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Huffman et al.(10) **Pub. No.: US 2021/0002036 A1**(43) **Pub. Date: Jan. 7, 2021**(54) **PACKAGED FOOD PRODUCT FOR
HEATING IN OVEN****B65D 75/00** (2006.01)**B65D 81/34** (2006.01)(71) Applicant: **SOCIÉTÉ DES PRODUITS NESTLÉ
S.A., Vevey (CH)**(52) **U.S. Cl.****CPC** **B65D 43/021** (2013.01); **B65D 51/1666**
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81/3415 (2013.01)(72) Inventors: **Samuel Lamar Huffman**, Aurora, OH
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Feb. 12, 2018.**Publication Classification**(51) **Int. Cl.****B65D 43/02** (2006.01)**B65D 51/16** (2006.01)

(57)

ABSTRACT

A packaged food product for being heated in an oven or heater includes a container with a food and a lid. The container includes an inwards raised bead at the inner wall of the container near the opening end of the container. The lid includes a recess designed to engage with the raised bead at the inner wall of the container in such a way as to snap-close the container. The food is located in the container.

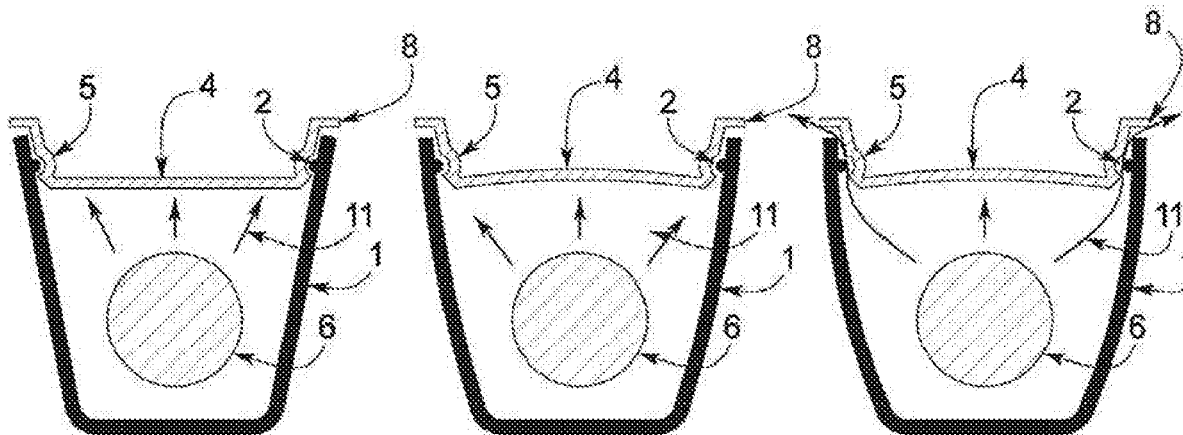


FIG. 1A

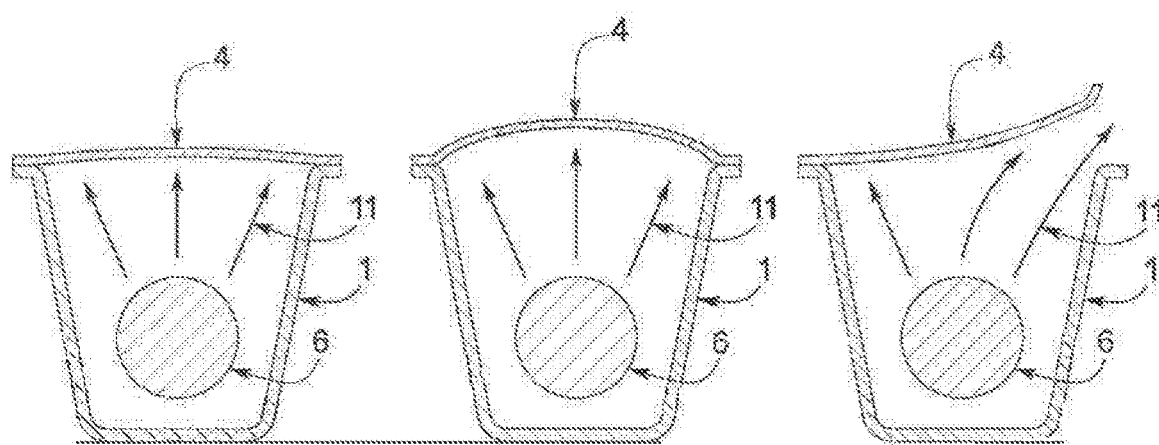


FIG. 1B

