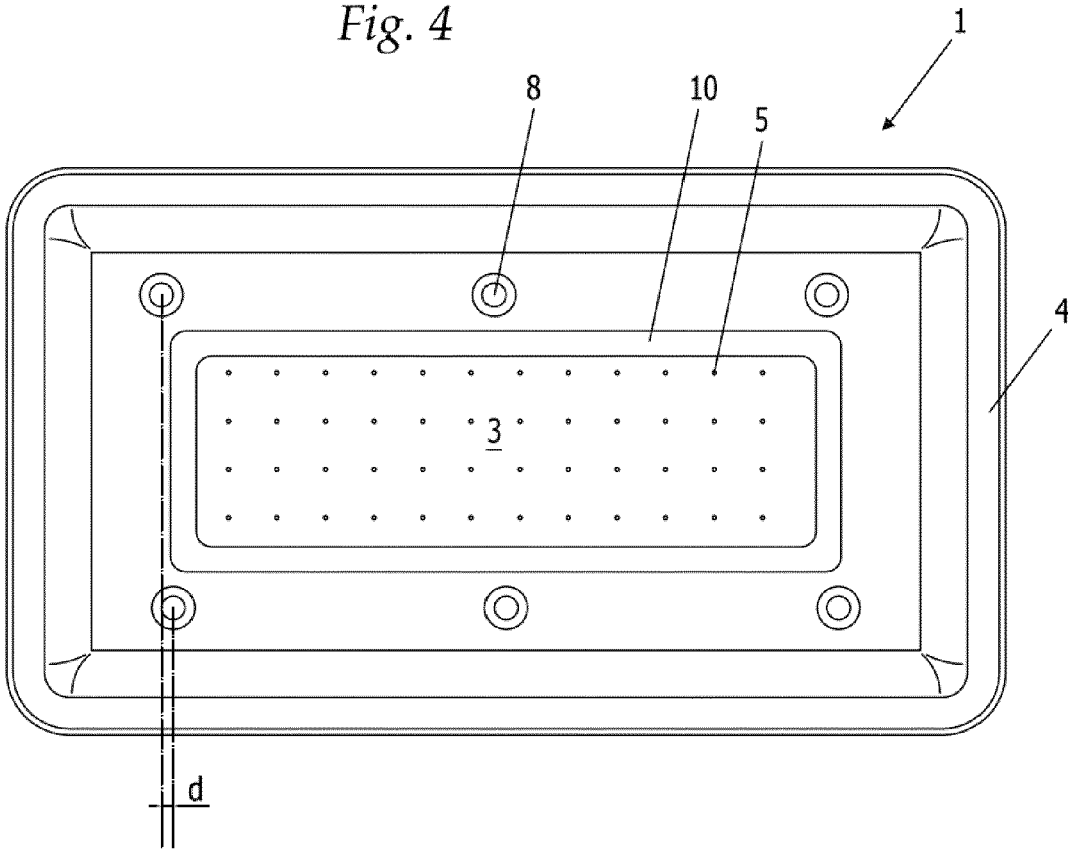
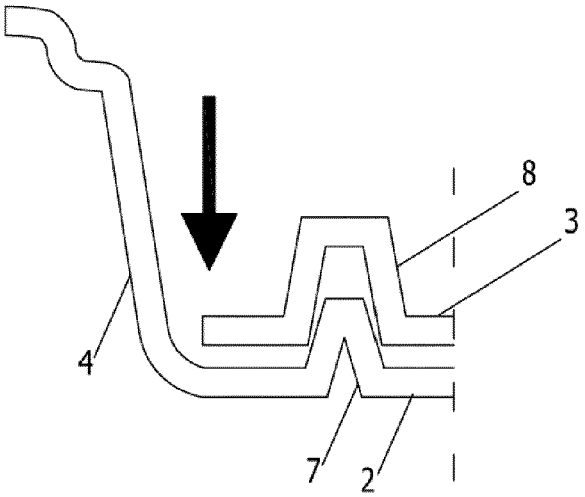


Fig. 5



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 15 8276

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 540 642 A1 (BIANUCCI DI BIANUCCI S & C SNC [IT]) 2 January 2013 (2013-01-02) * paragraph [0028] - paragraph [0043]; figure 7 *	1-8	INV. B65D1/34 B65D81/26
X	DE 297 11 265 U1 (KRACHT ACHIM [DE]) 28 August 1997 (1997-08-28)	1	
A	* page 3, line 4 - page 7, line 17; figures 1-3 *	2-8	
X	EP 0 495 230 A2 (HOECHST AG [DE]) 22 July 1992 (1992-07-22)	1	
A	* column 8, line 13 - column 9, line 16; figures 1-7 *	2-8	
A	DE 43 13 334 A1 (LINPAC TECHNOLOGIE GMBH [DE]) 8 September 1994 (1994-09-08) * column 3, line 11 - column 5, line 45; figures 1-10 *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 April 2018	Lämmel, Gunnar

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)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 15 8276

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.

19-04-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2540642 A1	02-01-2013	NONE	
DE 29711265 U1	28-08-1997	DE 29711265 U1	28-08-1997
		EP 0960056 A1	01-12-1999
		WO 9900314 A1	07-01-1999
EP 0495230 A2	22-07-1992	AT 149950 T	15-03-1997
		DE 59108616 D1	17-04-1997
		DK 0495230 T3	21-04-1997
		EP 0495230 A2	22-07-1992
		ES 2099124 T3	16-05-1997
		FI 916122 A	28-06-1992
		NO 915088 A	29-06-1992
		PT 99942 A	30-11-1993
DE 4313334 A1	08-09-1994	DE 4313334 A1	08-09-1994
		ZA 9306915 B	11-04-1994

EPO FORM P0459

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

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

- WO 0001406149 A **[0003]**