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

(11) EP 1 449 790 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.08.2004 Bulletin 2004/35

(51) Int Cl.[7]: **B65D 81/20**

(21) Application number: **03425260.1**

(22) Date of filing: **28.04.2003**

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

(30) Priority: **20.02.2003 IT PR20030014**

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(54) A package for frozen food products and a packaging process

(57) A package for frozen food products in a tray (3) is characterised in that the tray (3) with the products (2) is wrapped in a transparent film (4) which leaves the products in view, there being an inert gas atmosphere between the film (4) and the products (2), the gas preferably being nitrogen, which eliminates any frost or misting present on the surface of the product at the moment of packaging.

The packaging process includes:

- inserting the frozen food products in a tray;
- wrapping the tray in a transparent film after creating an inert gas atmosphere inside the tray; closing the film by means of heat-sealing or a flow-pack system which may include a heat-shrink operation.

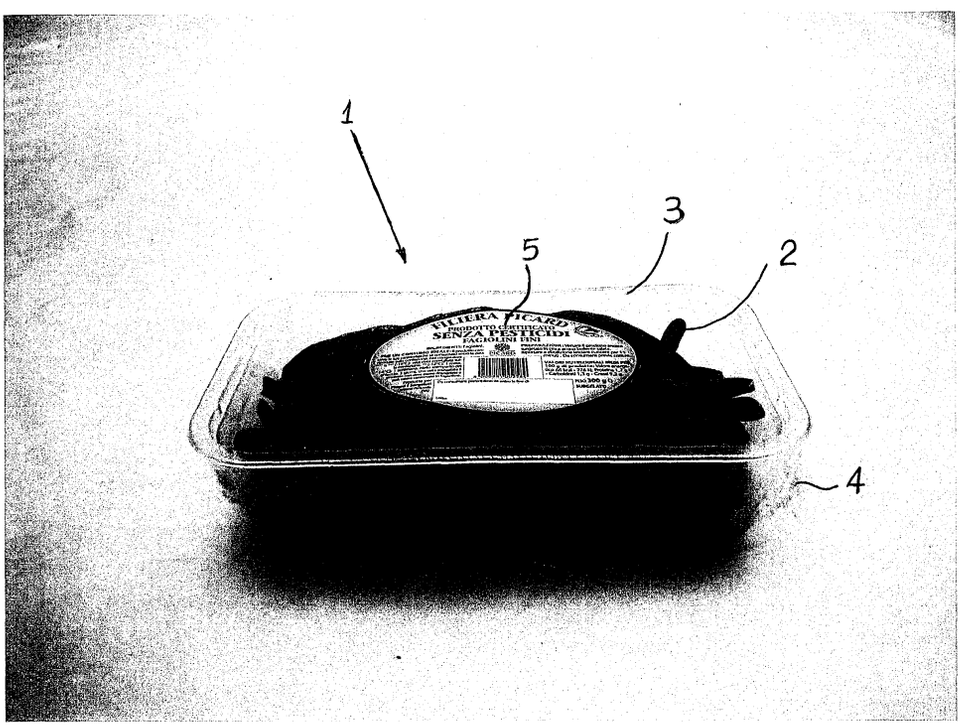

FIG. 1

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Description

[0001] The present invention relates to a package for frozen food products and a packaging process.

[0002] In the foodstuffs sector frozen food product packages with various shapes and colour are already known, sharing the characteristic of not allowing the product to be seen, except through some small windows which may be present in the package.

[0003] But even where such windows are present, it is often difficult to see the product due to the window misting over as a result of the freezing process and the temperature and humidity conditions in which the product is kept while awaiting sale in the freezers in shops and supermarkets.

[0004] The aim of the present invention is to overcome the above-mentioned disadvantages by providing a package for frozen food products in which the product is totally visible from the outside in such a way that the consumer can easily check it before purchasing it, so as to be sure of exactly what they are purchasing.

