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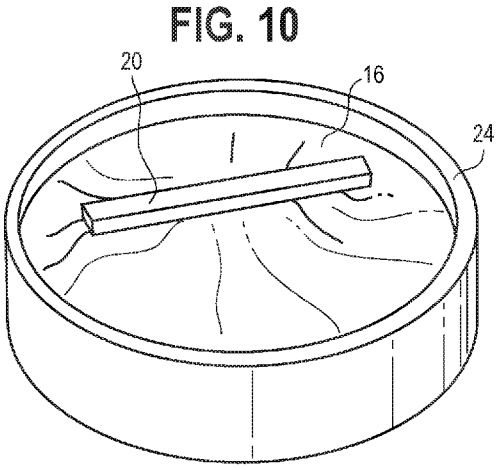

(57) Abstract: Described herein are food items (2) that are configured to facilitate cooking or heating in multifunction pressure cookers with increased efficiency. In some embodiments, a food item (2) may be frozen, and may be a single, unitary, integral one-piece block or chunk that is heated by itself in the cooker. Also disclosed herein are processes associated with the above-described combination, such as methods of preparing, packaging, and heating of food products (2). Also disclosed are containers (16) and molds (24) that can be used to form frozen food products with a shape and structure corresponding to inner cavities of heating devices. In some cases, containers or molds can also serve as packaging for one or more of storage, shipping, retail display, sale and consumer handling of frozen food products.

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TITLE

FOOD PRODUCTS FOR MULTIFUNCTION PRESSURE COOKERS

RELATED APPLICATION

[0001] This application claims the benefit of United States patent application No. 62/806,522, which was filed February 15, 2019, and which is incorporated by reference herein.

FIELD

[0002] This application relates generally to food products for multifunction pressure cookers, and to preparation, packaging, and heating of such products.

BACKGROUND

[0003] Multifunction pressure cookers typically include a heat source beneath a receptacle or pot. A lid is sealed on the receptacle to restrict escape of water vapor or other fluids, such that outflow of fluids can occur only through one or more pressure relief valves. This enables elevated internal pressures to be maintained during heating operations, and can enable cooking times and moisture loss to be reduced.

[0004] When a frozen food item is heated in a pressure cooker with the bottom surface resting on a heated bottom surface of the pressure cooker interior, initial heating may result in a localized phase change, creating a thin layer of liquid at the bottom of the food item. The liquid layer may incorporate particulate or other solid matter. The vertical dimension of the liquid layer may increase progressively as heating continues, but localized overheating may nevertheless occur, e.g., where solid components of the food item directly contact the heated bottom of the receptacle, depending on factors such as the heat transfer characteristics of the cooker, local temperatures at various points on the interior surface of the cooker at various times during the process, the content and viscosity of the liquid layer, the nature and content of solid components of the food product, and the length of time during which the heating element is operated.

[0005] Problems such as burning, scorching, overcooking, uneven heating, toughening, excessive drying, and/or other problems can present difficult challenges under certain circumstances, particularly where frozen food products are involved. Such

problems can be difficult to address in pressure cookers due to the cooker remaining closed during heating processes, such that food items in the cooker may be relatively static, with little or no movement other than flow associated with natural convection resulting from heat transfer to the food items, i.e., without any opportunity for a user to stir or otherwise displace the food items with a utensil.

[0006] In some cases, adding water to the receptacle may help to alleviate such problems. Use of a trivet, spacer, or other means for supporting a food product above the bottom surface of the cooker may also help. However, addition of water and use of trivets tends to slow the rate of cooking or heating. Also, addition of water or use of trivets does not always avoid burning, scorching, etc., and for some food items, addition of water may have an undesirable effect on organoleptic properties of the food item.

SUMMARY

[0007] Described herein are food items that are configured to facilitate cooking or heating in multifunction pressure cookers with increased efficiency, such that cooperation between the food items and the cookers reduces or eliminates burning, scorching, overcooking, uneven heating, toughening, excessive drying, and/or other problems, and results in cooked or otherwise heated food items with desirable organoleptic properties. In some embodiments, a food item may be frozen, and may be a single, unitary, integral one-piece block or chunk that is heated by itself in the cooker. In other embodiments, a food item may comprise two or more separate items that are not connected to each other prior to heating or cooking. In some embodiments, a food item may include raw, cooked, partially cooked, blanched, natural, processed, organic, seasoned, unseasoned, salted, unsalted, and/or individually quick frozen (IQF) items. In some embodiments, a food item may include one or more proteinaceous items, one or more farinaceous items, one or more soups or sauces, one or more meats, one or more vegetables or fruits, and/or other items.

[0008] In some embodiments, a food item may include multiple relatively small pellets comprising, e.g., frozen sauces and/or other solids or liquids. The pellets be of any useful weight, size and shape. They may be irregular in shape, or may be molded to be similar in shape to cubes, spheres, ellipsoids, parallelepipeds, or other shapes. In some

embodiments, the pellets may have an average weight within a range of, e.g., 0.1 oz. to 3 oz., 0.25 oz. 2 oz., 0.25 oz. to 0.75 oz. or about 0.5 oz.

[0009] In some embodiments, a food item may include one or more larger frozen masses comprising, e.g., mashed potatoes, other forms of potatoes, polenta, or other items. The larger frozen masses may be of any useful size, shape and weight. In some embodiments, the larger masses may be similar in shape and size to a hockey puck, or may be similar in shape to a puck, but larger, e.g., up to 4 times the size of a conventional puck, or smaller, e.g., as small as 1/4 the size of a conventional puck.. In some embodiments, the larger masses or pucks may have a weight within a range of, e.g., 2 to 16 oz., 2 to 10 oz., or 2 to 6 oz.

[00010] Also disclosed herein are processes associated with the above-described combination, such as methods of preparing, packaging, and heating of food products. Also disclosed are containers and molds that can be used to form frozen food products with a shape and structure corresponding to inner cavities of heating devices. In some cases, containers or molds can also serve as packaging for one or more of storage, shipping, retail display, sale and consumer handling of frozen food products.

BRIEF DESCRIPTION OF THE DRAWINGS

[00011] Fig. 1 is a perspective view of an embodiment of a frozen food product;

[00012] Figs. 2, 3, and 5 are side elevational cross-sectional views of embodiments of frozen food products in a pot;

[00013] Fig. 4 is a top perspective view of the embodiment illustrated in Fig. 3, with a partial cutaway of a peripheral wall of the pot;

[00014] Fig. 6 is a side elevation cross-sectional view of an embodiment of a frozen food product resting on a trivet in a pot;

[00015] Fig. 7 is a side elevational view of an embodiment of an empty polymeric bag;

[00016] Fig. 8 is a side elevational view of the polymeric bag of Fig. 7 filled with unfrozen food;

[00017] Fig. 9 is a top perspective view of an embodiment of a mold;

[00018] Fig. 10 is a top perspective view of the bag of Fig. 8 placed in the mold of Fig. 9;

[00019] Fig. 11 is a top perspective view of an embodiment of a tub;

[00020] Fig. 12 is a top perspective the tub of Fig. 11 covered with a lid;

[00021] Fig. 13 is a top perspective view of an embodiment of a tub in a thermoforming mold;

[00022] Fig. 14 is a top perspective view of an embodiment of a frozen food product being pushed out of a tub by deforming the tub;

[00023] Fig. 15 is a perspective view of an embodiment of a multifunction pressure cooker;

[00024] Fig. 16 is a top perspective view of an embodiment of a tub;

[00025] Fig. 17 is a top plan view of the tub of Fig. 16;

[00026] Fig. 18 is a side elevation cross-sectional view of the tub of Fig. 16;

