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

(11) **EP 3 395 716 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
31.10.2018 Bulletin 2018/44

(21) Application number: **15911243.2**

(22) Date of filing: **23.12.2015**

(51) Int Cl.:
B65D 81/34 *(2006.01)*

(86) International application number:
PCT/ES2015/070949

(87) International publication number:
WO 2017/109237 (29.06.2017 Gazette 2017/26)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

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(54) **BAG FOR COOKING CORN GRAINS IN A MICROWAVE**

(57) The invention relates to a bag, based on the conventional structure of a bag of this type, characterised in that the free end vertices (7) thereof have a bevelled or rounded configuration, which, during the unfolding caused by the increase in volume due to the cooking of the corn grains inside said bag, prevents the bag from being able to remain blocked or held back against the lateral walls of the microwave, preventing the rotation thereof, which ensures a homogeneous distribution of heat over the corn grains, thereby preventing a large number of grains from not cooking properly, as occurs with the conventional popcorn bags.

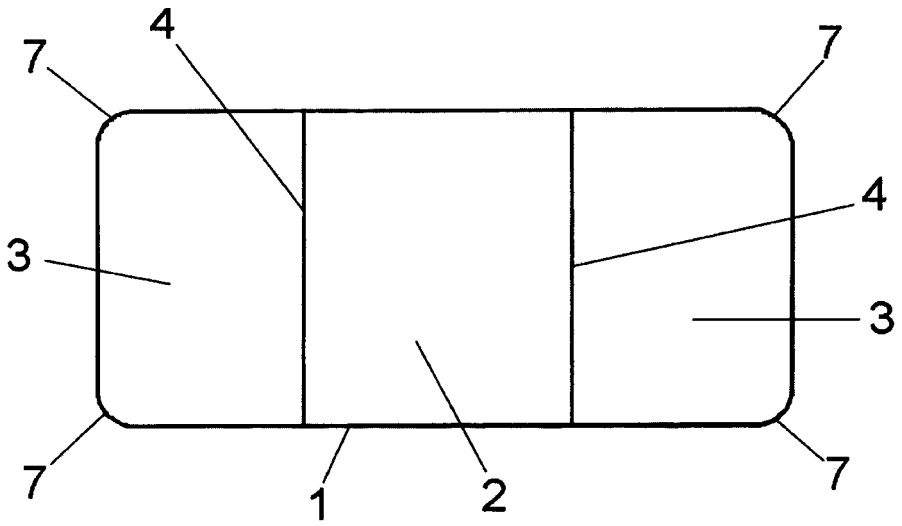

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a bag for cooking corn grains in microwave in order to obtain the classic "popcorn".

[0002] The object of the invention is to provide a bag that allows ensuring an optimal and uniform cooking of corn grains housed within the same, regardless of how it is arranged within the microwave, thereby avoiding, as is usual, that some of them are not cooked properly, and therefore, do not finally transform into the product to be obtained.

BACKGROUND OF THE INVENTION

[0003] In the field of practical application of the invention, the bags of corn grains intended for obtaining popcorn in microwaves have a flattened tubular structure and consequently rectangular, closed at its ends, ends which are folded over the central area of the bag in which the properly treated corn grains are contained.

[0004] The bag must be arranged horizontally centred on the rotating plate of the microwave with the ends facing upwards, so that during cooking said ends begin to unfold due to the increase of volume that the corn grains undergo on transforming into popcorn, it being necessary that the heat generated by the microwaves is distributed evenly over the corn grains for them to transform into popcorn.

[0005] The reality is that a significant amount of grains does not transform into popcorn during the cooking process and this is due to the nature of the package itself, in which, when its ends begin to unfold define elements that tend to block the rotation of the package, especially in small-sized microwaves, in such a way that when these ends impact on the walls of the microwave the package does not rotate enough and heat is not distributed evenly. This results in that either a large part of the corn grains is not finally cooked properly, and therefore, are not transformed into popcorn, or, to achieve the transformation of all the grains into popcorn the employment of additional cooking time is necessary, which means that part of the popcorn is subjected to a process of overcooking, and therefore ends up burned, which obviously, very negatively affects the taste thereof.

DESCRIPTION OF THE INVENTION

[0006] The bag proposed resolves in a fully satisfactory manner the aforementioned problem on the basis of a simple but highly effective solution.