[0005] Another aim of the present invention is to prevent or at least greatly limit the formation of any frost in the package which could obstruct a perfect view of the product.

[0006] A further aim of the present invention is to achieve this with a particularly simple and economical embodiment.

[0007] Said aims are fulfilled by the package disclosed, with the characteristics described in the claims herein and in particular characterised in that the tray holding the products is wrapped in a transparent film which leaves the products in view, there being an inert gas atmosphere between the film and the products, the gas preferably being nitrogen, which eliminates any frost or misting on the surface of the product at the moment of packaging.

[0008] The present invention also refers to a packaging process with the characteristics described in the claims herein and in particular including the following steps:

- inserting the frozen food products in a tray;
- wrapping the tray in a transparent film after creating an inert gas atmosphere inside the tray;
- closing the film by means of heat-sealing or a flow-pack system which may include a heat-shrink operation.

[0009] These and other characteristics are more clearly illustrated in the description which follows, with reference to the accompanying drawings, which illustrate a preferred embodiment of the invention without limiting the scope of the inventive concept, and in which:

- Figure 1 is a photograph of the package;
- Figures 2, 3, 4 and 5 are photographs of other possible packages.

[0010] With reference to the accompanying drawings, the numeral 1 denotes a package for food products 2 as a whole (Figures 1 and 2, for example, illustrate runner beans, whilst Figures 3, 4 and 5 respectively illustrate vegetables for thick soups, peas and spinach cubes).

[0011] The package has an original configuration combining a tray 3 made of transparent plastic (for example, polypropylene) with a closing film 4, also transparent, made of the same material and having undergone anti-fog treatment, with a thickness variable between 15 and 30 microns, substantially allowing an all-round view of the product held in the tray, with the exception of a zone in which there is a label 5 which, in an embodiment not illustrated, can be substituted with text printed directly on the film 3 to provide an even better view of the product.

[0012] With the package disclosed, the consumer purchasing the frozen food product can take a good look at the product and assess it satisfactorily before making the purchase. This is in contrast to known frozen product packages which oblige the consumer to purchase the product in a substantially "closed box" manner, that is to say, without looking at it, thereby having to trust only the representation (unfortunately not always true to the product actually contained in the package) on the outside of the cardboard box or on the flexible bag containing the product.

[0013] Another original characteristic of the package disclosed is the presence of an inert gas atmosphere, the gas preferably being nitrogen (although it may be a mixture of nitrogen and carbon dioxide), created between the product and the film at the moment of packaging.

[0014] This atmosphere, maintained in the upper space between the surface of the product and the inner surface of the film or tray, is not designed to protect the product from oxidisation and so extend the length of time for which it will keep, but has the surprising effect of eliminating any frost present on the surface of the product at the moment the package is closed and of limiting its subsequent formation during subsequent steps until the sale of the product. In this way, an extremely simple and economical method is used to prevent possible misting in the package and, therefore, allows an excellent view of the product in the package to be maintained at the moment it is purchased.

[0015] The package is closed by means of heat-sealing or using a "flow-pack" system. For the latter operation an automatic continuous horizontal machine is used, which wraps and closes the package by sealing it. The operation may be completed by a rapid pass in a heat-shrink oven. In this way the film is taut and adheres to the tray perfectly.

[0016] Therefore, the packaging process includes the following steps:

a) inserting the frozen food products in a tray;
b) wrapping the tray in a transparent film after cre-

ating an inert gas atmosphere inside the package; closing the film by means of heat-sealing or a flow-pack system which may include a heat-shrink operation.

[0017] Step b) is performed in a continuous fashion, using a tube with holes made in it to diffuse the gas in the package immediately before it is closed.

[0018] The flow is regulated by a valve which adjusts the flow rate of the gas arriving from a pressurised container.

[0019] According to requirements, introduction of the inert gas may be preceded by extraction of part of the surface air, to create a certain degree of vacuum inside the package before introducing the gas.