[00027] Fig. 19 is a partial side elevation cross-sectional view of the tub of Fig. 16;

[00028] Fig. 20 is a partial side elevation cross-sectional view of two tubs of Fig. 16 in a concentrically stacked configuration;

[00029] Fig. 21 is a top perspective view of an embodiment of a tub;

[00030] Fig. 22 is a top plan view of the tub of Fig. 21;

[00031] Fig. 23 is a side elevation cross-sectional view of the tub of Fig. 21;

[00032] Fig. 24 is a partial side elevation cross-sectional view of the tub of Fig. 21;

[00033] Fig. 25 is a partial side elevation cross-sectional view of two tubs of Fig. 21 in a concentrically stacked configuration;

[00034] Fig. 26 is a top perspective view of an embodiment of a tub;

[00035] Fig. 27 is a top plan view of the tub of Fig. 26;

[00036] Fig. 28 is a side elevation cross-sectional view of the tub of Fig. 26;

[00037] Fig. 29 is a partial side elevation cross-sectional view of the tub of Fig. 26;

[00038] Fig. 30 is a partial side elevation cross-sectional view of two tubs of Fig. 26 in a concentrically stacked configuration;

[00039] Fig. 31 is a top perspective view of an embodiment of a tub;

[00040] Fig. 32 is a top plan view of the tub of Fig. 31;

[00041] Fig. 33 is a side elevation cross-sectional view of the tub of Fig. 31;

[00042] Fig. 34 is a partial side elevation cross-sectional view of the tub of Fig. 31; and

[00043] Fig. 35 is a partial side elevation cross-sectional view of two tubs of Fig. 31 in a concentrically stacked configuration.

DETAILED DESCRIPTION

[00044] Described herein are food items that are formulated and configured to facilitate heating of the food items in particular heating devices. In some embodiments, there are provided frozen food products having a configuration that can conform to dimensions of an inner cavity of a heating device. This can promote one or more of efficient, even, and rapid heat transfer between the heating device and the frozen food product. This improved heat transfer can reduce heating times, reduce uneven cooking, improve the quality of the resulting heated food item, and/or reduce energy consumption.

[00045] The heating devices described herein comprise an inner cavity in which a food item, *e.g.* a frozen food product, can be placed and heated. Heating can comprise one or more of thawing, warming, cooking, toasting, roasting, steaming, baking, etc.

[00046] One or more regions of an inner cavity of a heating device can supply heat. For example, a heating device can comprise an inner cavity with a bottom and an inner peripheral surface, such as a peripheral wall or rim. One or both of a bottom and an inner peripheral surface can supply heat. A heating device can comprise heating elements such as heating coils or burners, or heat can be supplied to a heating device from an external source such as a stove, oven, burner, etc. When heating elements are incorporated in a heating device, the elements can be positioned to supply heat to one or more of a bottom and an inner peripheral surface of the heating device. Exemplary heating devices include pressure cookers such as multifunction pressure cookers, slow cookers, pots, pans, woks, skillets, dutch ovens, crock pots, casserole dishes, etc. In some embodiments, a pressure cooker may comprise a removable pot. In some embodiments, a multifunction pressure cooker comprises a heating element beneath a pot that has a cavity for receiving food items to be heated.

[00047] In some embodiments, multifunction pressure cookers include 6-12 different functions. Exemplary heating functions of multifunction pressure cookers may

include one or more of a pressure cooking function, bean heating function, a broth heating function, a cake preparing function, a chili heating function, a custom function, an egg heating function, a meat heating function, a multigrain heating function, a porridge heating function, a rice heating function, a sauté function, a searing function, a slow cook function, a soup heating function, a steaming function, a stew heating function, a sterilizing function, a warming function, a yogurt function, etc. Multifunction pressure cookers can generally operate at various pressures and temperatures for cooking or heating food items. Exemplary pressures used when heating food under pressure in multifunction pressure cookers range from 9 to 13, 9.5 to 12.5, 10 to 12, or 10.2 to 11.6 psi. Exemplary temperatures for heating food under pressure in multifunction pressure cookers range from 220 to 260, 225 to 255, 230 to 250, 240 to 250, 235 to 245, or 239 to 244 °F. Exemplary multifunction pressure cookers include Instant Pot® Duo 7-in-1 6 quart, Instant Pot® Duo Plus 6 quart, Instant Pot® Ultra 10-in-1 6 quart, as well as multifunction pressure cookers sold under brands such as Ninja, Crockpot and Cooks Essential.

[00048] Frozen food products may comprise ingredients that are raw, uncooked, pre-cooked, partially cooked, blanched, fully cooked, or otherwise prepared or processed. In some embodiments, a frozen food product can comprise one or more of a farinaceous component and a proteinaceous component. Exemplary types of foods useful for making a frozen food product include one or more of soups, sauces, stews, broths, eggs, meats, vegetables, grains, breads, cakes, noodles, desserts, etc. In some embodiments, a frozen food product can include frozen liquids and/or solids. After a frozen food product is heated in a heating device, the resulting food can comprise portions in different phases, *e.g.* liquids and solids. In some embodiments, a frozen food product comprises different components of a meal, *e.g.* proteinaceous and farinaceous components, noodles and a sauce, rice and meat, etc. In some embodiments, a frozen food product packaged for retail sale may include two or more components that are individually sealed so as to remain separate form one another until the consumer begins preparing the product. For example, in some embodiments, a proteinaceous component such as salmon may be packed and sealed separately from an individually sealed sauce component such as a lemon herb sauce. In other embodiments, multiple components may be sealed together, without being

separated from one another, e.g., a combination of beef, broccoli and sauce. In some embodiments, a frozen food product has a total weight including water content ranging from 100 to 1500, 300 to 1300, 600 to 1000, 200 to 700, or 225 to 680 g. In some embodiments, proteinaceous frozen food products or components, *e.g.* frozen beef, pork, poultry, etc, require heating at a temperature and for a period time sufficient for the core of the proteinaceous component to be cooked.

[00049] In some embodiments, the frozen food product comprises a frozen meal that includes one or more sauces that are less than 90% water. In some embodiments, the sauce accounts for 9% to 26% of the total weight of the meal. In other embodiments, the sauce may account 4.5% to 32% of the weight of the meal. One specific embodiment comprises a seared salmon meal in which sauce accounts for 4.5% of the total weight of the meal. Another specific embodiment comprises a chicken penne meal in which sauce accounts for 32% of the weight of the meal.

[00050] When a frozen food product is placed in a heating device, a part of an exterior surface of the frozen food product can contact a bottom surface of the inner cavity of the heating device. The contact can be full contact, substantially full contact, or partial contact with the entire bottom surface. Other surfaces of a frozen food product, *e.g.* an outer peripheral surface, can also be positioned close to or in contact with other surfaces, *e.g.* an inner peripheral surface, of the inner cavity of a heating device. Contact between these other surfaces can also be partial contact, substantially full contact, or full contact. Partial contact can encompass degrees of contact where a surface of a frozen food product contacts only a minority of the area of the bottom and/or other surfaces of the inner cavity of the heating device. Substantially full contact can encompass degrees of contact where the surface of the frozen food contacts a majority of the area of a bottom and/or other surfaces of the inner cavity of the heating device. Partial and substantially full contact can occur when gaps exist between the frozen food product and the bottom and/or other surfaces of an inner cavity of a heating device. These gaps can be in areas where structures or irregularities, *e.g.* holes, dents, cracks, pockets, voids, dimples, protrusions, bulges, projections, etc., in either one or both of the surface of the frozen food product and surfaces of the inner cavity of the heating device prevent full contact.

