

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 279 605 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.01.2003 Bulletin 2003/05

(51) Int Cl.7: **B65D 1/22**, B65D 25/54,
B65D 51/16, B29C 45/16,
B29C 45/14, B65D 43/02

(21) Application number: **02014070.3**

(22) Date of filing: **01.07.2002**

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

(72) Inventors:
• **Scarabelli, Dionisio**
24060 Cividino di Castelli Calepio (Bergamo) (IT)
• **Scarabelli, Enrico**
24060 Telgate (Bergamo) (IT)
• **Scarabelli, Marino**
24060 Telgate (Bergamo) (IT)

(30) Priority: **25.07.2001 IT MI20011610**

(71) Applicants:
• **Scarabelli, Dionisio**
24060 Cividino di Castelli Calepio (Bergamo) (IT)
• **Scarabelli, Enrico**
24060 Telgate (Bergamo) (IT)
• **Scarabelli, Marino**
24060 Telgate (Bergamo) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(54) **Container for thawing foodstuff in a microwave oven**

(57) A food container, particularly a hermetic container for preserving foods in refrigerators and freezers and for thawing in a microwave oven, comprising a base body (2) with which a lid (10) can be associated hermetically, the lid (10) forming a groove (11) that is open to-

ward the edge (30) of the base body (2). The lid (10) has a substantially rigid central portion (12) with which a substantially elastic peripheral portion (20) that forms the groove (11) is associated. The central portion (12) reaches, in a radial direction, no further than the region delimited by the edge (30).

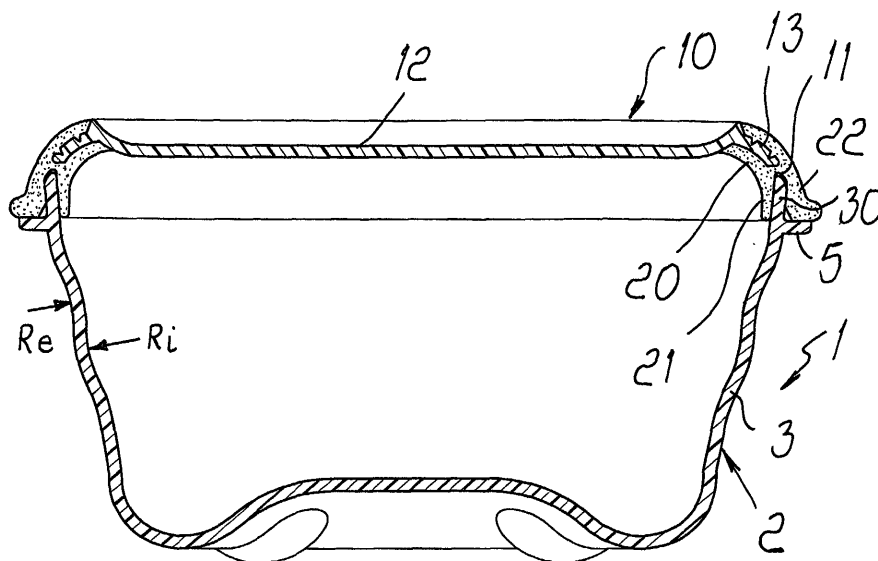


Fig. 1

EP 1 279 605 A2

Description

[0001] The present invention relates to a food container, particularly a hermetic container for preserving foodstuff in refrigerators and freezers and for thawing the foodstuff in a microwave oven.

[0002] As is known, food containers are already commercially available which are devised specifically to be used in refrigerators and freezers and are manufactured so that they can be placed in a microwave oven to heat the product contained therein.

[0003] During heating in microwave ovens, it is necessary to remove the lid of hermetic containers in order to avoid its violent removal due to the pressure of the steam generated during the thawing and subsequent heating of the food.

[0004] This fact causes two kinds of drawback: the first one is that it is necessary to perform a first thawing step in order to allow to remove the lid, and the second one is that heating the container without a lid does not prevent the food from spattering out of the container.

[0005] The prior art solutions have failed to solve the problem adequately and in many cases have led to the provision of complicated structures that nonetheless failed to optimize the problem.

