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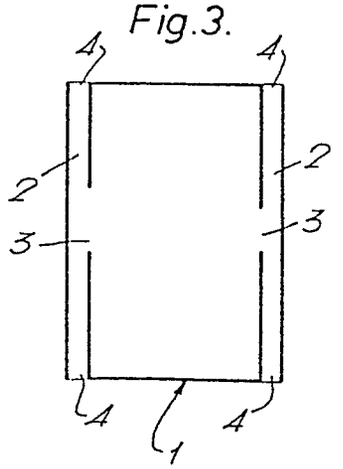
(54) A method for the packaging of meat.

(57) A method for packaging of meat so that with the aid of pressurised carbon dioxide in the packaging (1) its preservation time is lengthened. The excess pressure of the carbon dioxide existing in the package at the beginning is discharged through its valve (2). The excess pressure is achieved by adding a sufficient amount of carbon dioxide ice into the package. The excess pressure is most suitably held in the package over a period of 0, 5 - 1,0 hours.

Fig.3.



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A method for the packaging of meat

This invention concerns a method for the packaging of meat, so that its preservation life is lengthened with the aid of carbon dioxide.

An earlier method is known for meat packaging in a gas-tight pack when the preservation life of the meat is improved by adding into the package a protective gas, for example with the aid of carbon dioxide. The carbon dioxide reduces the pH value at the meat surface when microbic growth is reduced. A method has been described in GB publication 1 186 978 in which a mixture of oxygen and carbon dioxide is used as a protective gas.

From earlier on a valve-packaging is also known which has been used for gaseous or gas-forming fluid packaging. The packaging is described in GB publication 956123.

The purpose of this invention is to make the influence of the protective gas more effective for improvement of meat preservation. It is characteristic to the method according to the invention that the excess pressure of the carbon dioxide gas present in packaging at the beginning discharges through the valve in it. Due to the excess pressure the dissolution of the carbon dioxide into the meat is improved.

In using a gas-tight valved packaging for the preservation of fresh meat, so that a sufficient quantity of carbon dioxide ice is placed in the package together with the meat, as much as doubled preservation lives are attained. On the basis of researches performed at Helsinki University the preservation method is particularly well-suited to the preservation of pork meat.

The increased preservation is founded on the influence of the excess pressure gasefication of the carbon dioxide on the passification of the bacterial flora. It is of fundamental significance in the method in question that excess pressure is formed in the packaging for 0.5 - 1 h, which conclusively improves the effects of the

carbon dioxide.

The excess pressure can be regulated by changing the construction of the valve.

It is an advantage of this method, as compared to normal gas packaging, that an excess quantity of carbon dioxide is added which can discharge under pressure through the valve.

The invention and its details are described more closely in the following by referring to the drawings in which:

Fig. 1 presents one valve packaging to be applied for use in the method and Figures 2-4 present schematically alternative solutions for locating the valves.

The gas- and aroma tight packaging material is composed of a simple gas-tight plastic film or its various laminations. The package is furnished with a special gas valve. The package is formed and closed by seaming, for example by heat seaming or by gluing. The valve is formed together with the seaming in such a way that at a suitable position a labyrinthine passage is formed in the package. In the accompanying drawings the packaging is marked with reference number 1 and the passage formed by the valve is at the area 2. The opening connecting to the packaging space to be used is at 3 and the opening to the outside air is at 4.

The meat to be packed is placed in the package together with the carbon dioxide ice and the package is closed and the air extracted from it as carefully as possible. The carbon dioxide ice gasefiés inside the package. As the pressure rises inside the gas can slowly discharge into the surrounding space along the labyrinth. When the pressure has equalised the film materials of which the labyrinth are composed are pressed fast together and they close the passage. The time of the carbon dioxide discharge can be regulated by suitably selecting the length of the valve labyrinths 2 and the size of the openings 3 and 4

The packaging material can be, for example, laminates, in which the polyamide- or polyester film and polyethylene film, are laminated together, or polyamide and polypropylene film. The package is furnished to advantage with at least two valves (Figures 2-4).