[00051] Efficient heat transfer from an inner cavity of a heating device to a frozen food product can be promoted by eliminating or limiting gaps between surfaces of the frozen food product and surfaces of the inner cavity of the heating device. In some embodiments, a maximum gap between an outer peripheral surface of a frozen food product and an inner peripheral surface of a heating device can be, e.g., 6, 5.5, 5.0, 4.5, 4.0, 3.5, 3.0, 2.5, 2.0, 1.5, 1.0, 0.5, 0.2, or 0.1 cm or less. In some embodiments there may be no gap or substantially no gap between these surfaces. In some embodiments, when one or more gaps exist between an outer peripheral surface of a frozen food product and an inner peripheral surface of a heating device, widths of gaps can range from 0.05 to 6.0, 0.5 to 6.0, 0.3 to 5.7, 0.5 to 5.5, 0.8 to 5.2, 1.0 to 5.0, 1.2 to 4.8, 1.3 to 4.6, 1.6 to 4.3, 2.0 to 4.0, 2.2 to 3.8, 2.5 to 3.5, or 2.9 to 3.1 cm. In some embodiments, a gap can fully or partially surround the outer peripheral surface of the frozen food product.

[00052] Gaps between surfaces of a frozen food product and surfaces of an inner cavity of a heating device can serve useful purposes such as providing a tolerance to facilitate placement of the frozen food product in the heating device, and permitting interposition of cooking implements between the frozen food product and the inner cavity of the heating device. Exemplary cooking implements may include spacers, platforms, trivets, pie plates, baskets, strainers, steamers, pans, springform pans, liners, pots, racks, spatulas, forks, knives, spoons, thermometers, etc. For example, a gap can allow interposition of at least a part of a cooking implement between a surface of a frozen food product and a surface of an inner cavity of a heating device.

[00053] A trivet can generally comprise a platform configured to support food within an inner cavity of a heating device. In some embodiments, a platform can have a structure allowing fluid to pass therethrough while the platform supports the food. Exemplary platforms may include grating, mesh, a perforated substrate, etc. A trivet can also include one or more feet attached to or integral with the platform, to support the platform over a surface. A trivet can include one or more handles for lowering the trivet into and lifting the trivet out of a heating device. A trivet can generally be constructed of any suitable material such as metal, polymers, composites, etc. A trivet can also be used to lower food into a heating device. A trivet can be particularly useful for removing solid food from a heating device. A trivet can be placed on a bottom of an inner cavity of a

heating device and food can be placed on the trivet. A trivet can also be placed on top of food that has already placed in an inner cavity of a heating device, and additional food can be placed on top of the trivet. A trivet can provide a space between a food and a bottom of an inner cavity of a heating device, *e.g.* the bottom of a pot of a pressure cooker, and the space can prevent food from being scorched by the heating device. A trivet can also provide a space between two different foods placed in an inner cavity of a heating device, and the space can prevent foods from mixing and allow convective heating between the foods. In addition, gaps between surfaces of a frozen food product and surfaces of an inner cavity of a heating device can allow any one or more of handles and a platform of a trivet to be disposed between the frozen food and the heating device.

[00054] In some embodiments, a food product comprising a solid item, such as a frozen roast, can be placed on a trivet and lowered into a pressure cooker so that the trivet will allow the product to be lifted out of the pressure cooker after cooking. The food product may be dimensioned to provide one or more gaps between the frozen product and the interior surface of the pressure cooker, with the gap(s) dimensioned just large enough to allow the trivet to remain in the pressure cooker while cooking the product and also allowing the desired heat transfer from the inner cavity of the pressure cooker to the frozen food product. In some of these embodiments, the frozen food product may be in partial or substantially full contact with the interior surface of the cooker, with structural elements of the trivet being accommodated in indentations such as grooves provided on the bottom and/or side surfaces of the food product. In some embodiments, interior surfaces of the trivet may be in contact with the food product, and exterior surfaces of the trivet may be in contact with the cooker to enable conductive heat transfer from the cooker interior to the trivet to the food product. In these embodiments, the entire bottom surface of the food item may be in contact with the bottom of the cavity, except for portions that are in contact with the trivet, such that these portions of the bottom of the food item receive conductive heat transfer from the bottom of the cavity through the trivet, and all other portions of the bottom of the food item receive conductive heat transfer directly from the bottom of the cavity.

[00055] In some embodiments, a support such as a trivet as described above may be packaged and sold with a food item as a unit. In these embodiments, the support and

food item may be removed from a package by a consumer and lowered into the cooker together as a unit, with the support/food item combination being configured to fit snugly in the bottom of the cavity. The support may have one or more handles or other structural elements extending upward or otherwise positioned to enable a consumer to remove the food item from the cooker by pulling the structural elements upward without engaging the food item directly.

[00056] In some embodiments, a frozen food product can comprise multiple separate frozen food components. In some embodiments, one or more trivets can be disposed between separate frozen food components within a heating device. A trivet can also be placed between a lowermost frozen food component and a bottom of an inner cavity of a heating device. In some embodiments including two or more frozen food components, a first frozen food component can be placed in a heating device and then a trivet can be placed on top of the first frozen food component.

[00057] In some embodiments, separate frozen food components can be sequentially and/or simultaneously heated using one or more different heating functions of the pressure cooker. For example, a frozen proteinaceous component can be heated along with a frozen farinaceous component under high pressure within a pressure cooker. The farinaceous component can then be removed from the pressure cooker, and the proteinaceous component can be sautéed within the open pressure cooker. After the sautéing, the proteinaceous and farinaceous components can be combined and ready to eat.

[00058] In some embodiments, a frozen food product can be heated within a heating container disposed in a cavity of a heating device. This configuration can be referred to as a "pot in pot" configuration. Embodiments of heating containers include a metal pan, *e.g.* a pie tin, a metal pot, a glass bowl, a Pyrex® bowl, etc. A lid including any one or more of a metal, *e.g.* foil, glass, a polymer, etc. can optionally be placed over an opening of a heating container. A heating container can optionally include one or more handles. A heating container can provide one or more advantages such as providing separation between different frozen food components while heating, *e.g.* allowing heating of a farinaceous frozen food component separately from a proteinaceous frozen food component, etc.

[00059] In some embodiments, a first frozen food component is placed in a cavity of a pressure cooker or other heating device, and a heating container holding a second frozen food component is placed on top of, under, or adjacent to the first frozen food component within the heating device. The first and second components of the frozen food product can be heated within the same heating device and then optionally combined after removal from the heating device. Heating containers can also be used in combination with trivets. For example, a first frozen food component can be placed in a heating device and then a trivet can be placed on top of the first frozen food component. A second frozen food component in a heating container can be placed on top of the trivet. In the alternative, a frozen food component in a heating container can be placed directly on a separate frozen food component or on a bottom of an inner cavity of a heating device.

[00060] Figs. 1 and 2 illustrate a frozen food product 2 having flat circular top and bottom surfaces 3 and 5, and a side surface 4. Fig 2 illustrates the frozen food product 2 in a pot 6, wherein the product has the same configuration as a lower portion of the interior of the pot, such that no gap exists between the frozen food product 2 and the interior surface 10 of the pot cavity. In this embodiment, the frozen food product 2 covers the entire bottom of the pot cavity. In the embodiment illustrated in Figs. 1 and 2, the illustrated side surface of the product and the interior of the pot are frustoconical. In other embodiments, these surfaces may be vertical and cylindrical, or may have other configurations.

[00061] Figs. 3 and 4 illustrate a second embodiment comprising a frozen food product 2 and a pot 6. A narrow gap 8 is provided between an interior side surface 10 of the pot 6 and a side surface 4 of the frozen food product 2. The diameters of the frozen food product and the interior of the pot both increase from bottom to top such that the difference Δd is constant from top to bottom. The side surfaces of the product and the interior of the pot are frustoconical. In other embodiments, these surfaces may be vertical and/or cylindrical, or may have other configurations.

