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(54) Packaging for food products in modified atmosphere

(57) The products (3), individually packed in a gas-permeable film, are arranged on a small supporting board (2) and this assembly (2, 3) is enclosed in an envelope (4) of non-gas-permeable thermoplastic sheet or film which is then filled with the gas necessary to produce the modified atmosphere at a pressure sufficient to create a cushion of gas (5) in the top part of the envelope, the properties of which are such that after a number of the resulting packagings have been stacked one on top of the other, an evenly distributed distance (6) is maintained between the underside of the supporting board of the upper packaging and the product packs of the lower packaging, this distance (6) being sufficient to avoid contact between said underside and said packs and such as to avoid damage to said packs.

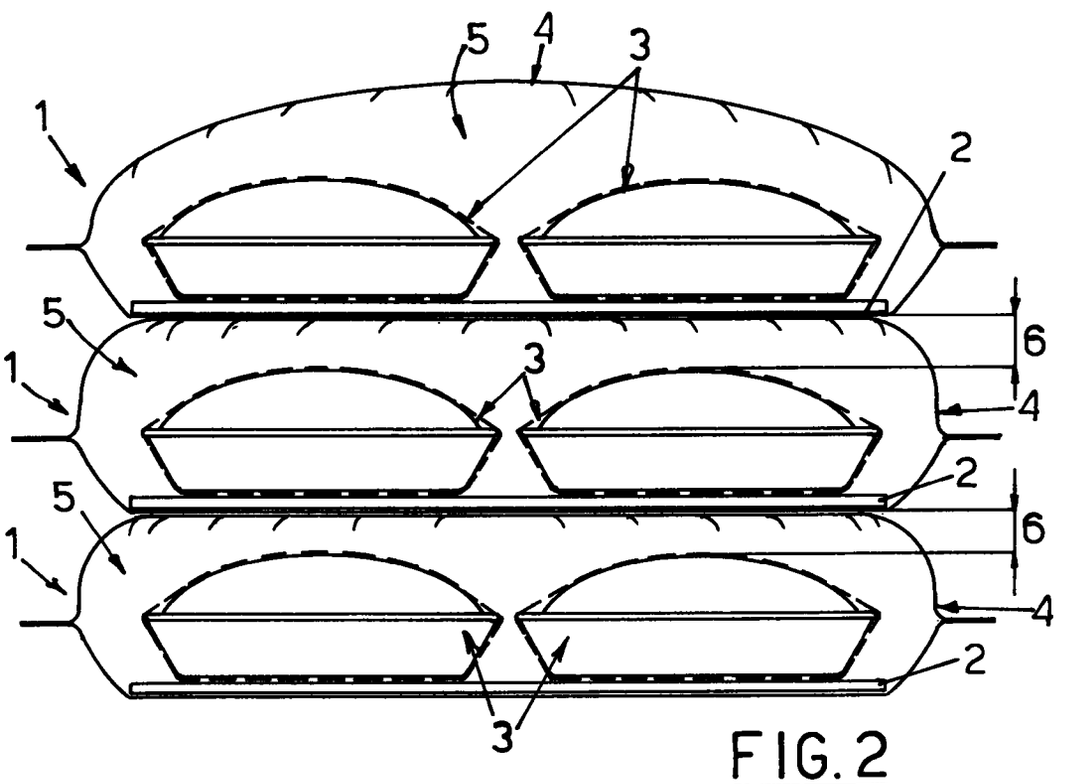

FIG. 2

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Description

A known method of improving the storage life of food products intended for display in large stores is to pack the products in a modified atmosphere appropriate for the purpose. Modified-atmosphere packaging is currently predominantly oriented in two different ways. In the first approach, the product is placed in a sufficiently rigid, non-gas-permeable pack and closed in a normally transparent sheet or film of thermoplastic material which is also non-gas-permeable, and the modified preserving atmosphere is injected into the resulting pack. The pack made in this way is sufficiently rigid and a number of such packs can be stacked one on top of the other in a packaging container. These packs are very expensive and not all consumers like them.

In another approach, the product is placed in a conventional pack on a small tray and bound in a gas-permeable stretchable film. The packs are placed side by side, without projecting, in a stout cardboard box which is then sealed with a non-gas-permeable film and the resulting packaging is filled with the modified atmosphere suitable for preserving the individually packed products. The products remain in this condition until the time when they are displayed on the shop counter, at which point the packaging is cut open and the individually packed products are placed in the refrigerated displays where they will be kept in the same way as fresh products that have never had modified-atmosphere treatment.

