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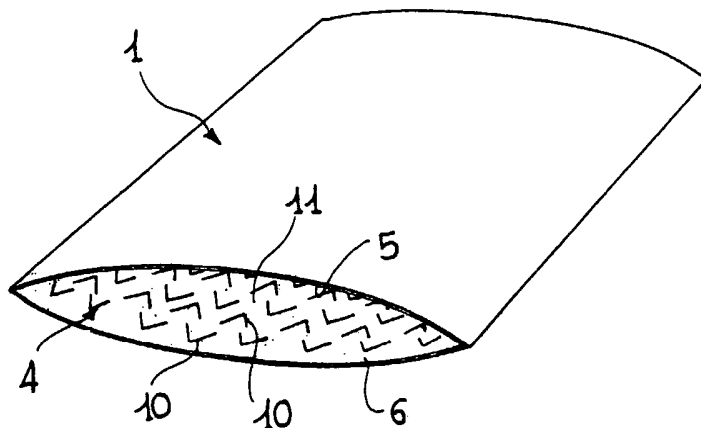
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(54) Title: A BAG-LIKE PACKAGE FOR THE VACUUM-PACKING OF PRODUCTS IN GENERAL



(57) Abstract: A bag-like package (1) for the vacuum-packing of products in general comprises a mouth (4) and facing internal walls (5, 6) in at least one of which impressions (10) are formed and define, with the opposite wall, a plurality of ducts (11) directed towards the mouth (4) to permit an outward flow from the package (1) when the mouth (4) is connected to an environment under reduced pressure in order to put the package (1) under partial vacuum, in which the impressions (10) have an extent and shape such that the ducts (11) are distributed along a labyrinthine path in which a plurality of pockets (12, 32) are defined, which pockets (12, 32) communicate with the ducts and are oriented relative to the direction of

outward flow (A) from the package in a manner such as to retain the liquid fraction of the outward flow and to allow the aeriform fraction thereof to pass through.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A bag-like package for the vacuum-packing of products in general

Technical field

The subject of the present invention is bag-like packages for the vacuum-packing of products in general. It is suitable particularly for the production of packages for the vacuum-packing of moist food products.

A further preferred application of the invention is in the field of domestic vacuum-packing, particularly of food products.

Technological background

It is known that perishable products are preserved considerably better if the product is vacuum-packed. Apparatus for this purpose, which can first of all put the environment inside the package under greatly reduced pressure and then heat-seal its mouth, are now widespread, even for domestic use.

A typical example of this apparatus and a respective package is described in US patent 4941310.

A problem which is typical of this packaging technology is connected with the fact that moist products tend to release liquids during the depressurization of the package. These liquids are a potential source of two problems. In the first place, if they reach the depressurization system (the vacuum pump) they may damage its components which are designed for the suction of gases and not liquids. In the second place, it is sometimes preferable for the liquids or at least a certain quantity thereof to remain in the package. A typical case is that of foods which are cooked in their sauce and in which the cooking sauce is an essential part of the preparation.

The packages that have been known up to now are designed purely to create ducts which can allow air to be extracted from inside the bag when it is put under partial vacuum. In a typical example, these ducts are straight; in other cases they have a more tortuous path
5 resulting from a substantially rhomboidal shape of the appendages which delimit them, with a substantially quincunx-like distribution. In this case, the solution of the first problem is entrusted entirely to measures provided in the vacuum-packaging devices which comprise a liquid-collecting chamber where the liquids are trapped as they emerge
10 from the mouth of the bag. Known packages do not offer any solution to the second problem.

Description of the invention

The problem underlying the present invention is that of providing a bag-like package which is designed structurally and functionally to
15 address and to solve both of the above-mentioned problems.

Within the scope of this problem, an important object of the invention is to provide a package which can trap any liquids associated with the packaged product without compromising the evacuation of the aeriform phases.

20 A further object of the invention is to provide a package which achieves the above-mentioned results without any substantial increase in cost over known solutions.

This problem is solved and these objects are achieved according to the invention by a bag-like package formed in accordance with the
25 appended claims.

Brief description of the drawings

The characteristics and the advantages of the invention will become clearer from the detailed description of some embodiments thereof which are described by way of non-limiting example with
5 reference to the appended drawings, in which:

Figure 1 is a partially-sectioned, perspective view of a bag-like package according to the present invention,

Figure 2 is a schematic view showing a detail of the package of Figure 1, in section and on an enlarged scale,

10 Figures 3 to 5 are schematic plan views of respective examples of the design of the ducts of the package of Figure 1,

Figure 6 is a schematic cross-section view of another embodiment of the invention.