[00062] Fig. 5 is a cross-sectional view of a third embodiment comprising a frozen food product 2 in a pot 6. In Fig. 5, the gap 8 has a wedge-shaped cross-section between the inner peripheral surface 10 of the pot 6 and the outer peripheral surface 4 of the frozen food product 2. The width of the gap increases from bottom to top.

[00063] Fig. 6 illustrates a fourth embodiment in which a trivet 14 is provided to support the food product in the pot. The trivet is disposed in gaps between the frozen food product 2 and the pot 6.

[00064] In some embodiments, a method of preparing a frozen food product such as those described herein can comprise introducing one or more flowable food items into a container or mold, then reducing the temperature of the food item(s) to form a single frozen food item having a shape that conforms to the interior of the container or mold. Containers and molds can provide a desired shape and structure to food products when freezing them. In some embodiments, molds and containers generally comprise an interior space or cavity configured to hold a food item. In some embodiments, a container or mold includes a bottom panel attached to a peripheral wall having a cylindrical, frustoconical, or other shape. The peripheral wall includes a first peripheral edge. The first peripheral edge is attached to the bottom panel. The bottom panel and peripheral wall form a closure on one side of the container or mold. The peripheral wall also includes a second peripheral edge on an opposite side from the first peripheral edge. The second peripheral edge forms an opening of the mold or container on a side opposite from the closure. The container or mold includes a cavity defined by the peripheral wall attached to the bottom panel. In an embodiment of a method of preparing frozen food product(s), one or more flowable food items can be placed in the cavity and frozen.

[00065] In some embodiments, containers and molds can be made of one or more polymers such as polyethylene terephthalate (PET), crystallized polyethylene terephthalate (CPET), polyethylene, polypropylene, etc.; one or more metals; composites; biodegradable materials; and/or other materials. In some aspects, containers and molds can be colored, *e.g.* by pigment added to polymer used to form the mold. Containers and molds can generally be made by one or more processes such as thermoforming, injection molding, casting, 3D printing, extrusion, and/or other methods or combinations of methods. A container or mold can generally be formed of a material having any useful thickness. In some embodiments a container or mold can have thicknesses ranging from 0.010 in. to 0.05 in., from 0.020 in. to 0.04 in., from 0.025 to 0.035 in., etc. In some embodiments, a tub is formed of impact modified CPET comprising black pigmentation and having a thickness of about 0.030 in.

[00066] In some embodiments, a mold is formed by a 3D printing process, and then the mold is used for thermoforming polymeric tubs that are used to hold food products while freezing them. In some embodiments, a container can comprise a bag, pouch, tray, tub, dish, box, boat, or other structure. In some embodiments of a container comprising a bag, the bag can comprise an opening for filling the bag with one or more flowable food items. The bag can be filled before or after placing the bag in a mold. After the bag is placed in the mold, the one or more flowable food items can be frozen.

[00067] In some embodiments, one or more food items may be packaged in a bag, pouch or the like, using a vertical form-fill-seal process, a horizontal form-fill-seal process or another process. In some embodiments, a packaged frozen food product is provided through the use of a horizontal flow wrap process wherein a solid volume of frozen food is wrapped and hermetically sealed. In other embodiments, a solid volume of frozen food is placed in a preformed bag in an automated horizontal bagging process, then hermetically sealed. In some embodiments, all or part of the packaging process may be conducted under a vacuum or at below atmospheric pressure, and/or may include a modified atmosphere packaging (MAP) process.

[00068] In some methods of preparing a frozen food product, a container can be placed in a mold and then filled with food, or a container filled with food can be placed in the mold. A frozen food product can then be formed by freezing the food in the container while the container is in the mold. The mold can stabilize or provide structure to a flexible container when freezing the food item.

[00069] In some embodiments, a container can have free-standing characteristics and sufficient rigidity, without a mold, to support a food item in a desired shape when freezing the food item into a frozen food product. In some embodiments, a container may comprise a semi-rigid, yet flexible, thermoformed polymeric tub, which is free-standing.

[00070] In some embodiments, a container can have an internal diameter of, *e.g.* 6, 8, 10, or 12 in.. In some embodiments, a container having an 8 inch internal diameter is configured to produce frozen food products that fit an inner cavity of a 6 quart Instant Pot® multifunction pressure cooker, with a gap between the food product and the container interior side wall. In some embodiments, a container can generally comprise an

internal depth of *e.g.* 1, 2, 3, 4, 5, or 6 in. In some embodiments, containers can be stacked for storage before filling.

[00071] In some embodiments, a mold can be used to form a frozen food product without use of a container. For example, one or more flowable food items can be provided directly in a mold and frozen to provide frozen food product(s). In some embodiments, the mold may comprise a polymeric container having an 8 inch internal diameters, and a 1 inch or 2 inch depth. The containers can be stacked for storage before filling. The 8 inch internal diameters of the containers are configured to produce frozen food products that fit an inner cavity of a 6 quart Instant Pot® multifunction pressure cooker, with a gap between the frozen food product and the cavity side wall.

[00072] In some aspects, after forming a frozen food product, the frozen food product can be removed from a mold or container and provided with packaging, the container and/or mold can serve as packaging for the frozen food product, or the container and/or mold including the frozen food product can be repackaged or further packaged. A method of packaging can include sealing a mold and/or container to enclose the frozen food product contained therein. The packaging can be used for storage, shipping, sale, etc. of a frozen food product. Containers or molds can be optionally sealed by any one or more of films, foils, seals, flaps, doors, frangible easy-open closures, etc.

[00073] Fig. 7 illustrates a side elevational view of an embodiment including a container comprising a polymeric pouch or bag 16. The bag comprises a bottom wall 17, side wall 18, and an easy-open closure 20 at the top. In Fig. 7, the bag is empty. Fig. 8 illustrates a side elevational view of the same bag filled with an unfrozen food item 22.

[00074] Fig. 9 illustrates an embodiment comprising a mold 24 that can be used to support and shape a food product while freezing it. Fig. 10 illustrates the filled bag of Fig. 8 in the mold of Fig. 9. The bag can serve as packaging for preservation and storage of one or both of unfrozen food and a frozen food product. The mold of Fig. 9 can also be used to form a frozen food without use of a container.

[00075] Figs. 11-13 illustrate another embodiment comprising a semi-rigid tub 26 comprising a bottom panel 28 and a peripheral wall 30 forming a cavity 32. The opening 34 to the cavity is surrounded by rim 36. In some embodiments, the tub can be made of polymeric material, *e.g.* polyethylene terephthalate (PET) or crystallized polyethylene

terephthalate (CPET), by thermoforming the polymeric material in a mold 38 (Fig. 13). In some embodiments, the polymeric material can have sufficient thickness and rigidity to provide the tub with free-standing characteristics, such that the peripheral wall of the tub can support a food product in the container during freezing to provide the resulting frozen food product with a desired shape. In other embodiments, the tub can be supported in a mold, *e.g.* as illustrated in Fig. 13, when freezing a food product. Fig. 12 illustrates the tub 26 of Fig. 11 with a lid 40 placed over the opening and sealed to the rim after a food product has been placed in the tub. The food can be frozen in the tub with or without a lid covering the opening. The tub can be used as packaging for storage of unfrozen food, partially frozen food, a frozen food product, etc., with or without a lid.