The following example illustrates more closely an application according to the invention.

Example:

A 2 kg. pork chop line was packed with the aforementioned method so that 15 g carbon dioxide ice was added in the valve package. The size of the package used was 300x400 mm. Tha package had a double valve according to the invention, the width of which was 30 mm. The packaging material was nylon&polyethylene laminate, the layer thicknesses of which were 20 and 70 microns.

The excess pressure of the carbon dioxide inside the package rose 0,5 m VP, from where it dropped over about an hour, to normal the carbon dioxide partly dissolving into the fibres. A portion of the carbon dioxide escapes through the valves.

In performance of sensory and microbiological tests the following results were achieved with various preservation times:

	0	7	12 /24 hours
aroma of raw meat	2,7	2,9	2.4
colour of raw meat	3,0	2,6	2,4
aroma of cooked meat	3,0	2,4	2,4
taste of cooked meat	3,0	2,4	2,5
aroma of the cooking fluid	3,0	2,7	2,5

The aforementioned sensory evaluation was a mean figure given by a panel composed of 4-6 experts on the following scale of values

3 = normal

2 = slightly changed

1 = clear change

0 = strong change

	0	7	12/24 hours
Total bacteria population plate count	$1,8x10^6$	$2,3x10^6$	$1,2x10^6$
Gram-negatives VRB-agar	$3,0x10^4$	$3,4x10^4$	$1,0x10^5$
Anaerobic bacteria sulphite-ferro-agar	$2,5x10^4$	$k,2x10^5$	$4,0x10^5$

As a conclusion, it can be noted that the pork meat was well preserved in the package. The above results are mean values of several measurements.

Patent Claims

1. A method for packing meat so that with the aid of carbon dioxide in the packaging (1) the preservation life is lengthened c h a r a c t e r i s e d in that the excess pressure of the carbon dioxide in the packaging discharges out of the packaging through the valve in it (2).

2. A method according to the patent claim 1 c h a r a c t e r - i s e d in that the excess pressure is achieved by adding a sufficient quantity of carbon dioxide ice into the packaging (1).

3. A method according to the patent claims 1 or 2 c h a r a c t - e r i s e d in that excess pressure is held in the packaging (1) for a period of about 0,5...1,0 hours.

The packaging material can be, for example, laminates, in which the polyamide- or polyester film and polyethylene film, are laminated together, or polyamide and polypropylene film. The package is furnished to advantage with at least two valves (Figures 2-4).

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Fig.1.