[0007] To this end, and more specifically, the bag of the invention is characterised in that the rectangular development thereof, instead of having its vertices at a right angle, presents sharply rounded vertices, so that on its arrangement on the corresponding rotating plate of the microwave, it does not represent an obstacle to the rotation of the plate, and therefore, the package itself, as it does not have sharp ends that could get stuck on the walls of the microwave. Therefore, it is not even necessary to arrange said package in a particular position since its own structure facilitates that the bag, as it swells due to the increase in volume of the corn grains, adapts to the internal volume of the microwave, remaining perfectly centred and enabling its rotation, thus achieving a uniform distribution of heat, and therefore, obtaining a greater number of perfectly cooked popcorn from a same volume of properly treated corn grains.

[0008] With regard to the process of manufacture of the bag, it does not require major changes in the production chain, since as in the case of conventional bags, it is based on a tubular body of considerable length, which is closed by one of its ends, it is filled with the volume of pretreated corn grains, and once ready, it is closed by heat sealing by its other end. Therefore, the only thing that changes is the configuration of the heat sealing and the manner of die-cutting the bags, which even though in conventional bags no waste generated as the cutting is perpendicular to the tubular element, in this case blades will be used which define a curved trajectory at its ends, and which cross-sectionally cut the tubular body, such that a small removable sector will be generated, which could be easily recycled.

[0009] In this way, a bag with a simple structure, but which allows a much greater yield than conventional popcorn bags is obtained.

[0010] Although the bag has been described and is intended preferably and fundamentally for the obtaining of popcorn, its use to contain any other type of product that needs to be packaged for later cooking in microwaves, such as pellets or other types of food that can be packed in a bag with these characteristics, is not discarded.

DESCRIPTION OF THE DRAWINGS

[0011] To complete the description that is going to be made and to assist a better understanding of the invention's characteristics, according to a preferred practical exemplary embodiment thereof, accompanying as an integral part of said description, is a set sheet of drawings, where in an illustrative and non limiting way, the following is represented:

Figure 1.- shows an illustration corresponding to a plan view of a bag for cooking corn grains in a microwave made in accordance with the object of the present invention.

Figure 2.-shows an illustration corresponding to a profile view of the bag of the invention arranged for use, i.e. with its ends folded over the central sector of the bag, before being introduced into the corresponding microwave.

Figure 3.-shows a similar view to that of Figure 2,

but in an intermediate phase of unfolding thereof, when the cooking of the product contained within the bag takes place in a microwave.

Figure 4.-shows a plan view of a completely unfolded bag within a microwave, this being represented schematically, including arrows which indicate the rotation of the plate and, therefore, of the bag, without it becoming an obstacle with the microwave walls preventing its own rotation.

Figure 5.-shows, finally, a plan view of various configurations of the vertices of the bags.

PREFERRED EMBODIMENT OF THE INVENTION

[0012] As can be seen in the mentioned figures, the bag of the invention is of the type of those intended to contain a foodstuff, preferably properly treated corn, intended for cooking in microwaves, so that said bag (1) has a central sector (2) in which is properly positioned the product to be cooked, and two side sectors (3) delimited relative to the central sector (2) through corresponding folding lines (4) in order to facilitate the increase in volume of the bag, necessary because of the volume increase that the corn grains undergo during cooking.

[0013] As is conventional, in the marketing of the package, the bag is arranged with its side sectors (3) folded and superimposed on the central sector (2), as shown in Figure 2, wherein this assembly can be properly packaged for its protection, package which has not been shown in the figures as it is optional and conventional.

[0014] The bag is intended to be arranged on the rotating plate (5) of the corresponding microwave (6), with the particularity that the configuration of said bag makes does not make it necessary that it be arranged in a concrete and specific way on the plate, but rather it can be arranged in any way, since as its volume begins to increase it will centre itself allowing for the constant rotation thereof, and therefore, the uniform cooking of all the corn grains contained therein.

[0015] To this end, the essential feature of the bag is that the free vertices (7) of the side sectors (3) have a chamfered or rounded configuration that prevents the bag getting stuck on impacting said side sectors with the walls of the microwave, avoiding any kind of retention of the bag in its rotation on the plate (5).