With this latter approach, costs are more contained than in the first approach described above, the reason being that the packs can be produced on very-high-speed machines, and there is also the advantage that they are more acceptable to consumers. On the other hand, this second approach causes problems in disposing of the cardboard boxes of the packagings.

It is an object of the invention to overcome this problem of the second approach described above by means of a package composed of a small supporting board made from any sufficiently rigid material suitable for the purpose and designed to hold at least two packs of the food product individually wrapped in a gas-permeable plastic film, this supporting board and its product packs being enclosed in a gastight envelope of plastic material, and this envelope being filled with the desired gases to produce the modified atmosphere at a pressure sufficient to create a cushion of gas in the top part of this envelope, such that, after a number of the resulting packages have been stacked one on top of the other, a distance is maintained between the underside of the supporting board of the upper package and the product packs of the lower package, this distance being sufficient to avoid contact between said underside and said packs and such as to avoid damage to said packs.

The supporting board, which has the important function of distributing the weight of the upper package uniformly over the gas cushion of the lower package, may have containing edges and may be made of, for example, board or a cellular extrusion of a plastic material which is the same as or compatible with that of the envelope of the package in order that all of the pack can be recycled.

The features of the invention and of a possible method for its industrial production will be made clear by the following description of a preferred embodiment of said invention, illustrated purely by way of a non-restricting example in the figures of the three accompanying sheets of drawings, in which:

- Fig. 1 shows a packaging according to the invention seen from the side;
- Fig. 2 shows a stack of the packagings of Fig. 1 seen from the side;
- Fig. 3 shows a plurality of stacks of packagings as in Figure 2, arranged inside a packaging container and seen from the side;
- Fig. 4 shows one step in the method of forming the tubular envelope of the packaging seen from the side;
- Fig. 5 shows in plan view from above the operation, carried out on the end sleeves of the tubular envelope of Figure 4, by the means for evacuating the ambient atmosphere and injecting the modified atmosphere; and
- Figs. 6, 7 and 8 show the packaging in side view during the final three steps of the production cycle.

As can be seen in Figure 1, the packaging 1 according to the invention comprises at least one sufficiently rigid supporting board 2 made of, for example, corrugated board or an extruded cellular plastic material (see below), which may have small containing edges 102 and on which two or more packs 3 of the food product, individually wrapped in a gas-permeable plastic film, are laid and arranged. The supporting board 2 with the products 3 is enclosed in a sufficiently flexible sealed envelope 4 made of a sheet or film of non-gas-permeable thermoplastic material, this envelope being filled with the desired gas or gases to produce the modified atmosphere at a pressure sufficient to create a cushion of gas 5 in the top part, the properties of which are such that, after a number of packages 1 have been stacked as shown in Figure 2, a distance 6 is maintained between the underside of the supporting board 2 of the upper packaging and the packs 3 of the lower packaging, this distance being sufficient to avoid contact between said underside and said packs and such as in all cases to avoid damage to said packs. The supporting board 2 has the important function of maintaining the arrangement of the packs 3 of each packaging, uniformly distributing the weight of the upper packaging over the lower packaging, and keeping the stack stable. The supporting board 2 is a quite separate item and can be removed without problems when the packagings are broken and the individually packed products displayed in the refrigerated displays for sale.

The supporting board 2 can be made from a sheet of corrugated board or from a cellular or ribbed sheet of an extruded plastic material, preferably the same as or

compatible with the plastic material of the envelope 4 of the packages, in such a way that all the parts making up these packs can be completely recycled.

Purely by way of a non-restricting example, a description will now be provided of one possible method for the industrial manufacture of the packagings 1 as stated above. For this purpose it is possible to use any known machine which binds the supporting board 2 and the individually packed products 3 in a tubular envelope 104 as seen in Figure 4 made of a gastight film, this envelope having sleeves 204 of a suitable length which project from the sides of said assembly 2, 3, as can be seen in Figure 5. Located or inserted with play in the sleeves 204 are devices 8, 108, which may be of the type described in Patent Application MI93A 000285 belonging to the same Applicant, which then expand horizontally in such a way that these sleeves are sealed. Connected with the devices 8, 108 are external valve boxes 9, 109 connected to means capable of aspirating out the atmosphere inside the tubular envelope 104, as seen in Figure 6. After this the same boxes 9, 109 are used to fill the envelope 104 with the gas necessary to produce the modified atmosphere for preserving the products 3, at the pressure required to create the gas cushion 5, as illustrated in Figure 7. The injection of the gas under pressure may, for example, be time-controlled in some appropriate manner and/or means may be provided for sensing the height of said cushion 5.