[00076] A container or tub can generally comprise any useful structure comprising various dimensions, radii of curvature of structural components, and angles of construction. Figs. 16-20 illustrate an embodiment comprising a semirigid tub 26 comprising a peripheral wall 30 arcuately joined to a bottom 28 of the tub 26, where the interior 29 of the bottom is generally convex. The tub 26 of Figs. 16-20 may be used as a mold to form a unitary, one-piece solid mass or block of frozen food product by introducing into the tub a liquid, partially liquid, or otherwise flowable food product that conforms to the shape of the interior of the tub, then freezing the food product in the tub. To facilitate handling, a recess or other surface irregularity may be useful. The convex or domed bottom results in a recess being formed in the bottom of the solid mass of frozen food product , which can facilitate handling both in the plant, e.g., during packaging at a manufacturing facility, and in the home, e.g., when a consumer is handling the frozen food product to place it in a pressure cooker. That is, one may engage the recess with a thumb or with one or more fingers while handling the frozen food product. During handling, the frozen food product may be fully or partially enclosed in a pouch and/or tub, or may be entirely exposed, without any packaging material contacting it. In any event, the frozen food product and/or any associated packaging material may be somewhat difficult to handle, due in part to a low coefficient of friction on its surface, particularly where a layer of liquid has formed on a frozen surface, and/or where condensation may have formed. Thus, having a recess in the bottom or elsewhere may be useful.

[00077] To facilitate handling of the tub of Figs. 16-20, the tub includes a rim 36 extending outward around the upper periphery of the tub. Some of the other embodiments also include a similar structure. The rim 36 may function as a handle that can be engaged, e.g., manually or by automated equipment in a food plant, during lifting, lowering, or other manipulation or transport of the tub.

[00078] Figs. 21-25 illustrate an embodiment comprising a semirigid tub 26 comprising a peripheral wall 30 arcuately joined to a flat bottom 28 of the tub 26. Figs. 26-30 illustrate an embodiment comprising a semirigid tub 26 comprising a frustoconical peripheral wall 30 joined to a bottom 28 of the tub 26. Figs. 31-35 illustrate an embodiment comprising a semirigid tub 26 comprising a peripheral wall 30 joined to a bottom 28 of the tub 26, where the peripheral wall 30 is configured to facilitate stacking of identical tubs 26 as shown in Fig. 35. In Figs. 31-35, wall 30 comprises a first, more steeply sloped upper frustoconical section 31 joined to a second, less steeply sloped lower frustoconical section 33.

[00079] A tub can optionally include a rim around an opening. A tub comprising a rim can generally have any useful outside rim diameter measured between opposite outer edges of a rim. For example, in the embodiments illustrated in Figs. 17 and 22, a rim diameter 46 can range from 6.0 in. to 8.5 in., from 6.5 in. to 8.0 in., from 7.0 in. to 7.75 in., from 7.25 in. to 7.5 in., from 7.3 in. to 7.4 in, or 7.375 +/- 0.030 in. For example, in the embodiments illustrated in Figs. 27 and 32, a rim diameter 46 can range from 6.5 in. to 10.0 in., from 7.0 in. to 9.5 in., from 7.5 in. to 9.0 in., from 8.25 in. to 8.75 in., from 8.6 in. to 8.7 in, or 8.622 +/- 0.015 in.

[00080] A tub can also generally have any useful internal diameter measured at a position inside a rim. Fig. 18 illustrates a side elevation cross-sectional view taken along line A—A of tub 26 in Fig. 17, Fig. 23 illustrates a side elevation cross-sectional view taken along line A—A of tub 26 in Fig. 22, Fig. 28 illustrates a side elevation cross-sectional view taken along line A—A of tub 26 in Fig. 27, and Fig. 33 illustrates a side elevation cross-sectional view taken along line A—A of tub 26 in Fig. 32. For example, in the embodiments illustrated in Figs. 18 and 23, a tub 26 can comprise an internal diameter 48, measured at a position inside the rim 36 (based on a theoretical sharp corners), ranging from about 4.5 in. to about 8.5 in., from about 5.0 in. to about 8.0 in.,

from about 5.5 in. to about 7.5 in., from about 6.0 in. to about 7.25 in., from about 6.25 in. to about 7.0 in., from about 6.3 in. to about 6.9 in, from 6.6 in. to 6.7 in, or the internal diameter 48 can be about 6.63 in. For example, in the embodiments illustrated in Figs. 28 and 33, a tub 26 can comprise an internal diameter 48, measured at a position inside the rim 36 (based on a theoretical sharp corners), ranging from about 5.5 in. to about 10.5 in., from about 6.0 in. to about 10.0 in., from about 6.5 in. to about 9.5 in., from about 7.0 in. to about 9.0 in., from about 7.5 in. to about 8.5 in., from about 7.75 in. to 8.25 in, from 7.9 in. to 8.1 in, or the internal diameter 48 can be about 8.00 in.

[00081] A bottom of a tub can generally have any useful outside diameter. For example, in the embodiments illustrated in Figs. 18 and 23, an outside diameter 50 of a bottom of a tub (based on theoretical sharp corners) can range from about 5.0 in. to about 7.0 in., from about 5.5 in. to about 6.5 in., from about 5.8 in. to about 6.2 in., from 5.9 in. to 6.1 in. or the outside diameter 50 can be about 6.09 in. For example, in the embodiment illustrated in Fig. 28, an outside diameter 50 of a bottom of a tub (based on theoretical sharp corners) can range from about 6.0 in. to about 9.0 in., from about 6.5 in. to about 8.5 in., from about 7.3 in. to about 8.0 in., from 7.55 in. to 7.75 in. or the outside diameter 50 can be about 7.65 in. For example, in the embodiment illustrated in Fig. 33, an outside diameter 50 of a bottom of a tub (based on theoretical sharp corners) can range from about 6.4 in. to about 8.5. in., from about 6.7 in. to about 8.2 in., from about 7.1 in. to about 7.8 in., or from 7.4 in. to 7.5 in., or the outside diameter 50 can be about 7.44 in.

[00082] A tub can generally have any useful overall depth from a bottom of the tub to an upper surface of a rim adjacent to an opening of the tub. For example, the embodiments illustrated in Figs. 18 and 23 can comprise an overall depth 52, from the upper surface of the rim 36 to the bottom of the tub 28, ranging from about 1.25 in. to about 3.25 in., from about 1.5 in. to about 3.0 in., from about 1.75 in. to about 2.75 in., from 2.0 in. to 2.50 in., or the depth 52 can be about 2.25 in. For example, the embodiments illustrated in Figs. 28 and 33 can comprise an overall depth 52, from the upper surface of the rim 36 to the bottom of the tub 28, of about 1.15 in. to about 3.15 in., from about 1.3 in. to about 3.0 in., from about 1.6 in. to about 2.7 in., from 1.9 in. to 2.1 in., or about 2 in.

[00083] In some aspects, a bottom of a tub can comprise a convexity that is convex to an inner cavity of the tub. Generally, a convexity can have any useful depth. Fig. 18 illustrates an embodiment comprising a tub 26, and a bottom of the tub 28 comprises a convexity 29 in the inner cavity 32 of the tub 26. For example, in the embodiment illustrated in Fig. 18, a convexity 29 can have a depth 54 ranging from about 0.09 in. to about 0.2 in., from about 0.10 in. to about 0.17 in., from about 0.11 in. to about 0.15 in., from about 0.12 in. to about 0.13 in., or the depth 54 can be about 0.125 in.