Preferred embodiment of the invention

15 In the drawings, a bag-like package, generally indicated 1, is formed by two superimposed sheets of multi-layer, laminated plastics material including, in known manner, at least one inner layer 2 of heat-sealable material and at least one outer layer 3 of material that is impermeable to air and to gases. The package has a substantially
20 rectangular shape in plan, sealed on three of its sides and open on the fourth side where a mouth 4 is defined.

Impressions 10 are formed in at least one of the facing internal walls 5, 6 that form parts of the inner layer 2 of the package 1. The impressions may extend as well to the outer layer 3 of the package and
25 may be provided in the form of stripes with flat portions 10a interposed

there between as shown in fig. 6. The impressions 10, jointly with the opposite wall, define ducts 11 which extend towards the mouth 4. These ducts 11 have the purpose of permitting an air-flow out of the package 1 when the mouth 4 is connected to an environment that is under reduced pressure in order to put the package under partial vacuum. The course and direction of the flow are indicated by the arrow A in the drawings. Any liquids that are present in the package, typically when the package contains moist food products, also tend to flow towards the mouth, with the air-flow.

10 The extent and shape of all of the impressions 10 are such that the ducts 11 are distributed along a labyrinthine path in which a plurality of pockets 12 are defined, which communicate with the ducts 11 and are oriented relative to the direction of the outward flow A from the package in a manner such as to retain the liquid fraction of the outward flow and to allow the aeriform fraction thereof to pass through.

In a first embodiment of these ducts, which is described with reference to Figure 3, the impressions 10, which are in relief relative to the surface of the internal walls 5, 6, that is, towards the interior of the package 1, are substantially V-shaped and are arranged in alternating rows with concavities 13 facing towards the mouth 4 and with concavities 14 facing in the opposite direction, respectively. The rows having concavities 13 and 14 are offset in a quincunx-like arrangement. The impressions 10 thus delimit ducts 11 in which the rows with concavities 14 delimit pocket-like portions which tend to collect the liquid fraction of the outward flow from the package 1. To achieve

improved separation between the liquid fraction and the aeriform fraction of the flow, the pocket-like portions have concavities which open in the opposite direction to the direction of outward flow and are provided in the vicinity of regions of the ducts 11 in which the flow is
5 subject to abrupt changes in direction. It will be noted in Figure 3 that the outward flow, generally indicated by the arrow A, is forced to enter a passage 16 of the duct 11 between two impressions 10 that are oriented so as to have concavities 13. Then the aeriform fraction is caused to enter two diverging passages 16a, 16b which bring about an
10 abrupt change in direction (arrows A1 and A2) of the flow. Owing to its greater mass and consequent greater momentum, the liquid fraction tends to continue in a straight line beyond the passage 16 so as to be deposited in the concavity 14 facing the passage 16.

The cycle is repeated as each row of impressions is passed.

15 A conceptually similar function is performed by the impressions 10 and by the ducts 11 defined in the embodiment of Figure 4. In this embodiment, the impressions are U-shaped and are oriented in one direction or are inverted in alternating rows, in a quincunx-like arrangement. The impressions are thus oriented with concavities 23
20 facing in the same direction as the direction of outward flow A from the package or with concavities 24 facing in the opposite direction. The rows with concavities 24 delimit, in the ducts 11, pocket-like portions conceptually and functionally identical to those of the previous embodiment. In this embodiment, the liquid fraction of the outward
25 flow also tends to be separated as a result of the abrupt change in

direction of the duct 11 through which it flows and to be deposited in the pocket-like portion of concavity 24 by the same through-flow.

A last example of the shape and distribution of the ducts 11 is shown in Figure 5. In this case, the impressions 10 have a comb-like shape with parallel teeth 30 extending from a substantially continuous rib 31 oriented obliquely relative to the direction of the outward flow A from the package. The rib 31 is formed by a series of sections 33, 34 which have alternating orientations relative to a central axis and are arranged to form a fractured line. Pockets 32 are defined between the teeth 30 for retaining the liquid fraction of the flow where it is diverted abruptly by the change in orientation of the sections 33, 34.

The invention thus achieves the objects proposed by utilizing the greater momentum of the liquid fraction of the outward flow in comparison with that of the aeriform fraction and taking advantage of abrupt changes in direction of the ducts to trap the liquid fraction.

Upon completion of the depressurization of the bag, the bag is sealed by heat-sealing in the vicinity of the mouth 4 in conventional manner.

