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(54) **Container with flexible walls and overpressure relief valve**

(57) Container having flexible walls and an overpressure relief valve, comprising at least two walls that can be attached to each other, one of them having a hole around which the two walls are joined together in a con-

tour located at certain distance from the hole. The aforementioned union between the two walls has a resistance to the separation of said walls which is lower than the resistance to the breaking down of the container.

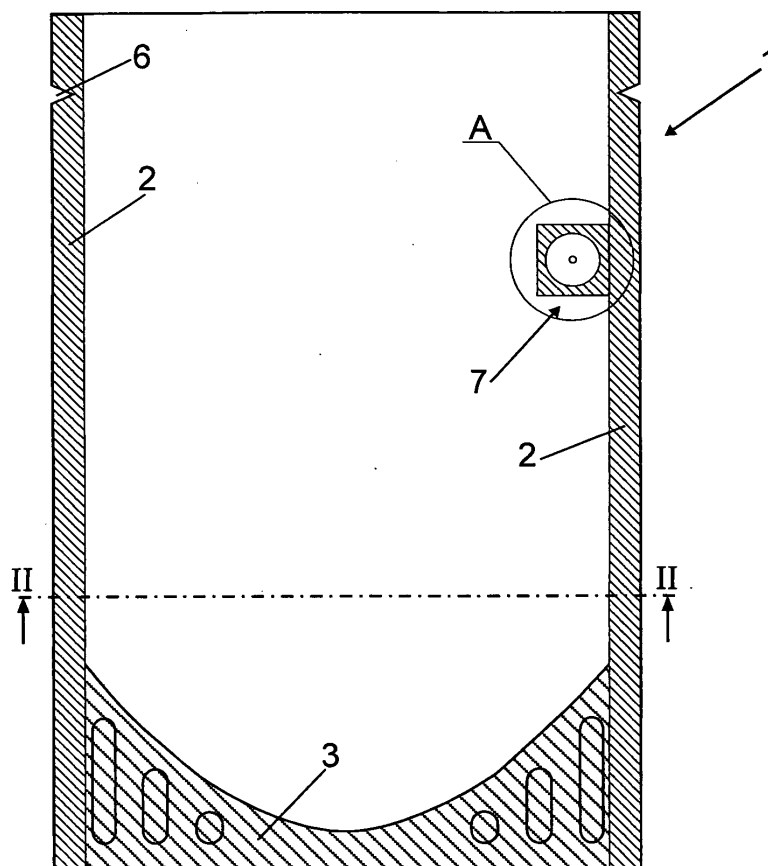


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention refers to a container having flexible walls and an overpressure relief valve, hermetically sealed, designed to contain a product which can generate overpressure inside the container, which can cause the container to break.

[0002] The container of the invention will be preferably made of plastic and it can be designed to store food with a certain degree of humidity and which, before eaten, must be heated, usually in a microwave.

BACKGROUND OF THE INVENTION

[0003] When a hermetically sealed container having food with a certain degree of humidity is placed in a microwave, this humidity transforms into steam, producing overpressure inside the container. If this overpressure is not controlled, it can cause the destruction of the container, and as a result, the product contained is spilt or scattered.

[0004] It is very frequent to use this type of plastic containers with flexible walls, hermetically sealed, containing some sort of food product, capable of producing overpressure inside said container, due to steam formation or degasification of the product contained. To prevent the overpressure responsible for the possible breaking of the container, these containers have an overpressure relief valve, which is manufactured as an independent component from the container, generally made of materials other than the one forming the container walls, and which is attached or fixed to said container during the mounting process.

[0005] This solution requires that the valve be manufactured separately and later assembled to the container, thus these operations causing an increase of the container manufacturing costs.

DESCRIPTION OF THE INVENTION

[0006] The object of the present invention is a container having flexible walls and an overpressure relief valve, which instead of being an independent component is formed from two of the container walls, said walls being part of the valve.

[0007] In this way, the valve can be made in the container itself during the manufacturing process of the container.

[0008] According to the present invention, the container has in one of the aforementioned walls a hole, and the two walls forming the valve are joined together in a contour around said hole, at certain distance from it. Thus, the outlet of the container through said hole is closed by the union of the walls in the aforementioned contour, keeping the airtightness of the container. However, this union between the two walls of the container will have a

resistance to the separation of the walls lower than the resistance to the breaking down of the container.

[0009] With this arrangement, when there is overpressure inside the container for any reason, before any breaking down of the container can occur, the two walls separate, at least partially, to define an outlet for the overpressure.