[0006] The aim of the present invention is to solve the above mentioned drawbacks by providing a food container that allows to thaw and heat food contained in the containers in a microwave oven without having to first remove the lid, thus allowing a single transfer from the freezer to the microwave oven, reducing the thawing time required, by eliminating the pause for thawing at ambient temperature and improving the general processing conditions, since outward spattering is prevented.

[0007] Within this aim, an object of the present invention is to provide a food container that can be placed in a microwave oven for thawing yet is capable of achieving a perfect hermetic seal, preventing the mixing of odors produced by different foods from mixing inside the refrigerator.

[0008] Another object of the invention is to provide a container that allows optimum adhesion for the closure of the lid on the container by performing particularly simple operations.

[0009] Another object of the invention is to provide a food container that thanks to its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use.

[0010] This aim and these and other objects that will become better apparent hereinafter are achieved by a food container, particularly a hermetic container for preserving foodstuff in refrigerators and freezers, according to the invention, comprising a base body with which a lid can be associated hermetically, such lid forming a groove that is open toward the edge of the base body, characterized in that said lid has a substantially rigid central portion with which a substantially elastic periph-

eral portion that forms the groove is associated, said central portion reaching, in a radial direction, no further than the region delimited by said edge.

[0011] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a food container, particularly a hermetic container for preserving food in refrigerators and freezers, illustrated by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic sectional view, taken along a transverse line, of a food container according to the invention;

Figure 2 is a sectional view of multiple stacked base bodies of the container;

Figure 3 is an exploded sectional view of the detail of the connection between the lid and the base body;

Figure 4 is a sectional view of the container in the closed position;

Figure 5 is a schematic view of the deformation undergone by the lid when the product in the container is heated.

[0012] With reference to the figures, the food container, particularly a hermetic container for preserving food in refrigerators and freezers, according to the invention, generally designated by the reference numeral 1, comprises a base body 2 advantageously made of a plastics that is compatible for use with foodstuffs.

[0013] As shown in cross-section, the base body 2 has a lateral surface that is advantageously inclined outwardly and has a substantially sinusoidal transverse cross-section.

[0014] Satin-finished bands and clear bands can be present alternately on the walls 3 in order to better view the contents of the container.

[0015] Advantageously, the curved portions that define the sinusoidal path have internal radii of curvature R_i and external radii of curvature R_e that are substantially identical one another.

[0016] Proximate to the upper part of the side wall there is a flange-like rim, designated by the reference numeral 5, that affects peripherally the entire base body 2 and acts as a stiffening element.

[0017] A lid 10 can be coupled to the base body 2 and forms perimetrically a groove 11 that is open toward the base body 2.

[0018] In greater detail, the lid 10 has a substantially rigid central portion 12 that ends peripherally with a protruding tab 13 on which a peripheral portion 20 is applied, such portion forming the groove 11 and being advantageously made of elastically flexible material.

[0019] A particularity of the invention is that the tab 13, and accordingly the rigid portion of the lid 10, reaches or extends in a radial direction no further than, or substantially up to, the region delimited by the edge 30 of

the base body.

[0020] The edge 30 of the base body is substantially straight and is preferably provided on the continuation of the lateral surface of the base body, with an inclination comprised between 0 and at the most 10°.

[0021] The peripheral portion, which is made of elastically flexible material, defines in practice an inner lip 21 and an outer lip 22, between which the groove 11 is located; the inner lip mates with the inner surface, achieving an excellent hermetic seal, in cooperation with the outer lip 22, which mates both with the outer surface of the edge 30 and with the flange rim 5 that engages by contact the lower edge 22a of the outer lip.

[0022] This arrangement provides an optimum hermetic seal, since it produces a synergistic effect between the elastic peripheral portion and the rigid central portion, which in conditions of normal use increases the adhesion that occurs between the lips 21 and 22 and the edge 30.

[0023] It should also be noted that the radial end of the tab 13 reaches at least one third of the thickness of the edge 30, and therefore the rigid portion can surmount, in practice, the edge that enters the groove 11 but can never protrude radially with respect to the outside and the inside.

[0024] Thereby the particular shape of the tab 13, which has a concavity directed toward the base body, when the container is placed in the microwave oven, the pressure generated inside the container applies an outward thrust to the rigid portion or central portion of the lid 10, which causes an oscillation of the tab 13 that surmounts the inner lip 21, which is forced to rotate, moving away from the inner surface of the edge 30, thus weakening the seal.