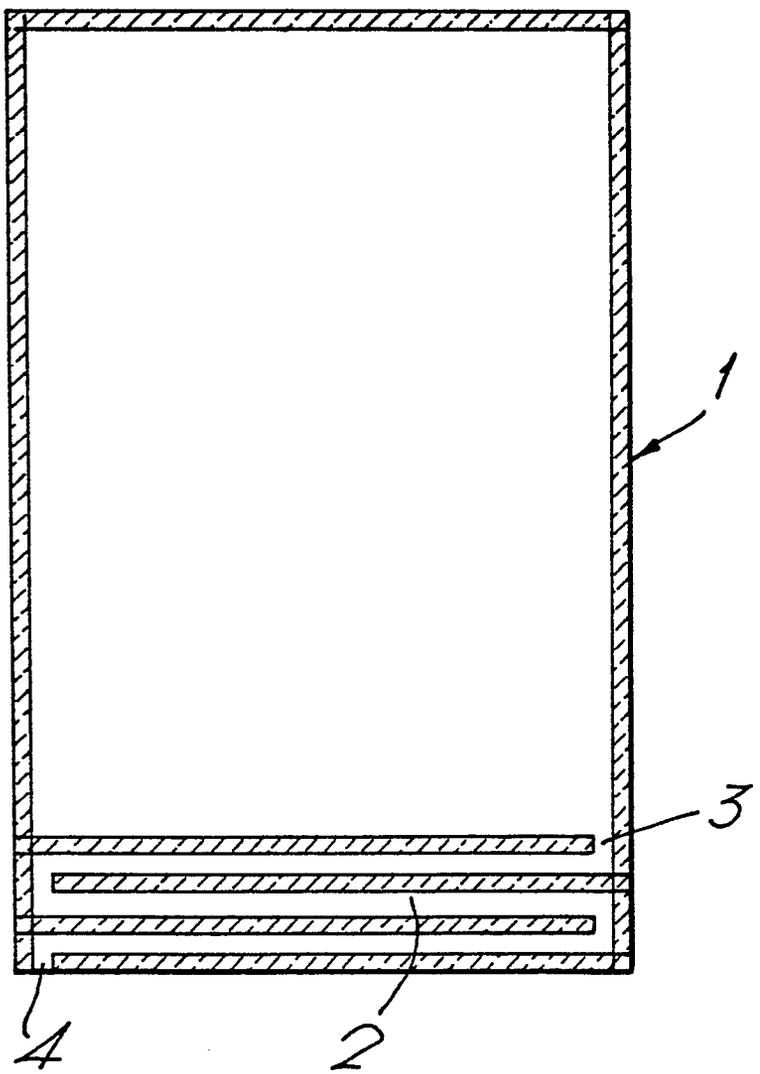

Fig.2.

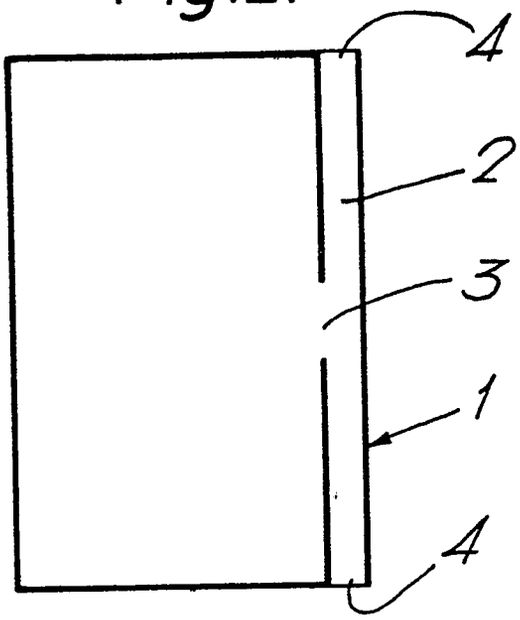

Fig.3.

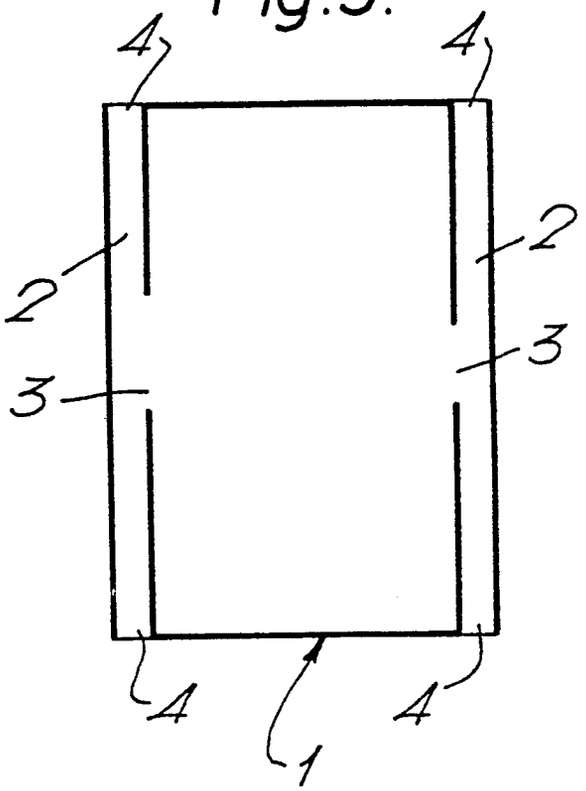

Fig.4.