The part 304 of the sleeves 204 which is near the abovementioned expander devices 8, 108 is stretched transversely by these, while the pressure of the preserving gas injected into the pack also stretches it longitudinally, with the result that the parts 304 are fully stretched and without creases, thus being in the best possible condition for subsequent sealing by lines of heat welding 10, 110 using pairs of heat welding bars 11, 111, as illustrated successively in Figures 7 and 8. Once the heat welding lines 10, 110 have been formed and allowed to cool, the devices 8, 108 contract transversely and withdraw from the closed sleeves 204, the heat welding bars 11, 111 return to the rest position and the packaging is removed from the production machine and stacked and the composite pack is placed in the packaging box 7.

Claims

1. Packaging for food products in a modified atmosphere, characterized in that it comprises at least one supporting board (2) holding two or more packs of the food product (3) individually wrapped in a gas-permeable plastic film, this supporting board and said product packs being enclosed in a gastight envelope (4) of thermoplastic material, and this envelope being filled with the gas necessary to produce the modified atmosphere at a pressure sufficient to create a cushion of gas (5) in the top part of the envelope, such that upon stacking of a number of packagings one on top of the other, an evenly distributed distance (6) is maintained between the underside of the supporting board of the upper packaging and the product packs (3) of the lower packaging, this distance (6) being sufficient to avoid contact between said underside and said packs and such as in all cases to avoid damage to said packs.

2. Composite package for food products in a modified atmosphere, characterized in that it comprises two or more packagings (1) placed one on top of the other, optionally side by side and preferably arranged in a container (7), and in which each packaging comprises at least one supporting board (2) holding two or more packs of the food product (3) individually wrapped in a gas-permeable plastic film, this supporting board and said product packs being enclosed in a gastight envelope (4) of thermoplastic material, and this envelope being filled with the gases necessary to produce the modified atmosphere at a pressure sufficient to create a cushion (5) in the top part of the envelope, such that upon stacking of a number of the aforesaid packagings one on top of the other, an evenly distributed distance is maintained between the underside of the supporting board of the upper packaging and the product packs of the lower packaging, this distance being sufficient to avoid contact between said underside and said packs and such as in all cases to avoid damage to said packs.

3. Composite package according to Claim 2, in which the pressure of the modified atmosphere in the cushion of gas (5) of the packagings (1) and the height and resistance to compression of this cushion are proportional to the weight, dimensions and number of the packagings (1) that must be stacked one on top of the other.

4. Composite package according to Claim 2, in which the supporting board (2) may have upwardly directed containing edges (102).

5. Composite package according to Claim 2, in which the supporting board (2) can be made from any suitable and sufficiently rigid material.

6. Composite package according to Claim 5, in which the supporting board may be formed from a cellular, or ribbed plate of any suitable plastic material, preferably the same as or compatible with that which forms the envelope (4) of the package (1).

7. Method for the production of packagings (1) according to the claim 1, characterized by the following steps:

   - binding the supporting board (2) and the product packs(3), with an envelope (4) of gas impermeable sheet or film open at at least one location;

- evacuating though the said open location the ambient atmosphere from said envelope (4);
- injecting through the said open location into said envelope the gases necessary to form the modified atmosphere and to form in this envelope a gas cushion (5) with the desired characteristics; and
- closing said open location of the envelope (4).

