



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/AU86/00191 <b>(22) International Filing Date:</b> 8 July 1986 (08.07.86) <b>(31) Priority Application Number:</b> PH 1556 <b>(32) Priority Date:</b> 19 July 1985 (19.07.85) <b>(33) Priority Country:</b> AU  <b>(71)(72) Applicants and Inventors:</b> LARSEN, Trevor, Allan [AU/AU]; LARSEN, Valerie, Louise [AU/AU]; 69 Sir Thomas Mitchell Drive, Davidson, NSW 2085 (AU).  <b>(74) Agent:</b> HALLIDAYS; 44 Ashley Street, Hornsby, NSW 2077 (AU).  <b>(81) Designated States:</b> AT (European patent), BE (Euro- pean patent), CH (European patent), DE (European patent), FR (European patent), GB (European pa- tent), IT (European patent), JP, LU (European pa- tent), NL (European patent), SE (European patent),		US.  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> LONG LIFE FOOD PRODUCT  <b>(57) Abstract</b>  A long life bread or like flour based product provided by packaging the product in an oxygen free atmosphere with- in a heat sealable substantially air impermeable laminate having a heat sealing temperature above a predetermined prepar- ation temperature to which the product would be heated to render it table presentable as a heated product.		

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## "LONG LIFE FOOD PRODUCT"

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This invention relates to a method of packaging a food product to provide it with a shelf-life without refrigeration which exceeds the shelf-life that can be reasonably expected from the same product as now produced when it is stored in un-refrigerated conditions. By shelf-life is meant the period of time between manufacture and the time when the product becomes uneatable from a health and/or acceptable standard of quality viewpoint. As  
10 is well known many flour based products will develop fungus or mildew, bread is one such product, if allowed to stand on a shelf for a period of time thereby rendering the product unacceptable to the consumer. The invention further provides a product when so packaged.

The invention has relevance to bread and flour based products which normally have a shelf-life without refrigeration which is in the order of a few days. The present invention provides a packing for bread and like flour based products which will ensure a shelf-life of a  
20 number of weeks even when stored under ambient air temperatures.

The invention has particular relevance to a bread or bread

like product which needs to be reheated to bring it to preferred edible condition, that is to render it table presentable as a heated product. One such product is a the common "long" bread roll which may, if desired, be laterally or longitudinally sliced and flavoured by inserting between the slices a flavouring medium e.g. garlic, cheese/bacon, herb or like flavoured butter and is then packaged.

By reheating such a product whilst still in the packaging as proposed by this invention the flavouring medium is  
10 liquified to the extent that it soaks into the bread and so provides simply and efficiently hot flavoured slices of a bread roll. Additionally, there is no loss of moisture from the bread product during the heating process ensuring the product has a "fresh" moist texture when presented to the user. The proposals of the invention therefore have advantages over known practices in which a sliced roll similarly provided with flavoured butter is heated in an oven. Under such conditions there is a loss of moisture  
20 from the bread product during the heating process resulting in the final product lacking the "fresh" moist texture which is desirable in a bread product.

It is immediately seen that such a product has great commercial advantages.

The invention can be broadly said to be for the packaging

of an extended shelf-life heatable bread or like flour based product by means of a method comprising the steps of providing a heat sealable substantially air impermeable wrapper with a heat sealing temperature above a preparation temperature to which a bread product wrapped therein would be heated in a subsequent operation to make the bread product table presentable and packing the bread product in the wrapper in the presence of a substantially oxygen free non-toxic gas and then heat sealing the wrapper to enclose  
10 the bread product in an environment comprised of the said gas.

Preferably the bread product is one which is substantially fat and sugar free.

The wrapper is preferably one comprising a number of layers. One suitable wrapper would have an outer layer of sheet polyester with at least one metallised surface with an inner layer of heat sealable cast polypropylene or like heat sealable plastics material overlying the metallised surface. Alternatively the wrapper can be made from sheet polyester  
20 with a nylon barrier layer in place of the metallised surface and an inner layer of heat sealable cast polypropylene. The latter wrapping material would be satisfactory for use in a microwave oven whereas the former would not.

Such laminates would have a heat sealing temperature in the order of 180 degrees C which is well above the required reheat temperature for causing a spread on the cut surfaces of a pre-prepared bread product to soak into the bread or for otherwise preparing the bread for eating in a heated form. It is envisaged that the heating process would be at a temperature in the order of 150-160 degrees C and would take place at this temperature for a period of 15 to 20 minutes.