[0025] Likewise, due to this deformation, the outer lip 22 that engages an upper portion of the edge 30 splays outward, thus forming a sort of reduced seal region that allows to vent outward the steam that acts as a lubricant on the resting region and, by venting gradually out, avoids the expulsion of the lid.

[0026] It should be added to the above that on the edge 30, above the region affected by the rim 5, it is possible to provide through holes 40 arranged at a distance from the free border of said edge that is shorter than the depth of the groove 11. The holes 40 are designed to further facilitate the escape of steam during heating and the escape of air in the initial steps of the depressurization of the container, before it is placed in the refrigerator, such depressurization occurring by applying to the lid a pressure from the outside toward the inside.

[0027] The thicknesses of the inner lip and outer lip, which are made of elastically flexible material, can have different mutual ratios, although the best results have been obtained by using substantially identical thicknesses.

[0028] In practical operation, as shown in Figure 5, the steam, by applying force to the inner surface of the

lid, forces it to deform inward the tab 13, separating the inner lip 21 from the inner edge 30, allowing the steam to be interposed between the two surfaces, lubricating them and facilitating the lifting of the lid without explosion.

[0029] It is therefore evident from the above description that the invention achieves the intended aim and objects; the fact is further stressed that the particular mutual arrangement of the rigid parts and the soft parts of the cover allows to obtain a gradual venting of the steam without having to resort to the use of valves and without risking any violent expulsions of the lid or even explosions.

[0030] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0031] All the details may further be replaced with other technically equivalent elements.

[0032] The materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements.

[0033] The disclosures in Italian Patent Application No. MI2001A001610 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

35 Claims

1. A food container, particularly a hermetic container for preserving foodstuff in refrigerators and freezers and for thawing in a microwave oven, comprising a base body (2) with which a lid (10) can be associated hermetically, said lid (10) forming a groove (11) that is open toward the edge (30) of said base body (2), **characterized in that** said lid (10) has a substantially rigid central portion (12) with which a substantially elastic peripheral portion (20) that defines said groove (11) is associated, said central portion (12) reaching, in a radial direction, no further than the region delimited by said edge (30).
2. The container according to claim 1, **characterized in that** said base body (2) has a lateral surface (3) that is inclined outward and has, in transverse cross-section, a substantially sinusoidal shape.
3. The container according to the preceding claims, **characterized in that** it comprises, on the lateral surface (3) of said base body (2), satin-finished bands alternated with clear bands.

4. The container according to one or more of the preceding claims, **characterized in that** the curved portions of said sinusoidal shape have internal radii (Ri) of curvature that are substantially equal to the external radii (Re) of curvature. 5
5. The container according to one or more of the preceding claims, **characterized in that** said edge (30) of said base body (2) is substantially straight and is arranged on the continuation of said lateral surface, proximate to said edge (30), an outer rim (5) being provided on said base body (2). 10
6. The container according to one or more of the preceding claims, **characterized in that** said substantially rigid central portion (12) is provided peripherally with a protruding tab (13) on which said peripheral portion (20) made of flexible material is applied. 15
7. The container according to one or more of the preceding claims, **characterized in that** said peripheral portion (20) made of flexible material forms, in transverse cross-section, an inner lip (21) and an outer lip (22) that delimit said groove (11), said inner lip (21) being hermetically associable with the inner surface of said edge (30) and said outer lip (22) being associable with the outer surface of said edge (30) and with said rim (5). 20
25
8. The container according to one or more of the preceding claims, **characterized in that** the radial end of said tab (13) reaches at least one third of the thickness of said edge (30). 30
9. The container according to one or more of the preceding claims, **characterized in that** said tab (13) has a concavity that is directed toward said base body (2). 35
10. The container according to one or more of the preceding claims, **characterized in that** the pressure applied to the inside of said container (1) during heating generates an oscillation of said tab (13) with a consequent inward oscillation of the inner lip (21) of said groove (11) and an outward oscillation of the outer lip (22). 40
45
11. The container according to one or more of the preceding claims, **characterized in that** it comprises, on said edge (30) of said base body (2), above the region affected by said rim (5), at least one through hole, which is arranged at a distance from the free border of said edge (30) that is shorter than the depth of said groove. 50
55