[0016] Figure 4 clearly shows the bag (1) with the central sector with its rectangular shape and its rounded vertices (7), located on the corresponding rotating plate (5) of the microwave (6), the arrows (8) indicating the direction of rotation of said plate (5) and, therefore, of the bag (1) that has been previously arranged on said plate with the side sectors (3) properly folded over the central area (2).

[0017] And finally, in Figure 5 various configurations of the chamfered vertices are shown.

Claims

1. A bag for cooking corn grains in a microwave in order to obtain the classic "popcorn", which on the basis of the materials commonly used in these types of bags are obtained from a tubular body within which are placed the corresponding corn grains with treatment that is deemed suitable, the tubular body which is sealed by its ends, adopting a flattened arrangement and said ends or sides (3) remaining folded over the central area (2) of the bag (1) in packaged arrangement, **characterised in that** the free vertices (7) of the side sectors (3) present a strongly chamfered configuration.

2. The bag for cooking corn grains in a microwave according to claim 1, **characterised in that** the free vertices (7) can be of rounded or polygonal configuration.

3. The bag for cooking corn grains in a microwave according to claim 1, **characterised in that** the bag is susceptible of including another type of food whose cooking involves an increase in the volume thereof.

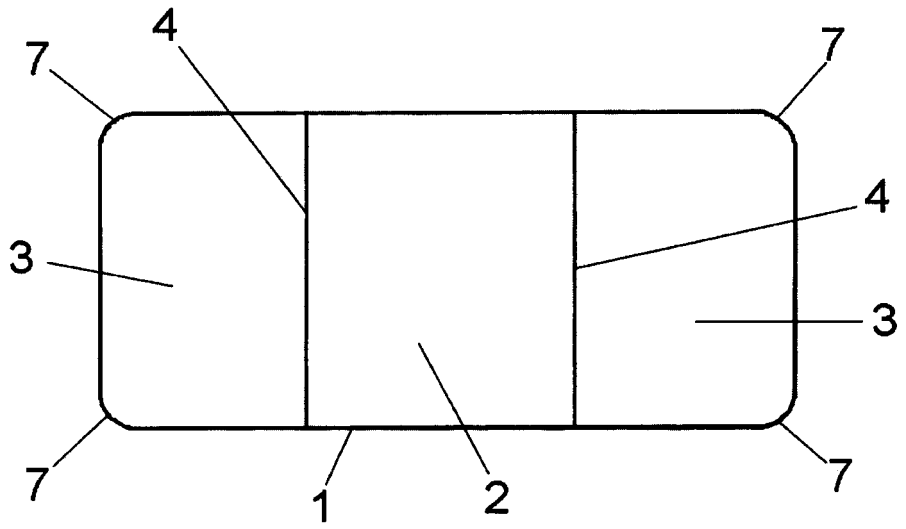

FIG. 1

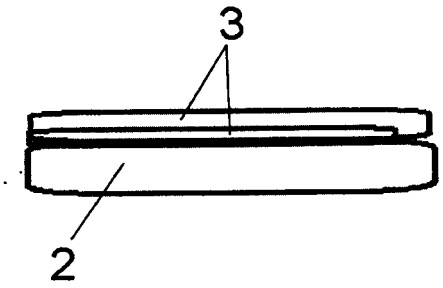

FIG. 2

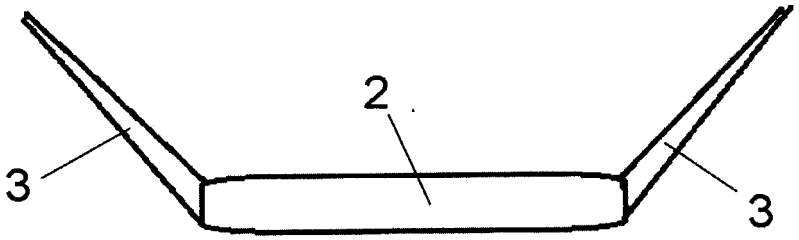

FIG. 3

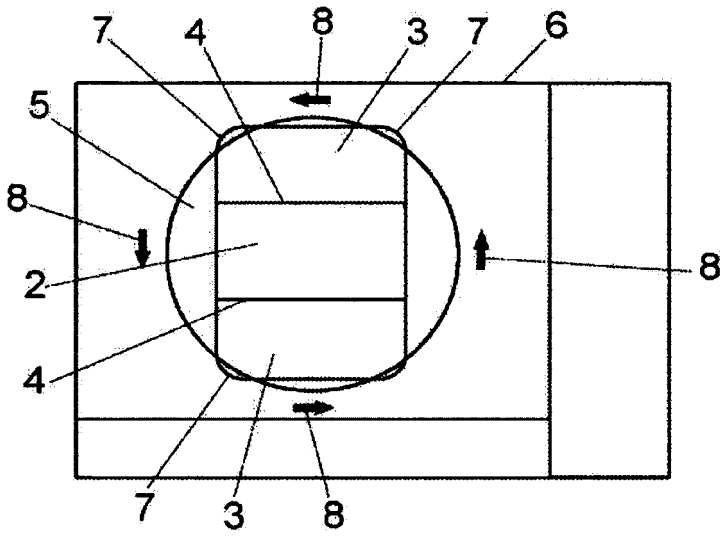

FIG. 4

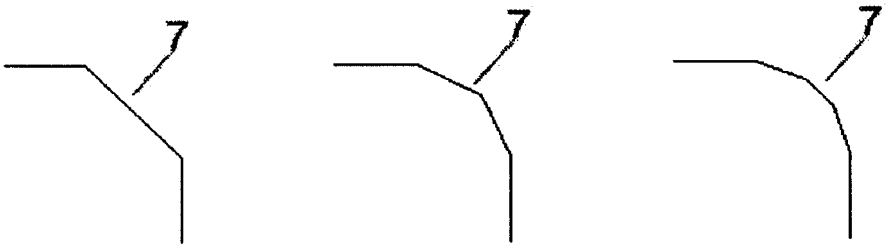

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2015/070949

A. CLASSIFICATION OF SUBJECT MATTER

B65D81/34 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