- 10 The bread or bread like product may have many forms. In a preferred form the bread would be in the nature of a long bread roll. The roll may be transversely or longitudinally cut to provide slices, possibly not completely separated each from its neighbours. Between slices there could be placed, for example by hand, a pat of butter or other meltable substance which may be flavoured. Alternatively, a liquid or semi-liquid flavoured substance could be deposited between slices as for example by a mechanical means, e.g. through a nozzle connected to a pump or a spray device. The
- 20 substance placed between the slices would be comparatively stable at room temperatures but would become sufficiently fluid at the temperatures proposed for heating, in order to render it table presentable as a heated product, to cause the substance to soak into the bread to flavour the bread slices.

Alternatively, other fillings, e.g. meats, have been found to have extended usable non-refrigerated shelf-life when packaged with bread products as proposed.

The preferred gas for the packaging operation is carbon dioxide but other non-toxic oxygen free gases could be used.

The foregoing description has been limited to packaging in an inert oxygen free atmosphere in order to achieve the greatest possible non-refrigerated shelf-life. It would be possible, however, to provide a product having lesser  
10 non-refrigerated shelf-life, but considerably more than the bread products now available, by packing the bread in the preferred packaging material described above in an ambient air atmosphere. Experimentation has shown that bread products packed as proposed in a carbon dioxide atmosphere have a non-refrigerated shelf-life of up to sixteen weeks. A product with a like recipe packed in the preferred wrapping material in an ambient air atmosphere has a non-refrigerated shelf-life of 10 to 14 days.

On the other hand a commercially available bread product  
20 packed in the conventional plastic bag has a non-refrigerated shelf-life of, in the order of, 3 to 4 days. The term shelf-life is intended to mean the period during which the bread product will remain fresh enough to be eaten without reheating or other freshening process.

The Claims:-

1. A method of packaging a bread or like four based product to give it an extended shelf life, the method comprising the steps of providing a heat sealable substantially air impermeable wrapper with a heat sealing temperature above a preparation temperature to which a bread product wrapped therein would be heated in a subsequent operation to make the bread product table presentable as a heated product and packing the bread product in the wrapper in the presence of a substantially oxygen free non-toxic gas and then heat sealing the wrapper to enclose the bread product in an environment comprised of the said gas.
2. The method claimed in claim 1 wherein the wrapper is a laminated material comprising two layers being respectively a layer of polyester film and a layer of polypropylene with a metalised surface which lies adjacent the polyester film.
3. The method as claimed in claim 1 wherein the wrapper is a laminated material comprising three layers in order being a layer of polyester film, a layer of nylon film and a layer of polypropylene film.
4. The method as claimed in anyone of the claims 1 to



3 including the step of slicing the bread product prior to sealing the product in the wrapper.

5. The method as claimed in claim 4 including the step of placing a filling material between the slices prior to sealing the product in the wrapper.

6. The method as claimed in claim 5 wherein the filling material is a spreadable flavoured substance.

7. The method as claimed in claim 5 or claim 6 wherein the filling material is one which will melt at a temperature at or below the preparation temperature.

8. The method as claimed in claim 5 wherein the filling material is a fluid substance.


9. The method as claimed in anyone of claims 1 to 8 including the step of subjecting the wrapped product to a heating step at a temperature in the range 150 to 160 degrees C.

10. A method of packaging a bread or like flour based product to give it an extended shelf life, as hereinbefore described.

11. A bread product when packaged by the method as claimed in anyone of the claims 1 to 10.

# INTERNATIONAL SEARCH REPORT

International Application No PCT/AU 86/00191

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. <sup>4</sup> B65B 31/00, 25/16, A21D 15/00		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC	B65B 31/00, 25/16, A21D 15/00	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
AU : IPC as above		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	AU,B, 40650/78 (525988) (JOULIN) 17 April 1980 (17.04.80)	(1,4-9)
X	US,A, 4357356 (JOULIN) 2 November 1982 (02.11.82)	(1,4-9)
A,Y	AU,B, 12268/76 (502625) (UNILEVER LTD) 29 September 1977 (29.09.77)	(1,4-9)
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<p>* Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
9 October 1986 (09.10.86)	16 OCT 1986	
International Searching Authority	Signature of Authorized Officer	
Australian Patent Office	 C.M. WYATT	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON  
INTERNATIONAL APPLICATION NO. PCT/AU 86/00191

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Patent Document  
Cited in Search  
Report

Patent Family Members

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