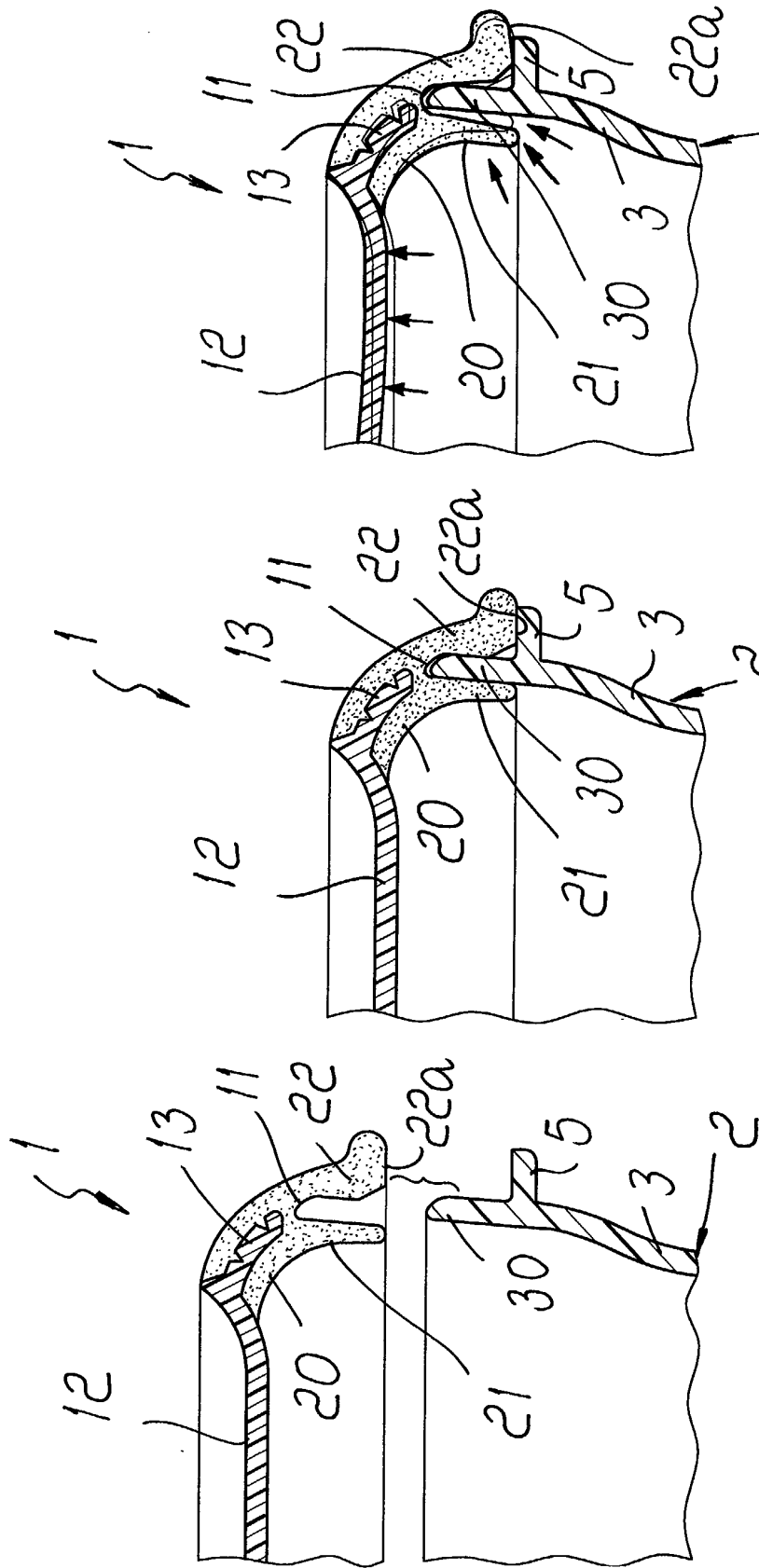


Fig. 3

Fig. 4

Fig. 5