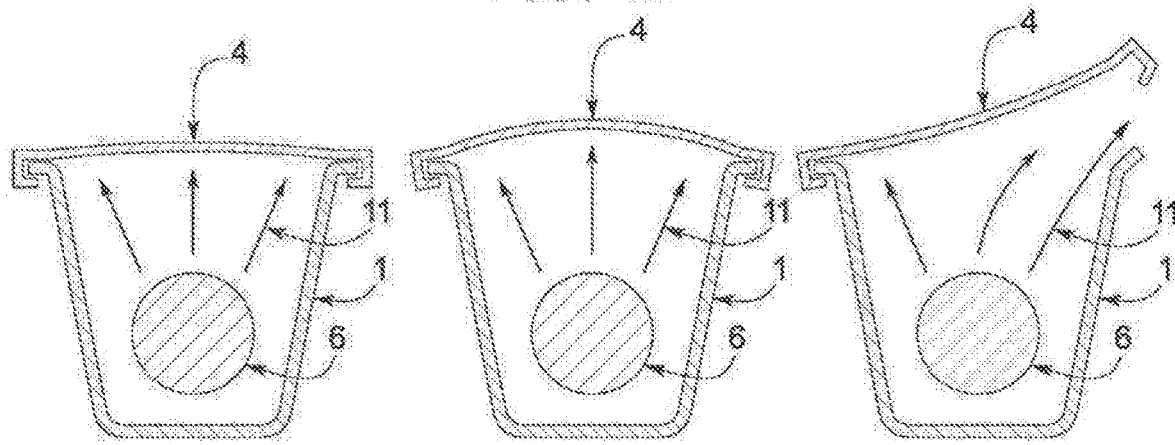


FIG. 2A

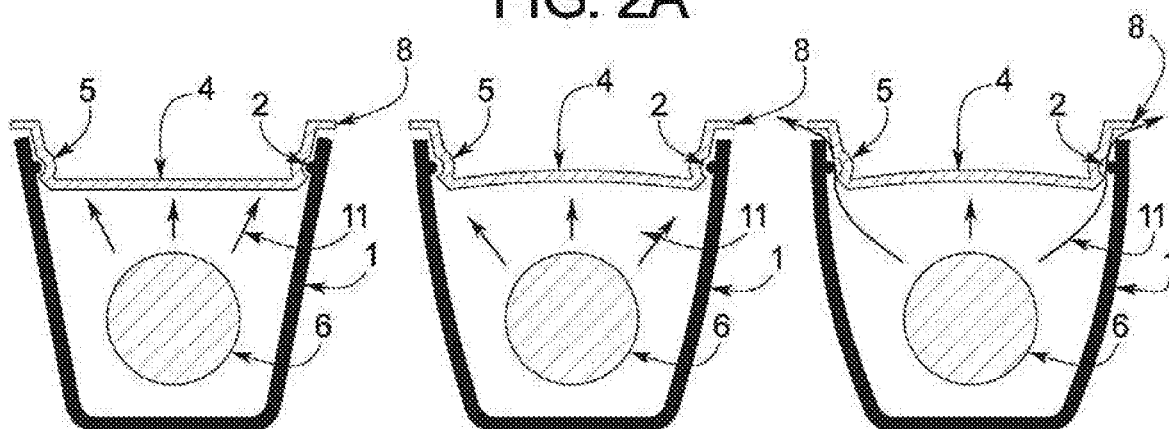


FIG. 2B

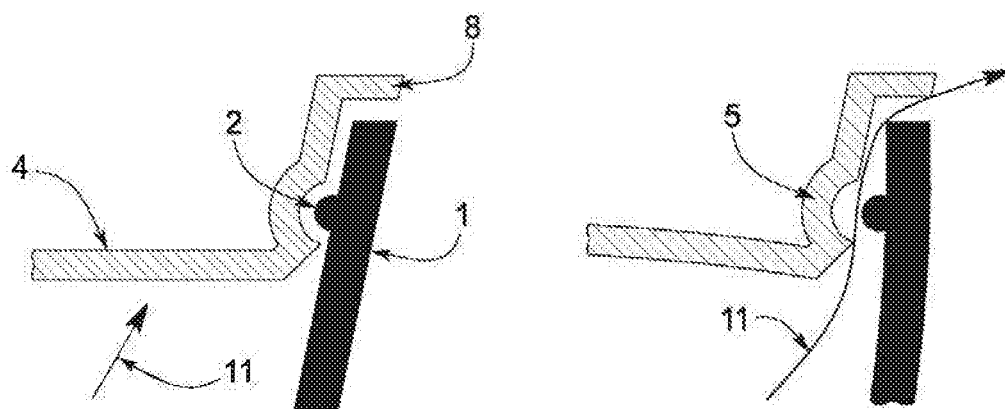


FIG. 3

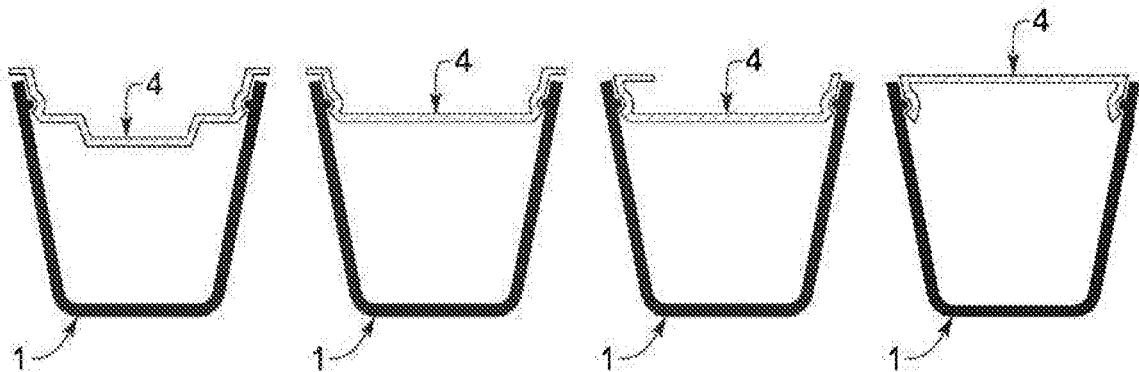


Fig. 4A

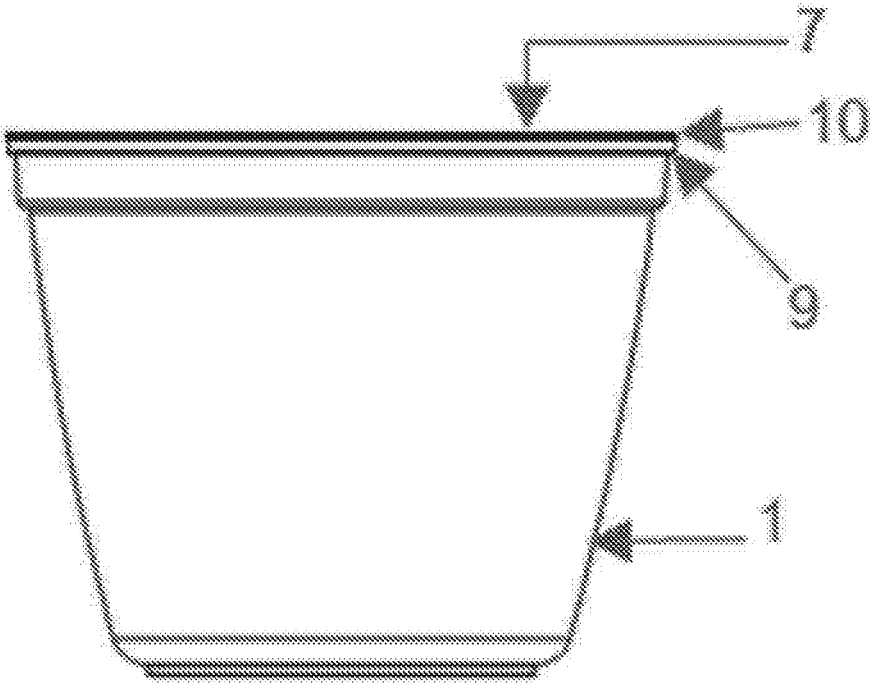


Fig. 4B

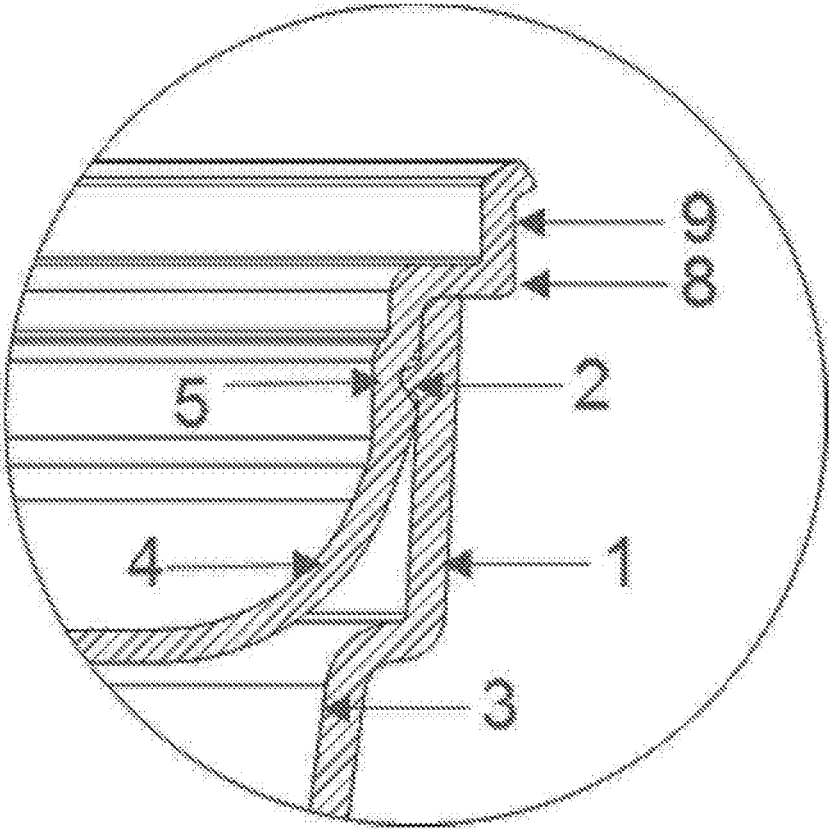
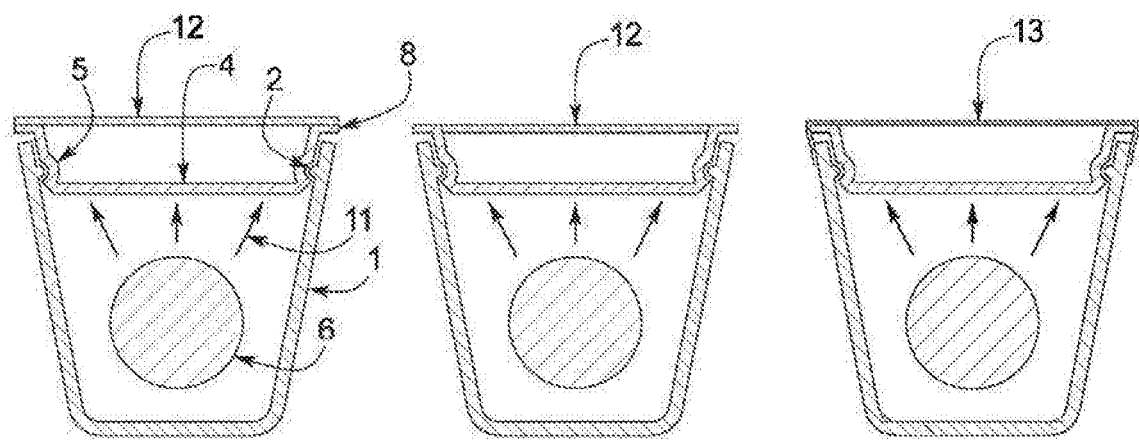


FIG. 5



PACKAGED FOOD PRODUCT FOR HEATING IN OVEN

PRIORITY CLAIM

[0001] This application is a continuation of U.S. application Ser. No. 15/893,956 filed Feb. 12, 2018, the entire contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a packaged food product for being heated in an oven, the packaged food product comprising a container with a food and a lid.

BACKGROUND OF THE INVENTION

[0003] A great variety of packaged convenience and prepared foods are available today to consumers on the market place. Typically, such products are prepared by food manufacturers and sold either ambient, chilled or frozen, to be prepared by a consumer for example by heating in an oven or microwave oven, either at home or out of home. The food can then typically be consumed directly from the provided packaging container or being transferred to another dish for consumption.