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 practicable, search terms used)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9319566 A1 (GOLDEN VALLEY MICROWAVE FOODS) 30/09/1993, description: page 6, line 12 - page 8, line 25; figures.	1-3
X	US 5958482 A (MONFORTON RANDAL J) 28/09/1999, description: column 3, line 17-40; column 7, line 18-42; figures.	1-3
A	WO 9222475 A1 (HUNT WESSON INC) 23/12/1992, description: page 4, line 26 - page 5, line 3; page 10, line 1-18; page 12, line 9-13; figures.	1-3
A	WO 03022006 A1 (GEN MILLS INC ET AL.) 13/03/2003, description: page 2, line 1-27; page 3, line 20-30; page 6, line 1-13; figures.	1-3

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15/09/2016	**(16/09/2016)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer E. Pértica Gómez Telephone No. 91 3493271

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2015/070949

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6410065 B1 (NOTTINGHAM JOHN R ET AL.) 25/06/2002, description: column 6, line 54 - column 7, line 2; figures.	1-3

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ES2015/070949

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
WO9319566 A1	30.09.1993	US5302790 A	12.04.1994
		US5357086 A	18.10.1994
		JPH07505109 A	08.06.1995
		EP0630552 A1	28.12.1994
		EP0630552 A4	02.01.1997
US5958482 A	28.09.1999	AR015189 A1	18.04.2001
		WO9920542 A1	29.04.1999
		US6066346 A	23.05.2000
		HK1032943 A1	03.02.2006
		EP1047614 A1	02.11.2000
		EP1047614 B1	07.12.2005
		CN1282302 A	31.01.2001
		CN1113027C C	02.07.2003
		BR9804406 A	09.11.1999
		AU1095699 A	10.05.1999
		AU749483B B2	27.06.2002
		AT312025T T	15.12.2005
WO9222475 A1	23.12.1992	US5460839 A	24.10.1995
		MX9202863 A	01.05.1993
		CA2111328 A1	23.12.1992
		CA2111328 C	22.10.1996
WO03022006 A1	13.03.2003	US2003044491 A1	06.03.2003
		US6660983 B2	09.12.2003
		US2004217112 A1	04.11.2004
		US6951999 B2	04.10.2005
		US2002106427 A1	08.08.2002
		US6733807 B2	11.05.2004
		CA2459259 A1	13.03.2003
US6410065 B1	25.06.2002	US4898561 A	06.02.1990

Form PCT/ISA/210 (patent family annex) (January 2015)