[0010] The valve controlling the overpressure is constituted by the walls of the container itself and the union between them in a contour around the hole made in one of the walls, which will be the outlet for the overpressure, when the container walls separate from each other at some point of the union contour between said walls.

[0011] Preferably, the container walls will be made of a thermoplastic material, and the union between said walls in a contour around the aforementioned hole will be made by thermo-welding.

[0012] The resistance of the union between the two walls, according to the contour described, will be calculated so that the breaking down or separation occurs when there is a specific overpressure inside the container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The following drawings show an example of an embodiment which will help understand better the characteristics of the container of the invention. In the drawings:

Figure 1 shows a container in the form of a bag, constituted according to the invention.

Figure 2 shows a partial cross sectional view of the container, according to the cutting line II-II of figure 1, at a larger scale.

Figure 3 shows detail A of figure 1.

Figure 4 shows a partial cross sectional view of the container, according to the cutting line IV-IV of figure 3, at a larger scale.

DETAILED DESCRIPTION OF AN EMBODIMENT

[0014] Figures 1 and 2 show a container 1 in the form of a bag, with a general constitution that is well-known, obtained for example from a sheet made of a plastic material which is folded at a medium cross line, the longitudinal edges being joined in thermowelded strips 2 and also at the free cross edges in a thermo-welding area 3 with the shape of a bag, with the two opposite walls 4 and 5. In the thermowelded longitudinal lines 2 it is possible to drill notches 6 to facilitate the opening of the bag.

[0015] The container of the invention, which can have the aforementioned arrangement or any other arrangement, will have flexible walls, preferably made of a thermoplastic material, and an overpressure relief valve, in-

licated with the reference number 7. This valve, as it can be seen better in figures 3 and 4, comprises a hole 8, drilled in one of the container walls 4, in any area thereof, and the union between the two walls 4 and 5 preferably made by thermo-welding, in a contour 9 which is bigger than the hole 8. 5

[0016] The union 9 between the two walls 4 and 5 will have a resistance to the separation of said walls which will be lower than the resistance to the breaking down of the container walls or to the breaking down of any of the closing strips 2 and 3 of the container itself. 10

[0017] In this way, if there is overpressure inside the container, before any breaking down of the container or of the union or closing strips thereof can occur, there is a separation of the two walls along at least part of the union 9 between both walls. The overpressure created inside the container will be released through the hole 8 and the part of the union 9 which is broken or detached. 15

[0018] The overpressure which can be produced inside the container will cause, first of all, the breaking down of at least part of the union 9, with the resulting separation of the two walls, the overpressure being thus released through the open area 10 between the two walls, until the outlet hole 8 is reached. 20

[0019] The union 9 between the two walls can define a contour of any shape, such as circular, polygonal, etc. In any case, the contour of the union area 9 and the open area 10 between walls 4 and 5 are concentric with the hole 6. 25