CLAIMS

1. A bag-like package (1) for the vacuum-packing of products in general, comprising a mouth (4) and facing internal walls (5, 6) in at least one of which impressions (10) are formed and define, with the
5 opposite wall, a plurality of ducts (11) directed towards the mouth (4) to permit an outward flow from the package (1) when the mouth (4) is connected to an environment under reduced pressure in order to put the package (1) under partial vacuum, characterized in that the impressions have an extent and shape such that the ducts (11) are
10 distributed along a labyrinthine path in which a plurality of pockets (12, 32) are defined, which pockets (12, 32) communicate with the ducts (11) and are oriented relative to the direction of outward flow (A) from the package in a manner such as to retain the liquid fraction of the outward flow and to allow the aeriform fraction thereof to pass through.
- 15 2. A package according to Claim 1 in which the pockets (12) have concavities (14) opening in the opposite direction to the direction of outward flow and are provided in the vicinity of regions of the ducts (11) in which the flow is subject to abrupt changes in direction.
- 20 3. A package according to Claim 1 or Claim 2 in which the ducts (11) are defined by impressions (10) with geometrical configurations having respective concavities (13, 14), the impressions being arranged in alternating rows with opposite concavities, the rows being offset in a substantially quincunx-like arrangement.

4. A package according to Claim 3 in which the impressions (10) are substantially V-shaped.
5. A package according to Claim 3 in which the impressions (10) are substantially U-shaped.
- 5 6. A package according to one or more of the preceding claims in which the impressions (10) have a substantially comb-like configuration, the pockets (32) being defined between adjacent teeth (30) of the comb-like configuration.