[0004] Typically, the prepared food is provided in a container such as a cup, tray or bowl, where the container is closed either by a lid and/or a sealed-on film or membrane. The consumer then has to open the container by partially or completely removing the lid and/or the membrane before heating the food product in the container in an oven or microwave oven. Some packages have an "auto-vent" feature such as a perforated seam or a sticker over an opening to release steam from the container produced during heating of the food product. Such a release is usually quite violent and a destructive mechanism, in the sense of breaking open a closed seal. Such a mechanism typically does not allow for re-sealing of the vent. Micro-wave ovens have become an increasing popular means for cooking/heating such packaged food products due to consumer convenience, shorten time for cooking and energy efficiency.

[0005] However, there is still a continuing need for packaged convenience food products that suit the trend and convenience aspect of as many consumers as possible. Particularly, consumers will be drawn to convenience products that can be prepared conveniently and safely. Therefore, there is a specific need for providing packaged food products that can be prepared by a consumer conveniently and safely, and which would also reduce the risk of spilling and spattering of the food product during preparation and heating of the product. Particularly also there is still a persisting need to provide a packaged food product solution which reduces the risk of spoilage and/or contamination of the food product per se before and/or during the heating step of the product in an oven. This is particularly evident as known packaged prepared meal products presently found on the market place need to be opened before heating in an oven, for example in a microwave oven, in order to avoid rupture of the packaging or closing material due to the generation of steam produced by the heating of the moist food comprised in said packaged meal products.

SUMMARY OF THE INVENTION

[0006] The object of the present invention is to improve the state of the art and to provide a new improved solution to overcome at least some of the inconveniences described above.

[0007] Particularly, the object of the present invention is to provide a packaged food product in a container, the food product which can be heated and/or cooked in an oven, such as a microwave oven, without the need to open the packaged food product, e.g. without removing the cover or lid of the container, before the heating and/or cooking step.

[0008] The object of the present invention is achieved by the subject matter of the independent claims. The dependent claims further develop the idea of the present invention.

[0009] Accordingly, the present invention provides a packaged food product comprising a container, a lid and a food, characterized in that:

[0010] the container comprises an inwards raised bead at the inner wall of the container near the opening end of the container;

[0011] the lid comprises a recess designed to engage with the raised bead at the inner wall of the container in such a way as to snap-close the container;

[0012] the food is located in the container;

[0013] wherein the packaged food product is suitable for being heated in an oven or a heater without the need of removing the lid from the closed container.

[0014] The present invention provides the user with an easy-to-open container for heating food in an oven, for example in a microwave oven, and consuming the food directly from the container. The container protects the consumer from the heated product and allows for easy re-seal of the closure.

[0015] Current prior art solutions require the user or consumer to open a container comprising a prepared meal before putting and heating the meal in an oven. Prepared meals usually are wet, e.g. when defrosted, and comprise water. Heating such a product in an oven will generate steam which would disrupt, usually quite violently, a packaging material, lid, membrane or film when not opened or provided with a valve. A schematic drawing of such prior art solutions are shown in FIG. 1A and FIG. 1B.

[0016] Current prior art solutions require the user for example to tear open a carton, to remove a tray type package, to puncture or remove a film for release of steam, covering to vent in the microwave, or peel back a thin film before heating and consuming. This presents a number of challenges for the user; they must tear the carton open which can be difficult and messy; puncture the film, which requires a sharp tool and extra step; and peel back a film cover once the food is heated for example, which is wet, shreds, and can release hot steam and burn the user. The instructions are often lost as the carton is pre-emptively thrown away or are inaccessibly printed on the package that is in the oven.

[0017] Hence, the present inventors have found that when providing a container with an inwards raised bead at the inner wall of a container near the opening end of said container, and closing said container with a lid comprising a recess designed to engage with the raised bead at the inner wall of the container in such a way as to snap-close the container with said lid, a packaged food product can be made containing a wet-based food in the container, where the packaged food product can be heated in an oven without the need of first opening or venting the container from the lid. In fact, the packaged food product can be heated or even cooked in an oven without first removing the lid from the container. The specific closure of the container with the lid of the present invention provides a solution where e.g. steam, generated by evaporation of water from the heating

of the meal inside of the container, can be evacuated from the container at the closure junction between the container and the lid due to the pressure produced by the steam. Thereby, steam can be evacuated at this closure junction without actually opening and removing the lid from the container. Upon release of the steam and its internal pressure, the packaged product closes itself again completely due to the design and the rigidity of the container and lid material. A schematic representation of this solution is shown in FIG. 2A and FIG. 2B. As a consequence, there is less spilling and less risk of contaminating the food of the packaged food product during its preparation, i.e. before, during and/or after the heating or cooking step. There is also a less risk for consumers to burn their fingers.