[00084] A tub can optionally include an over stack structure formed on a peripheral wall of the tub. An over stack structure can generally be formed around entirety or a portion of a peripheral wall of a tub. In some aspects, an over stack structure can be formed by a mold that deforms a portion of a peripheral wall of a tub. In embodiments illustrated in Figs. 18, 23, 28, and 33, an over stack structure 56 is formed around an entirety of the peripheral wall 30 of the tub at a position adjacent to a rim 36. As illustrated in Figs. 20, 25, 30, and 35, when two or more tubs 26 are concentrically stacked, an over stack structure 56 of a tub fitted with an adjacent tub can provide spacing between the tubs. The spacing can allow easy separation of the tubs and can be measured as a stack height 58 between rims 36 of the tubs and a stack gap 60. For example, in the embodiments illustrated in Figs. 20 and 25, a stack height 58 can range from about 0.15 in. to about 0.30 in., from about 0.20 in. to about 0.28 in., from about 0.21 in. to about 0.26 in., from about 0.22 in. to about 0.24 in., or the stack 58 height can be about 0.230 in; and a stack gap 60 can range from about 0.05 in. to about 0.15 in., from about 0.075 in. to about 0.125 in., from about 0.09 in. to about 0.11 in., or the stack gap 60 can be about 0.100 in. For example, in the embodiments illustrated in Figs. 30 and 35, a stack height 58 can range from about 0.15 in. to about 0.30 in., from about 0.20 in. to about 0.29 in., from about 0.21 in. to about 0.28 in., from about 0.225 in. to about 0.245 in., or the stack 58 height can be about 0.235 in; and a stack gap 60 can range from about 0.02 in. to about 0.15 in., from about 0.05 in. to about 0.135 in., from about 0.12 in. to about 0.13 in., or the stack gap 60 can be about 0.125 in.

[00085] Generally, an over stack structure can have any useful diameter between opposite outer edges of the over stack structure. For example, in the embodiments illustrated in Figs. 18 and 23, a tub can comprise a diameter 62 between opposite outer

edges of the over stack structure 56 ranging from about 5.5 in. to about 8.0 in., from about 6.0 in. to about 7.5 in., from about 6.5 in. to about 7.0 in, from about 6.6 in. to about 6.8 in, or the diameter 62 can be about 6.70 in. For example, in the embodiments illustrated in Figs. 28 and 33, a tub can comprise a diameter 62 between opposite outer edges of the over stack structure 56 ranging from about 6.5 in. to about 9.5 in., from about 7.0 in. to about 9.0 in., from about 7.5 in. to about 8.5 in, from about 7.75 in. to about 8.25 in, or the diameter 62 can be about 8.08 in. Fig. 19 illustrates an enlarged view of portion B of the embodiment illustrated in Fig. 18; Fig. 24 illustrates an enlarged view of portion B of the embodiment illustrated in Fig. 23, Fig. 29 illustrates an enlarged view of portion B of the embodiment illustrated in Fig. 28, and Fig. 34 illustrates an enlarged view of portion B of the embodiment illustrated in Fig. 33.

[00086] In some aspects, a peripheral wall of a container can comprise an arcuate section joined to a bottom of the container. For example, in the embodiments illustrated Figs. 19 and 24, a peripheral wall 30 includes an arcuate section joined to a bottom 28 of the tub, and the arcuate section can have a radius of curvature 64 ranging from about 0.7 in. to about 1.3 in., from about 0.8 in. to about 1.2 in., from about 0.9 in. to about 1.1 in., or a radius 64 of about 1.000 in. For example, in the embodiments illustrated Figs. 29 and 34, a peripheral wall 30 includes an arcuate section joined to a bottom 28 of the tub, and the arcuate section can have a radius of curvature 64 ranging from about 0.15 in. to about 0.35 in., from about 0.18 in. to about 0.32 in., from about 0.20 in. to about 0.30 in., or a radius 64 of about 0.250 in.

[00087] Generally any one or more useful angles can exist between a rim and a peripheral wall of a container. For example, in the embodiments illustrated in Figs. 19 and 24, an angle 66 between a peripheral wall 30 and a plane perpendicular to the plane of the rim 36 can range from about 4° to about 10°, from about 5° to about 9°, from about 6° to about 8°, or the angle 66 can be about 7°. As another example, in the embodiment illustrated in Fig. 29, an angle 66 between a peripheral wall 30 and a plane perpendicular to the plane of the rim 36 can range from about 2° to about 8°, from about 3° to about 7°, from about 4° to about 6°, or the angle 66 can be about 5°. Also, the peripheral wall 30 of the embodiment illustrated in Figs. 33 and 34 comprises a first frustoconical section 31 and a second frustoconical section 33, where an angle 65 between the first frustoconical

section 31 and a plane perpendicular to the plane of the rim 36 can range from about 2° to about 8°, from about 3° to about 7°, from about 4° to about 6°, or the angle 65 can be about 5°, and an angle 67 between the second frustoconical section 33 and a plane perpendicular to the plane of the rim 36 can range from about 5° to about 11°, from about 6° to about 10°, from about 7° to about 9°, or the angle 67 can be about 8°.

[00088] In addition, a tub can generally comprise any distance between an underside of a rim and a bottom of the tub. For example, as illustrated in Figs. 19 and 24, a distance 86 between an underside of a rim 36 and a bottom 28 of the tub 26 can range from about 2.0 in. to about 2.5 in., from about 2.1 in. to about 2.4 in. about 2.2 in. to about 2.3 in., or the distance 86 be about 2.220 +/- 0.015 in. For example, as illustrated in Figs. 29 and 34, a distance 86 between an underside of a rim 36 and a bottom 28 of the tub 26 can range from about 1.7 in. to about 2.3 in., from about 1.9 in. to about 2.1 in. about 1.97 in. to about 1.99 in., or the distance 86 be about 1.980 +/- 0.015 in.

[00089] Further, a tub can generally comprise any distance from an underside of a rim and a center of an over stack structure. For example, as illustrated in Figs. 19 and 24, a distance 90 between an underside of a rim 36 and a center of an over stack structure 56 can range from about 0.125 in. to about 0.175 in., from about 0.135 in. to about 0.165 in., from about 0.145 in. to about 0.155 in., or the distance 90 can be about 0.150 in. For example, as illustrated in Figs. 29 and 34, a distance 90 between an underside of a rim 36 and a center of an over stack structure 56 can range from about 0.135 in. to about 0.185 in., from about 0.145 in. to about 0.175 in., from about 0.155 in. to about 0.165 in., or the distance 90 can be about 0.160 in. For example, as further illustrated in Figs 29 and 34, an a section of a peripheral wall 30 disposed between a rim 36 and an over stack structure 56 can be disposed at an angle 69 from a plane perpendicular to a plane of a rim 36 where the angle 69 ranges from about 12° to about 18°, from about 13° to about 17°, from about 14° to about 16°, or the angle 69 can be about 15°.

[00090] For example, Figs. 19, 24, 29, and 34 further illustrate embodiments of an over stack structure 56 including inner radius 68 of curvature and an outer radius 70 of curvature, where the inner radius 68 can range from about 0.065 in. to about 0.095 in., from about 0.070 in. to about 0.090 in, from about 0.075 in. to about 0.085 in., or the inner radius 68 can be about 0.080 in.; and the outer radius 70 can range from about

0.075 in. to about 0.125 in., from about 0.085 in. to about 0.115 in, from about 0.095 in. to about 0.105 in., or the outer radius 70 can be about 0.100 in.

[00091] A rim can also generally have any width, and a bend between a rim and a peripheral wall can generally have any radius of curvature. For example, in the embodiments illustrated in Figs. 19 and 24, the width 72 of the rim can range from about 0.185 in. to about 0.260 in., from about 0.195 in. to about 0.250 in., from about 0.210 in. to about 0.245 in., from about 0.220 in. to about 0.240 in., or the width 72 can be about 0.233 in.; and the radius of curvature 74 of the bend between the rim and the peripheral wall can range from about 0.035 in. to about 0.065 in., from about 0.040 in. to about 0.060 in., from about 0.045 in. to about 0.055 in., or the radius 74 can be about 0.050 in. For example, in the embodiments illustrated in Figs. 29 and 34, the width 72 of the rim can range from about 0.120 in. to about 0.240 in., from about 0.150 in. to about 0.210 in., from about 0.160 in. to about 0.200 in., from about 0.170 in. to about 0.190 in., or the width 72 can be about 0.180 in.; and the radius of curvature 74 of the bend between the rim and the peripheral wall can range from about 0.015 in. to about 0.045 in., from about 0.020 in. to about 0.040 in., from about 0.025 in. to about 0.035 in., or the radius 74 can be about 0.030 in.