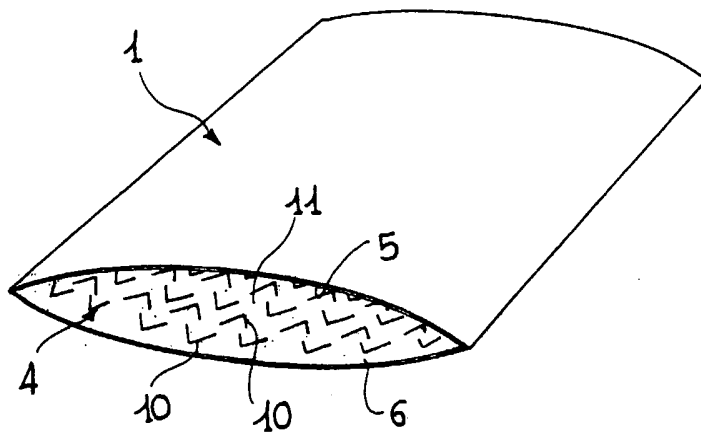


Fig. 1

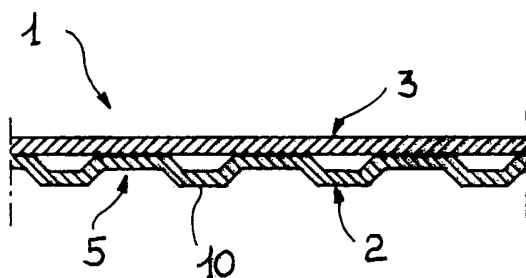


Fig. 2

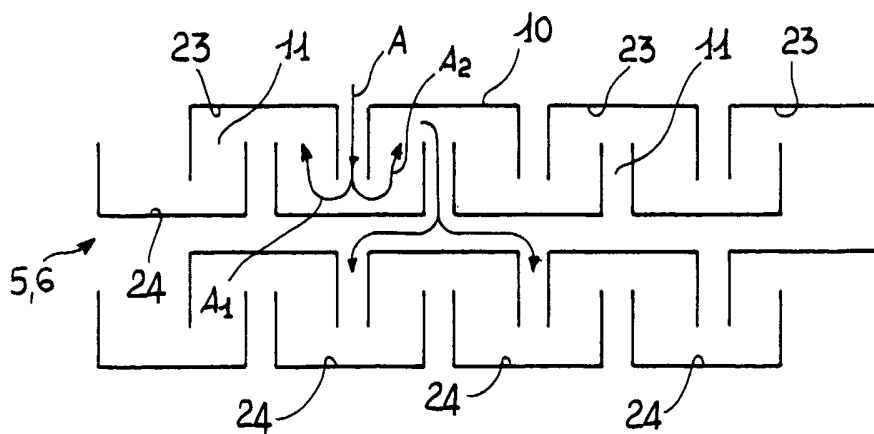
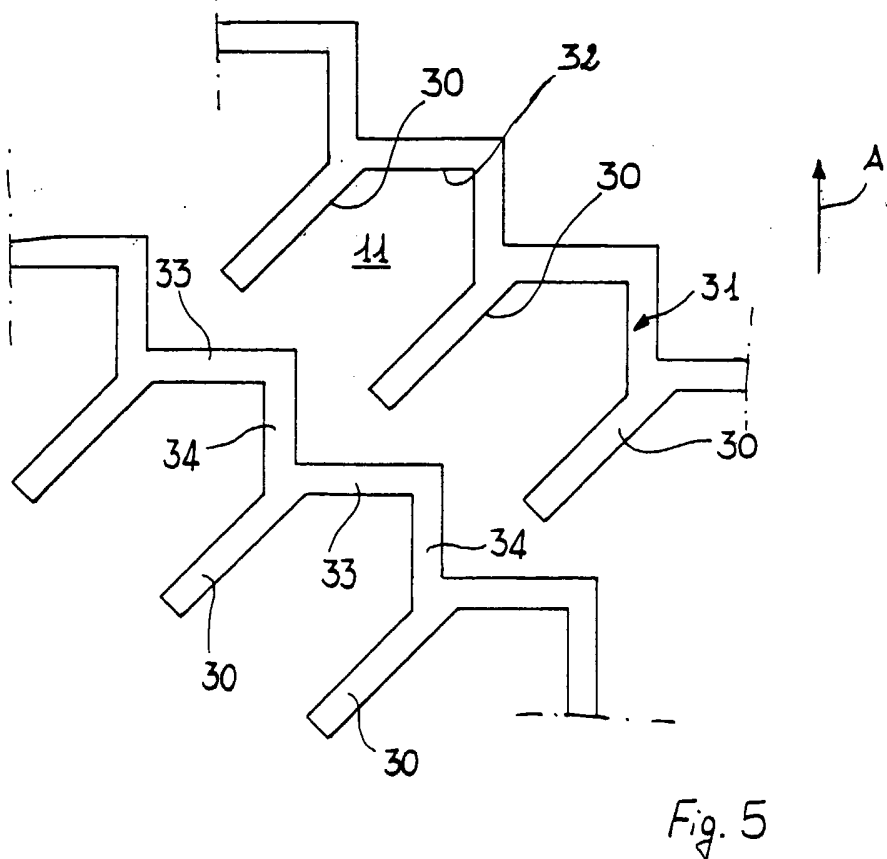
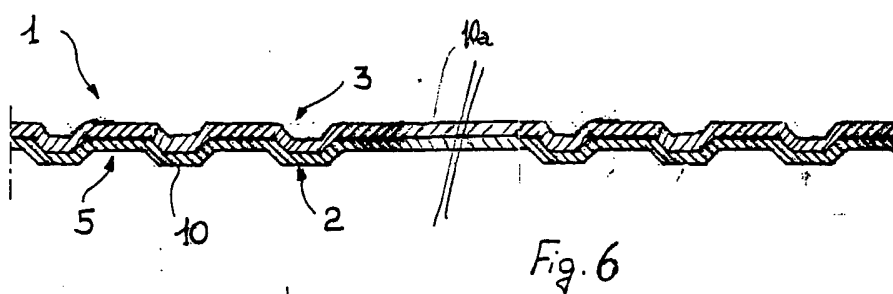
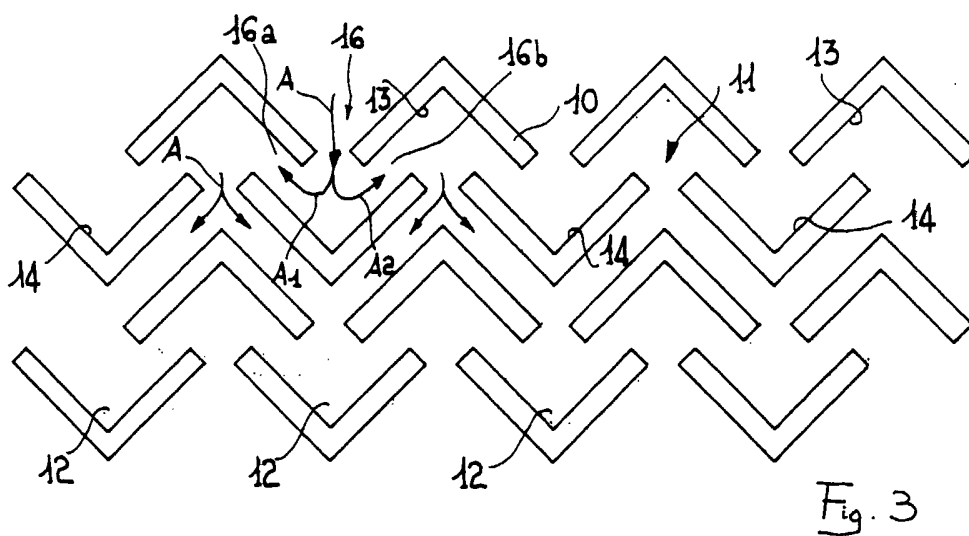


Fig. 4



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2004/078609 A (BRAKES DAVID ; TILIA INTERNATIONAL INC (US); WU HONGYU (US); ALBRITTON) 16 September 2004 (2004-09-16) paragraphs '0038! - '0051!; figures 1-4	1-6
A	US 2 778 173 A (GERALD TAUNTON) 22 January 1957 (1957-01-22) the whole document	1
A	US 4 941 310 A (KRISTEN HANNS J) 17 July 1990 (1990-07-17) abstract	1

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Patent family members are listed in annex.

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Information on patent family members

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