[0018] Schematic representations of some further possible embodiments of the present invention are shown in FIG. 3.

DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1A and FIG. 1B: Schematic drawings of prior art packaged food product solutions when heated closed in an oven. The arrows indicate presence and pressure of steam originating from water evaporation from the heating of the food product in the container. Upon generation of sufficient steam pressure, the packaging violently ruptures usually at the interphase between the container and a closing film or lid. FIG. 1A) shows a typical packaged product with a film sealed lid; and FIG. 1B) shows a typical packaged product with a snap-fit lid. Figure legend: container (1), film or lid (4), food (6), water steam (11).

[0020] FIG. 2A and FIG. 2B: Schematic drawing of a packaged food product of the present invention. FIG. 2A) shows the full packaging with the release of steam generated through water evaporation upon heating of the food; and FIG. 2B) shows an enlargement of the junction between the container and the lid. Figure legend: container (1), inwards raised bead (2), lid (4), recess (5) in the lid to engage with the raised bead (2), food (6) in the container (1), rim (8) at the periphery of the lid, bend of lid forming a bay, niche or indent (12), steam (11) generated by the evaporation of water from the food (6) when heated.

[0021] FIG. 3: Schematic drawings of some different embodiments of the packaged food product of the present invention. Container and bead are in black, the lid is shown with perforated lines.

[0022] FIG. 4A and FIG. 4B: Drawing of a preferred embodiment of the packaged food product of the present invention. FIG. 4A) shows the side view of the product; and FIG. 4B) shows an enlargement of a partial cross-sectional view of the junction between the container and the lid. Figure legend: container (1), inwards raised bead (2), lid (4), recess (5) in the lid to engage with the raised bead (2), rim (8) at the periphery of the lid, circumferential extending neck (9) at the rim of the lid.

[0023] FIG. 5: Schematic drawings of an embodiment of the packaged food product of the present invention showing the disk or film (10) and further showing the shrink wrap (13).

DETAILED DESCRIPTION OF THE INVENTION

[0024] The present invention provides a packaged food product comprising a container, a lid and a food, characterized in that:

[0025] the container comprises an inwards raised bead at the inner wall of the container near the opening end of the container;

[0026] the lid comprises a recess designed to engage with the raised bead at the inner wall of the container in such a way as to snap-close the container;

[0027] the food is located in the container;

[0028] wherein the packaged food product is suitable for being heated in an oven or a heater without the need of removing the lid from the closed container.

[0029] Preferably, the packaged food product is a prepared meal product. A “prepared meal product” is a food product which has been prepared by a food manufacturer and which is sold, typically ambient, chilled or frozen, to be prepared by a consumer for example by heating in an oven, such as a microwave oven, and be consumed at home or out of home.

[0030] Preferably, the packaged food product of the present invention is a chilled or frozen prepared meal product.

[0031] The inwards raised bead at the inner wall of the container of the present invention is near the opening end of the container. Thereby, “near” means at the opening end of the container, or a short or very short distance away from that opening end of the container. The location of the inwards raised bead defines the closure junction of the container between the container and the lid. It should be such that the function of the container, i.e. to provide sufficient space to contain a prepared meal in the container and to enable an appropriate closure of that container with a lid, is preserved.

[0032] In one embodiment of the present invention, the inwards raised bead leads at least part around the circumference of the container. Preferably, the inwards raised bead leads around the entire circumference of the container.

[0033] In one embodiment of the present invention, the container of the packaged food product of the present invention is a bowl, a cup, a beaker, a jar, a ramekin or a goblet.

[0034] In a preferred embodiment, the opening end of the container is round or oval. Thereby, “oval” meaning the opening end to have a rounded and slightly elongated outline or shape, like e.g. the shape of an egg.

[0035] In one embodiment of the present invention, the container and the lid are made of a material suitable for being heated in a microwave oven.