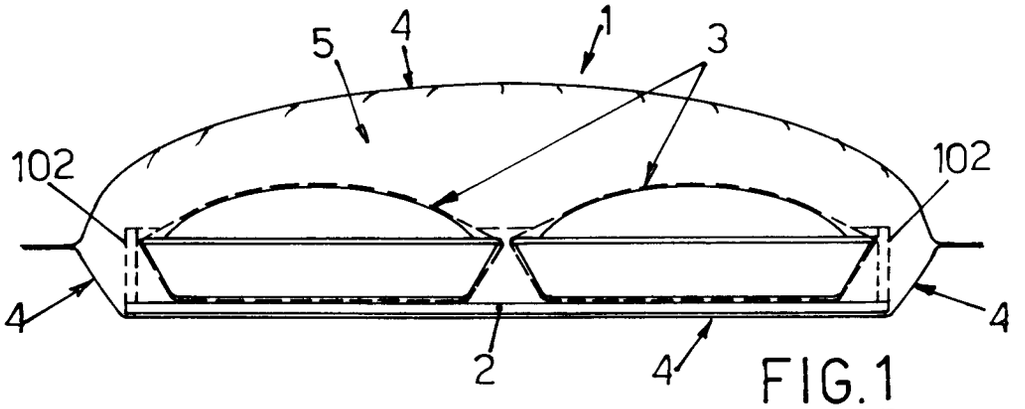

FIG.1

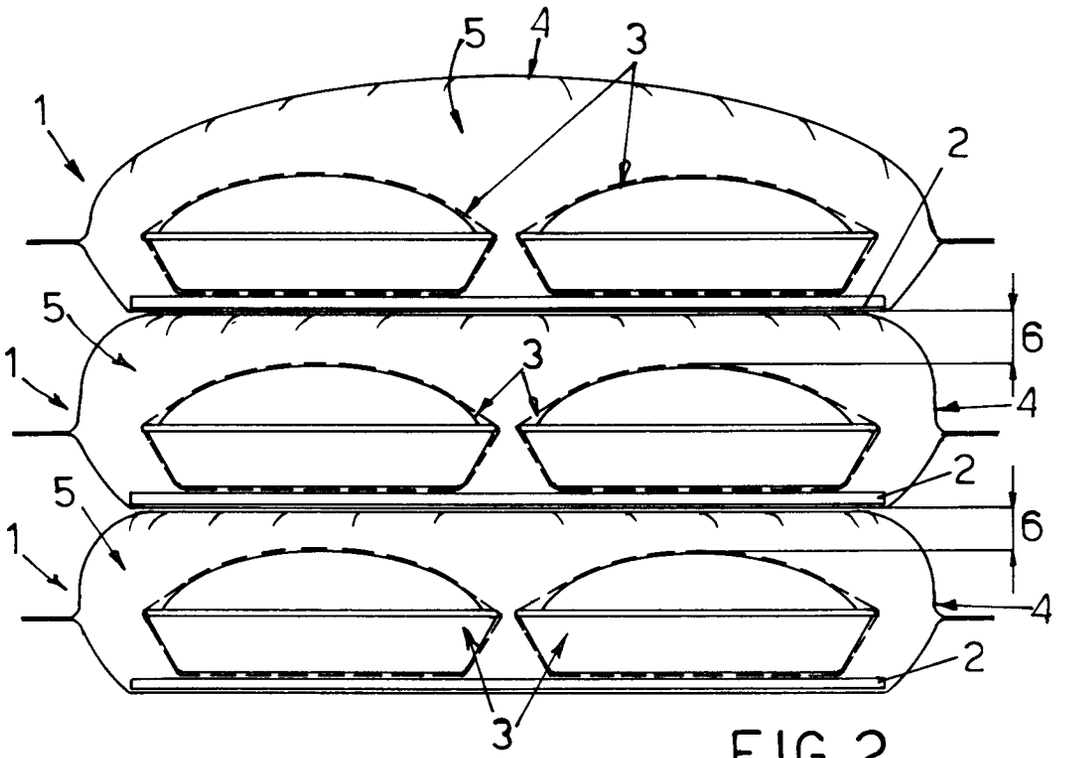

FIG.2

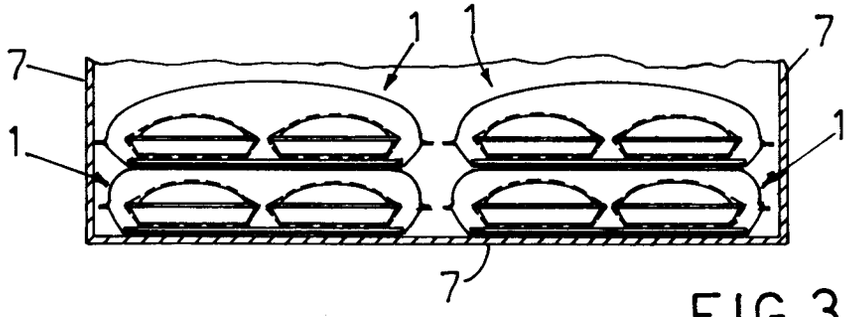

FIG.3

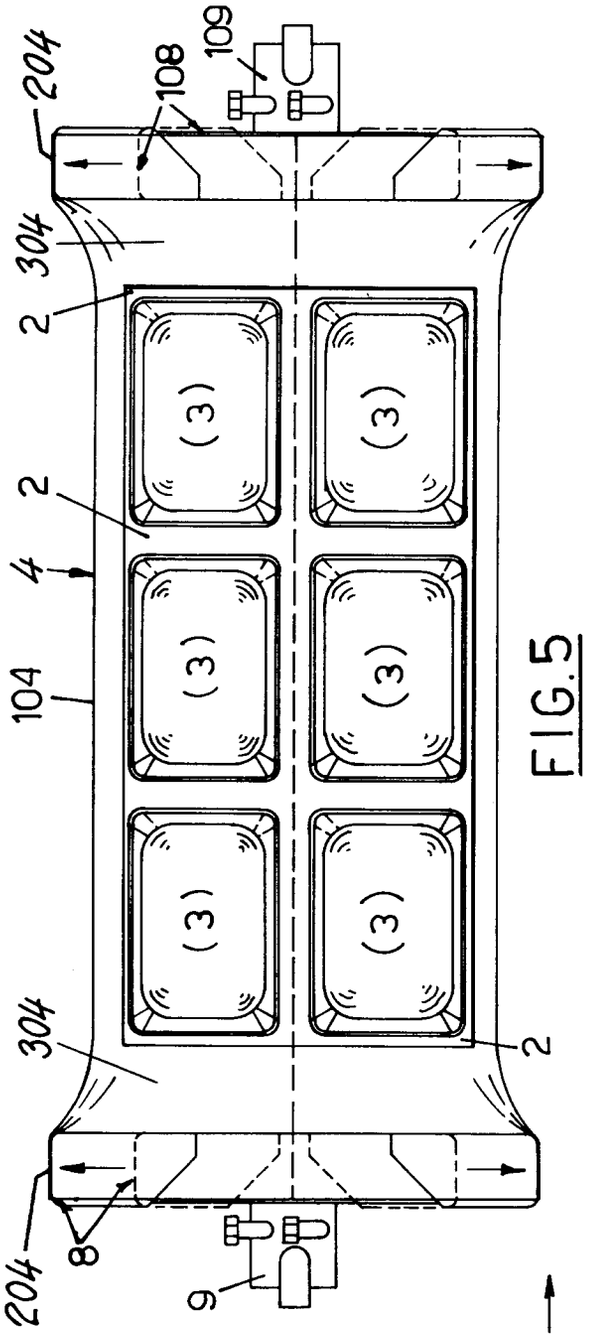

FIG.5

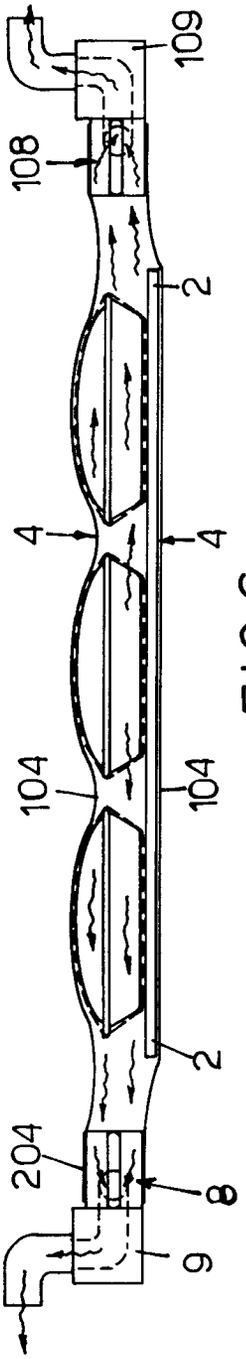

FIG.6

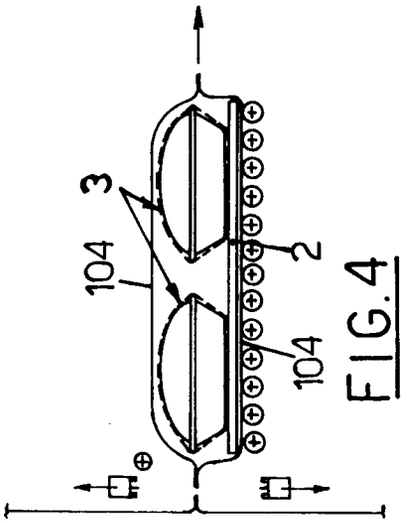

FIG.4

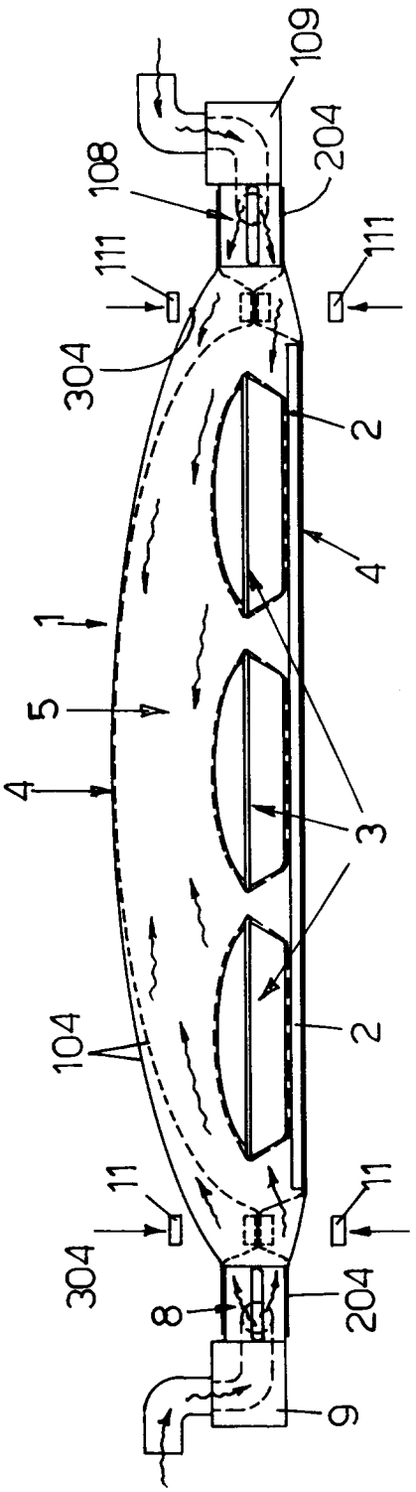
109
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FIG.7