[00092] A rim can optionally comprise additional structures such as a lip. For example, the embodiments of the tub 26 illustrated in Figs. 18, 23, 28, and 33 comprise a rim 36 including a tiered lip 76. In the embodiments illustrated in Figs. 19, 24, 29, and 23, the lip includes a first bend (having a radius of curvature 78) and a second bend (having radius of curvature 80). For example, in Figs. 19, 24, 29, and 23, the radius 78 of the first bend can range from about 0.010 in. to about 0.050 in., from about 0.020 in. to about 0.040 in., from about 0.025 in. to about 0.035 in., or the radius 78 can be about 0.030 in; in Figs 19 and 24 the radius 80 of the second bend can range from about 0.005 in. to about 0.045 in., from about 0.015 in. to about 0.035 in., from about 0.020 in. to about 0.030 in., or the radius 80 can be about 0.025 in.; and in Figs. 29 and 23 the radius 80 of the second bend can range from about 0.010 in. to about 0.050 in., from about 0.020 in. to about 0.040 in., from about 0.025 in. to about 0.035 in., or the radius 80 can be about 0.030 in.

[00093] In the embodiments illustrated in Figs. 19, 24, 29, and 23, a section of the lip 76 between the first and second bends can be disposed at angle 82 from a plane perpendicular to the plane of the rim. For example, in the embodiment illustrated in Figs. 19 and 24, the angle 82 can range from about 6° to about 14°, from about 7° to about 13°, from about 8° to about 12°, from about 9° to about 11°, or the angle 82 can be about 10°; and in the embodiment illustrated in Figs. 29 and 34 the angle 82 can range from about 1° to about 5°, from about 2° to about 4°, or the angle 82 can be about 3°.

[00094] As further illustrated in Figs. 19, 24, 29, and 23, the lip can extend a distance 84 from the second bend of the lip to the edge of the lip, and the distance 84 can range from about 0.015 in. to about 0.045 in., from about 0.020 in. to about 0.040 in., from about 0.025 in. to about 0.035 in., or the distance 84 can be about 0.030 in.

[00095] Also, a tub can generally comprise any distance between an underside of a rim and an underside of a lip. For example, as illustrated in Figs. 19 and 24, a distance 88 between an underside of a rim 36 and an underside of a lip can range from about 0.050 in. to about 0.150 in., from about 0.075 in. to about 0.125 in., from about 0.09 in. to about 0.11 in., or the distance 88 be about 0.100 in. For example, as illustrated in Figs. 29 and 34, a distance 88 between an underside of a rim 36 and an underside of a lip can range from about 0.070 in. to about 0.110 in., from about 0.080 in. to about 0.10 in., from about 0.085 in. to about 0.095 in., or the distance 88 be about 0.090 in.

[00096] In some embodiments, a method of heating a frozen food product can comprise transferring the frozen food product from a container into a heating device and then heating the frozen food product in the heating device. In some embodiments, a frozen food product can be removed from a container using one or more steps such as inverting the container, prying or lifting the frozen food product out of the container, and/or deforming a flexible wall of a container to push the frozen food product out. In an embodiment illustrated in Fig. 14, the tub 26 is constructed of a polymeric material with sufficient flexibility to allow a force applied to the bottom of the tub, e.g. from a user's thumb 42, to deform the tub and partially separate the frozen food product 2 from the tub.

[00097] Fig. 15 illustrates an embodiment of a multi-function pressure cooker 44 including a receptacle or pot 6 that can hold a frozen food product. In some embodiments, a frozen food product is formulated and configured to fit closely within the

receptacle 6, and to be cooked or otherwise heated to provide a ready-to-eat food product efficiently and reliably without scorching, burning, localized overheating, excessive drying or toughening, or other problems. In some embodiments, the bottom of the food product may be in direct contact with the bottom of the receptacle, and a minimum ratio of the bottom area of the product to the bottom area of the receptacle cavity may be, e.g., 0.7:1.0, 0.75:1.0, 0.8:1.0, 0.85:1.0, 0.9:1.0, 0.95:1.0, 0.97:1.0, or 0.99:1.0.

EXAMPLES

[00098] The following examples illustrate embodiments and are not intended to limit the scope of the present teachings.

EXAMPLE A – Beef and Broccoli with Rice

[00099] A beef, broccoli, and rice meal kit was prepared as follows.

[000100] A beef and sauce component included the following ingredients:

[000101] 1 cup of chopped yellow onion

[000102] 2 tbsp. of vegetable oil

[000103] 3 tbsp. fresh chopped garlic

[000104] ¼ cup of beef broth

[000105] 3 tbsp. low sodium soy sauce

[000106] 3 tbsp. regular soy sauce

[000107] 1 tbsp. of dark brown sugar

[000108] 2 tsp. of ground ginger

[000109] 1 lb. of flank steak; thinly sliced (3 inch length x ¼ inch thick)

[000110] The onions were sautéed in oil, stirring occasionally, for 5 minutes or until the onions slightly caramelized. The garlic was then added to the onions and the mixture was sautéed for 1 minute. The mixture of onion and garlic was then allowed to cool.

[000111] The beef broth, soy sauces, brown sugar and ginger were combined and mixed until well blended. The cooled onion and garlic was then added to the broth and other ingredients to form a marinade. The beef was added to a large clear container (6-1/2

cup size) and the marinade was poured over the beef. The clear container was then sealed, and the contents were frozen.

[000112] A rice component was prepared by rinsing 1 cup of Minute Rice brand instant rice, and draining. The rinsed rice was then placed in a pouch and frozen.

[000113] A starch component was prepared by placing 2 tbsp. of corn starch in a container and freezing.

[000114] A broccoli component was prepared by placing 2 cups of baby broccoli florets in a pouch and freezing.

[000115] Components of the meal kit configured for sale to a consumer included the container including the frozen beef and sauce component, the pouch including the frozen rice component, the container including the frozen cornstarch, the pouch including the frozen broccoli component, and a foil pan.

[000116] Meal Preparation

[000117] Tools used: multifunction pressure cooker, aluminum foil, pressure cooker trivet, whisk, and spoon

[000118] The frozen beef and sauce component was emptied into a pot of a multifunction pressure cooker and ¼ cup of water was added to the pot. A gap existed between at least a portion of the outer peripheral surface of the frozen beef and sauce component and the inner peripheral surface of the pot. A trivet was inserted in the pot in a position on top of the frozen beef and sauce component. A foil pan was placed on top of the trivet and the rice component was emptied from the pouch and into the pan. One cup of water was added to the pan, and the pan was covered with foil.

[000119] After closing the lid of the multifunction pressure cooker, the pressure relief valve of the pressure cooker was set to the sealing position, and the contents of the pressure cooker were heated at a high pressure cook setting for 10 minutes. After the timer went off, the cancel button on the pressure cooker was pressed, a quick release of the pressure in the pressure cooker was activated, and the lid was removed. The trivet and the pan including the rice were removed from the pot and set aside.