[0036] In a further embodiment of the present invention the material of the container and of the lid is rigid. For the present invention, “rigid” means that the material is firm and/or stiff with a certain hardness. The material should not be completely inflexible; but upon bending by force, the material should regain its original form upon release of said force. The rigidity of the material is thereby determined by its chemical nature as well as its thickness.

[0037] In a preferred embodiment, the material of the container and lid of the present invention is selected from polypropylene, crystallized polyethylene terephthalate (CPET), plastic, molded pulp fiber, laminated molded fiber, or a combination thereof. In a further preferred embodiment, the material of the container and lid of the present invention has a thickness from 0.5 to 5 mm, preferably from 0.6 to 4 mm, more preferably from 0.7 to 3 mm, even more preferably from 0.8 to 2 mm.

[0038] In another embodiment of the present invention, the material of the container and lid is steam- and water-

proof. Preferably, the material is also steam- and water-proof when heated to a cooking temperature of 100° C. or of 120° C.

[0039] In one embodiment of the present invention, the lid of the packaged food product comprises a rim at the periphery designed for the lid to sit on the opening end of the container. Preferably, the lid further comprises a circumferential extending neck at the rim. This will allow to nicely place the lid on top of a container in such a way as to ease its handling and opening by a consumer.

[0040] In a further embodiment, the lid is bent inwards in direction of the container in order to form a bay, niche or indent at the surface of the lid. In a still further embodiment, the surface of the lid is concave, curved towards the inside of the container. This specific bent of the lid and its surface has the advantage of allowing an easy handling and opening of the lid by a consumer. Because of this bent and form, the lid can more easily be bent for example by the force of the hand of a consumer in order to remove the lid from the container. Furthermore, this specific bent and form also provides some space on top of the lid which would allow to place or insert further objects to the packaged food product which could be easily removed by a user before heating the packaged food product in an oven. Such further objects could be for example cooking instructions, ingredient and/or food product lists, information to consumers as to the nutritional value of the food product, sachets with containing seasonings, spices, herbs, salt and/or pepper, items such as a spoon, fork, toy for children, etc. Preferably, this further embodiment further comprises a disk or a film, covering the lid. Preferably, the disk is nested within a circumferential rim and neck of the lid and covering said lid. With this disk any of the further objects are protected and preserved for example during transport and distribution of the packaged food product.

[0041] In one further embodiment, the packaged food product of the present invention further comprises a shrink film (13) wrapped around part or all of the packaged food product.

[0042] For example, one embodiment of the present invention consists of a rigid lower container and a rigid lid which snap together using an interlocking raised bead and corresponding recess on the corresponding part of the lid. The lid may contain a recess to hold additional components which need to be separated during transportation and subsequently accessed and used during consumption. This recess in the lid may be covered with a “disk” or a film of similar or different material which acts to contain and protect the additional component. The entire assembly may be sealed with plastic sleeve that is “shrunk” from the base to wrap over the lid and lid “disk” or film. Benefits of the present invention can be as follows:

[0043] 1. The “shrink” sleeve may be perforated and easy to remove. It may provide tamper evidence, lock the lid in place, and provide a way to easily remove packaging graphics.

[0044] 2. Once the “shrink” is removed the lid disk or film simply lifts up to reveal the additional component. This component may need to be excluded from the heating process, so this allows for easy access, without exposing or needing to touch the food below.

[0045] 3. The lid disk may act as a “recipe card” to contain for example the preparation steps. The disk’s easy remov-

ability lets for example the user keep the instructions with them while the rest of the container is heating in a microwave or standard oven.

[0046] 4. The package’s main closure is easy to open, for example with one hand. To open, the thumb and a finger placed on opposing sides of the lid can simply squeeze to “pop” the lid loose. At this point the lid can be left resting on the container opening to prevent splattering and retain some steam, or removed entirely. This will also keep the dish warm until ready to eat.

[0047] 5. The lid or closure may then be placed under the main container to act as a “saucer,” protecting the user from the hot package base and to place to rest a utensil, keeping it off of the table for cleanliness. The lid and container base may interlock to keep the container from sliding laterally on the lid surface. The extra space “headspace” above the food but below the top container edge provides a second cool location from which to handle the heated package. A final feature which protects user and the user’s furniture from heat may be the raised ridges on the container base. If the user wishes to leave the lid on the top of the container, or not use it, these ridges may isolate fingers and surfaces from the hot package base.

[0048] 6. The container may offer additional potential benefits through the ability to survive e.g. washing in a residential dishwasher, and possesses a lid that can be securely re-attached for re-purposed use.