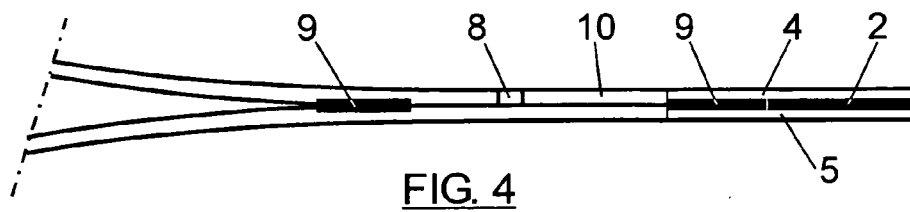
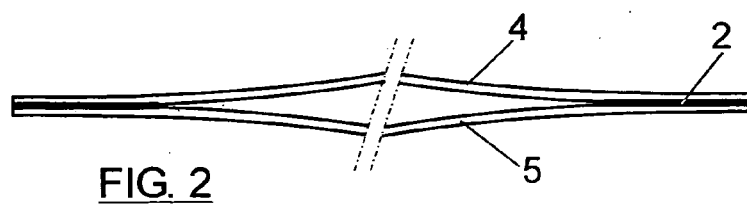
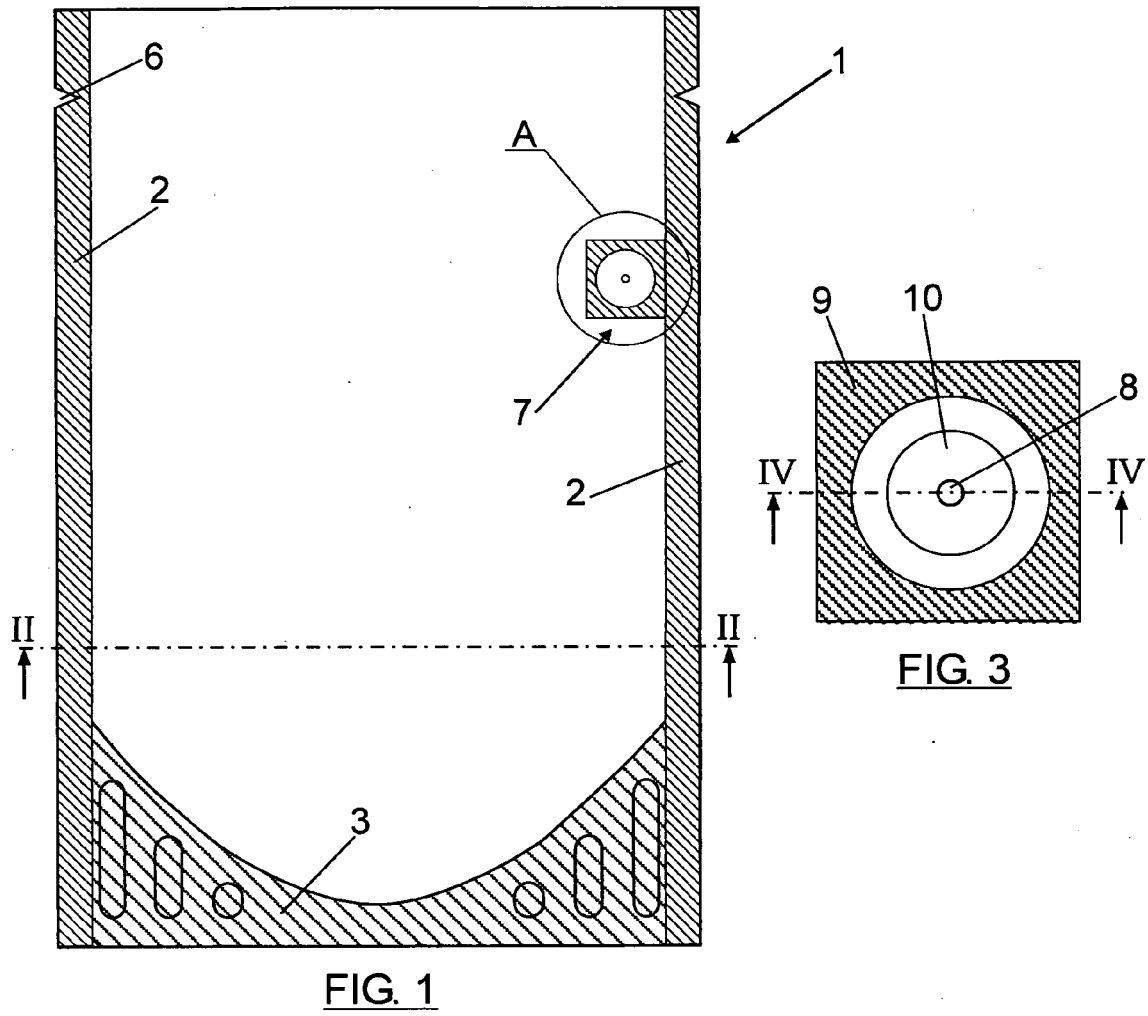
[0020] The aforementioned constitution forms an overpressure relief valve, which has a simple constitution and manufacturing process as well as a reduced cost, and which can be obtained during the manufacturing process of the container itself. 30

[0021] The container can have a constitution and arrangement other than those herein described, as long as it has two walls which can be joined in a contour 9, around the hole 8 drilled in one of these walls. 35

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Claims

1. Container having flexible walls and an overpressure relief valve, comprising at least two walls that can be attached to each other, **characterized in that** one of said walls has a hole and the two aforementioned walls are joined together and sealed to each other in a contour around said hole, at certain distance from it, closing the outlet through said hole; featuring the aforementioned union between the two walls a resistance to the separation of said walls which is lower than the resistance to the breaking down of the container. 45 50
2. Container according to claim 1, **characterized in that** the union of the two walls along the contour around the aforementioned hole is made by thermo-welding. 55





EUROPEAN SEARCH REPORT

Application Number
EP 09 38 0095

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2005/067411 A1 (MONFORTON RANDAL J [US] ET AL MONFORTON RANDAL J [US] ET AL) 31 March 2005 (2005-03-31) * paragraphs [0025], [0031], [0036] * -----	1-2	INV. B65D77/22 B65D81/34
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 October 2009	Examiner Jervelund, Niels
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 38 0095

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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27-10-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005067411 A1	31-03-2005	NONE	

EPO FORM P0459

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