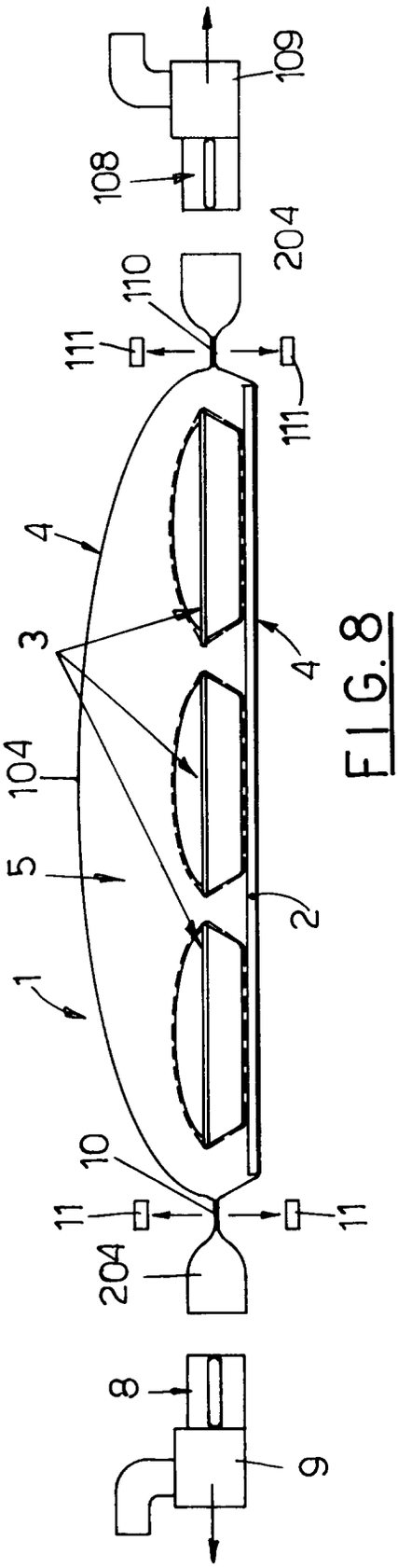
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FIG.8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 11 1671

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	FR-A-2 407 146 (USM CORPORATION) * claim 1; figure 1 *	1,2,4,5,7	B65D81/20
Y	EP-A-0 375 513 (DUTEIL) * the whole document *	1,2,4,5,7	
A	DE-U-82 36 703 (APFFELSTAEDT) * page 2, line 17 - line 29; figure 1 *	1,2,4,5	
A	EP-A-0 368 601 (UNITED BISCUITS) * claim 1 *	1,2,7	
A	US-A-3 038 593 (ROOT ET AL.) * column 2, line 50 - line 62; figure 4 *	1,2,7	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27 October 1995	Bridault, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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