[0049] 7. Preferably, all of the components are fully recyclable without further disassembly or processing.

[0050] 8. Re-purpose-able components (container and lid) may be nested in multiples to save space in the user’s home.

[0051] The packaged food product of the present invention is suitable for being heated in an oven or a heater without the need of removing the lid from the closed container. For the purpose of the present invention, an oven or a heater is a device for heating up and/or cooking a food product. Preferably, an oven is a standard kitchen oven used by today’s consumers or a microwave oven; a heater is preferably an air or water heater such as e.g. a water bath to warm-up prepared food dishes.

[0052] Those skilled in the art will understand that they can freely combine all features of the present invention disclosed herein in the specification, figures and in the different embodiments. Further advantages and features of the present invention are apparent from the figures and the example.

[0053] FIG. 4A and FIG. 4B show an example of an embodiment of the present invention. Thereby, the elements of the packaged food product are as follows: container (1), inwards raised bead (2), inner wall (3) of the container, lid (4), recess (5) in the lid to engage with the raised bead at the inner wall of the container (1), food (6) in the container, opening end (7) of the container, rim (8) at the periphery of the lid, circumferential extending neck (9) at the rim of the lid, disk (10). The container and the lid are made of crystallized polyethylene terephthalate (CPET) and have a wall thickness of 1.2 mm.

1. A method comprising:

defrosting a food located in a container of a packaged food product, the container comprising an inwards raised bead at an inner wall of the container, the inwards raised bead adjacent an opening end of the container, the product further comprising a lid comprising a recess, wherein engagement of the inwards

- raised bead at the inner wall of the container with the recess of the lid forms a snap closing between the lid and the container, and the food comprising a chilled or frozen meal product and water, the food is in a wet state from the defrosting; and
- heating the packaged food product in an oven or a heater without removing the lid from the container with the defrosted food inside.
2. The method of claim 1, wherein the heating of the packaged food product comprises evacuating steam from the container through a closure junction without opening and removing the lid from the container, wherein the inwards raised bead defines the closure junction of the container between the container and the lid.
3. The method of claim 2, wherein the closure junction between the container and the lid is in a sealed state during the defrosting of the food located in the container.
4. The method of claim 3, wherein the heating of the packaged food product causes the water to transition from fluid to the steam, the steam having a pressure that causes the closure junction to transition from the sealed state to the evacuated state.
5. The method of claim 4, wherein the closure junction in the evacuated state evacuates a portion of the steam from the container without opening and removing the lid from the container.
6. The method of claim 4, wherein the closure junction in the evacuated state is positioned to separate the rim at the periphery from the opening end of the container to thereby allow the steam to travel to the outside of the container.
7. The method of claim 1, wherein the inwards raised bead extends around an entire circumference of the inner wall of the container.
8. The method of claim 1, wherein the opening end of the container is round or oval.
9. The method of claim 1, wherein the container and the lid are made of a material suitable for being heated in a microwave oven.

10. The method of claim 9, wherein the material is at least one of a rigid material, a steam-proof material and a water-proof material.

11. The method of claim 9 wherein the material is selected from the group consisting of polypropylene, crystallized polyethylene terephthalate (CPET), plastic, molded pulp fiber, laminated molded fiber, and combinations thereof.

12. The method of claim 1, wherein the lid comprises a rim at the periphery configured such that the lid sits on the opening end of the container.

13. The method of claim 12, wherein the lid further comprises a circumferential extending neck at the rim.

14. The method of claim 13, further comprising a disk covering the lid, and the disk is nested within the circumferential extending neck of the lid and covering a portion of the lid.

15. The method of claim 12, wherein the lid is bent inwards in a direction of the container in order to form a bay, niche or indent at a surface of the lid.

16. The method of claim 12, wherein a surface of the lid is concave, curved towards an inside of the container.

17. The method of claim 1, wherein the packaged food product comprises a shrink film wrapped around part or all of the packaged food product prior to the defrosting of the packaged food product.

18. The method of claim 1, wherein the oven is a gas oven, electric oven, or a microwave oven.

19. The method of claim 1, wherein the heating of the packaged food product in the oven or heater comprises placing the packaged food product in a water bath.

20. The method of claim 1, wherein the lid is interlocked with the container to prevent the container from sliding laterally on the surface of the lid prior to the defrosting of the packaged food product.

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