Claims

1. A package for food products in a tray (3) subjected to freezing, **characterised in that** the tray (3) with the products (2) is wrapped in a transparent film (4) which leaves the products in view, there being an inert gas atmosphere between the film (4) and the products (2) which eliminates any frost or misting present on the surface of the product at the moment of packaging.

2. The package according to claim 1, in which the inert gas is nitrogen or a mixture of nitrogen and carbon dioxide.

3. The package according to claim 1, in which the tray (3) is transparent, so that the whole product (2) contained in it can be seen, the view of the product (2) only being obstructed by a label (5) which may be present, indicating the characteristics of the product.

4. A packaging process for food products, **characterised in that** it comprises a combination of the following steps:

   - inserting the frozen food products in a tray;
   - wrapping the tray in a transparent film after creating an inert gas atmosphere in the tray, the latter operation being performed after partially extracting the air if necessary;
   - closing the film by means of heat-sealing or a flow-pack system which may include a heat-shrink operation.

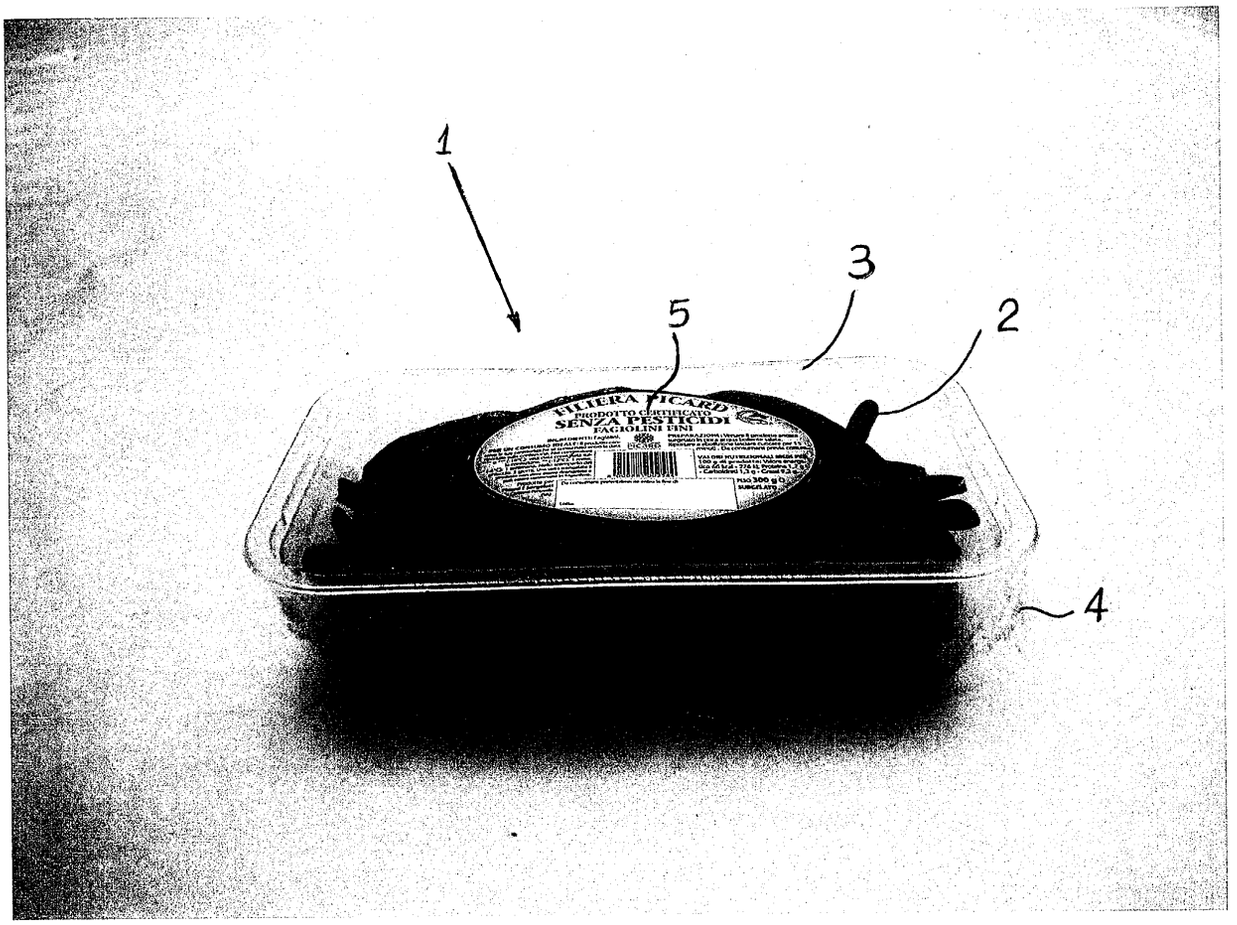
1
3
5
2
4
FILIERA PICARD
PRODOTTO CERTIFICATO
SENZA PESTICIDI
FAGIOLINI FINI

FIG. 1

FIG.2

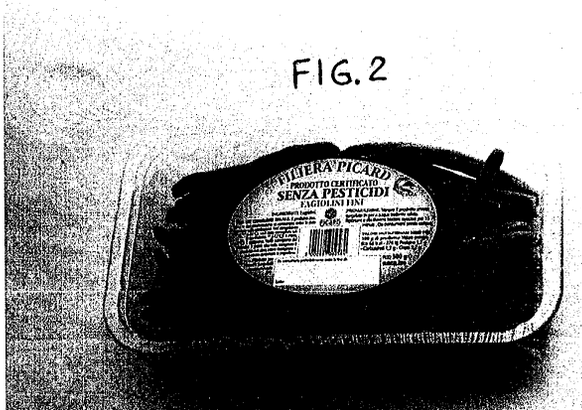

FIG.3

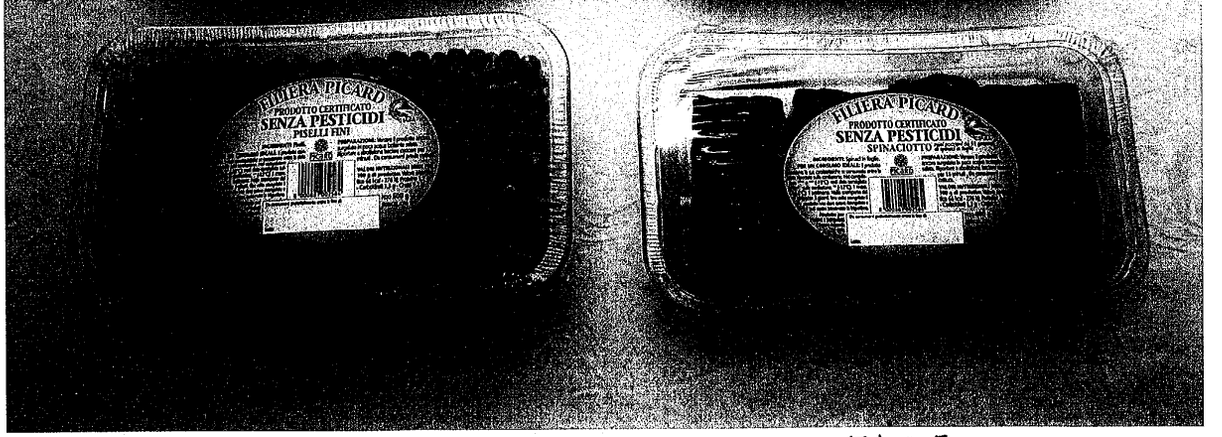

FIG.4

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5260

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.7)
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 April 2004	Newell, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 42 5260

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