[000120] The 2 tablespoons of water where added to the starch component in the container and the contents were whisked until smooth and then stirred into the beef and sauce component in the pot until well mixed. The multifunction pressure cooker set to a

sauté setting and the contents of the pot were boiled while whisking constantly for 2-3 minutes or until the sauce slightly thickened. The beef and sauce were then allowed to cool. The broccoli component was then removed from the pouch, added to the pot, and cooked and stirred for 2-3 minutes or until the heated thoroughly and the broccoli was broken apart. Using a meat thermometer, the temperature of each piece of meat was ensured to have reached a temperature above 165° F. The beef, sauce, and broccoli were then served over the rice.

[000121] The total time to prepare the five-serving meal from the kit was 37 minutes (including 8 minutes of active preparation).

EXAMPLE B - Honey Teriyaki Chicken and Rice

[000122] A honey teriyaki chicken and rice meal kit was prepared as follows.

[000123] A chicken, carrot, and sauce component included the following ingredients:

[000124] ¼ cup of low-sodium soy sauce

[000125] 3 tbsp. of ketchup

[000126] 7 tbsp. of clover honey

[000127] 2 tbsp. of vegetable oil

[000128] ½ cup of chopped yellow onion

[000129] 2 tsp. of minced garlic

[000130] ¼ tsp. of dried red pepper flakes

[000131] ¼ tsp. of salt

[000132] ¼ tsp. of ground black pepper

[000133] 1 lb. of boneless skinless chicken thighs, cut into ¾-inch pieces

[000134] 2 cups frozen crinkle cut carrots

[000135] The chicken and carrots were placed in a large clear container (8-1/2 cup size) and then the soy sauce, ketchup, honey, oil, onion, garlic, red pepper flakes, salt, and black pepper were combined poured over and chicken and carrots. The clear container was then sealed, and the contents were frozen.

[000136] A rice component was prepared by rinsing 1 cup of Minute Rice brand brown rice, and draining. The rinsed rice was then placed in a pouch and frozen.

[000137] A starch component was prepared by placing 5 tbsp. of cornstarch in a container and freezing.

[000138] Components of the meal kit configured for sale to a consumer included the container including the frozen chicken, carrot, and sauce component, the pouch including the frozen rice component, the container including the frozen cornstarch, and a foil pan.

[000139] Meal Preparation

[000140] Tools used: multifunction pressure cooker, aluminum foil, pressure cooker trivet, whisk, spoon, measuring cup, and measuring spoon.

[000141] The frozen chicken, carrot, and sauce component was emptied into a pot of a multifunction pressure cooker and ¼ cup of water was added to the pot. A trivet was inserted in the pot in a position on top of the frozen chicken, carrot, and sauce component. A foil pan was placed on top of the trivet and the rice component was emptied from the pouch and into the pan. One cup of water was added to the pan, and the pan was covered with foil.

[000142] After closing the lid of the multifunction pressure cooker, the pressure relief valve of the pressure cooker was set to the sealing position, and the contents of the pressure cooker were heated at a high pressure cook setting for 10 minutes. After the timer went off, the cancel button on the pressure cooker was pressed, a quick release of the pressure in the pressure cooker was activated, and the lid was removed. The trivet and the pan including the rice were removed from the pot and set aside.

[000143] The 2 tablespoons of water where added to the starch component in the container and the contents were whisked until smooth. The water and starch was then added to the chicken, carrot, and sauce component mixed well within the pot. The multifunction pressure cooker set to a sauté setting and the contents of the pot were boiled while stirring constantly for 2-3 minutes or until the sauce thickened. Using a meat thermometer, the temperature of each piece of meat was ensured to have reached a temperature above 165° F. The chicken, carrot, and sauce were allowed to cool before serving over the rice.

[000144] The total time to prepare the five-serving meal from the kit was 25 minutes (including 5 minutes of active preparation).

EXAMPLE C – Chicken Broccoli Mac and Cheese

[000145] A chicken broccoli mac and cheese meal kit was prepared as follows.

[000146] A sauce component included the following ingredients:

[000147] 1 tbsp. of butter

[000148] 8 oz. (1 cup) evaporated milk

[000149] 1 ½ tbsp. cornstarch

[000150] ¾ tsp. salt

[000151] ½ tsp. dry mustard

[000152] ¼ tsp. garlic powder

[000153] ¼ tsp. ground black pepper

[000154] The butter was placed in a medium microwave-safe bowl and heated in a microwave on a high setting until for 30 to 45 seconds or until melted. The evaporated milk, cornstarch, salt, dry mustard, garlic powder, and ground black pepper with then combined with the melted butter in the bowl by whisked to form a sauce component. The sauce component was then placed in a small clear container (3-1/2 cup size). The clear container was then sealed, and the contents were frozen.

[000155] A crumb topping component included the following ingredients:

[000156] ¼ cup plain panko (Japanese-Style) bread crumbs

[000157] 1 tsp. butter

[000158] The butter was placed in small microwave-safe bowl and heated in a microwave on a high setting until for 15 to 30 seconds, or until melted. The panko crumbs were stirred into the bowl and then the mixture was heated in a microwave for 30 to 45 seconds, or until the crumbs are lightly toasted. The contents of the bowl were stirred and then crumb topping component was placed in a pouch and the pouch was sealed, and the contents were frozen.

[000159] A pasta component was prepared placing 2 cups (6 oz.) of fusilli pasta in a pouch and freezing.

[000160] A broccoli and cheese component was prepared by placing 2 cups (6 oz.) of baby broccoli and 1 ½ cups (6 oz.) of shredded sharp cheese were placed in a pouch and frozen.

[000161] A chicken component was prepared by placing cut chicken pieces in a pouch and freezing.

[000162] Components of the meal kit configured for sale to a consumer included the container including the frozen sauce component, the pouch including the frozen crumb component, the pouch including the frozen pasta component, the pouch including the frozen broccoli and cheese component, the pouch including the chicken component.

[000163] Meal Preparation

[000164] Tools used: multifunction pressure cooker, tongs, rubber spoon.

[000165] The chicken component was broken into smaller pieces within the pouch and then emptied into a pot of a multifunction pressure cooker along with 2 tbsp. of vegetable oil. The pressure cooker was set to a sauté setting and the chicken and oil were heated and stirred for 8 minutes or until the chicken was no longer pink. The chicken was then removed from the pot and set aside. The cancel button on the pressure cooker was then pressed.

[000166] The frozen sauce component was then emptied from the pouch into the pot of the pressure cooker. Two cups of water were added to the pot. The pressure cooker was set to a sauté setting and the sauce was heated until steaming (about 5 minutes), while stirring occasionally. The cancel button on the pressure cooker was then pressed.

[000167] The pasta component was then removed from the pouch and combined with the sauce in the pot of the pressure cooker. After closing the lid of the pressure cooker, the pressure relief valve of the pressure cooker was set to the sealing position, and the contents of the pressure cooker were heated at a high pressure cook setting for 6 minutes. After the timer went off, the cancel button on the pressure cooker was pressed, a quick release of the pressure in the pressure cooker was activated, and the lid was removed. The broccoli and cheese component and chicken were then stirred into the pot. The pressure cooker was set to a sauté setting and the contents of the pot were heated for

5 minutes with constant stirring to avoid scorching the sauce. Using a meat thermometer, the temperature of each piece of meat was ensured to have reached a temperature above 165° F. The crumb topping component was then sprinkled on top of the cooked sauce, chicken, and broccoli and cheese components.

The total time to prepare the five-serving meal from the kit was 40 minutes (including 18 minutes of active preparation).

EXAMPLE D – Pizza pasta with sausage and pepperoni

[000168] A pizza pasta with sausage and pepperoni meal kit was prepared as follows.

[000169] A pizza sauce, spaghetti sauce, and sausage component included the following ingredients:

[000170] ½ lb. sweet Italian turkey sausage

[000171] 2 tsp. minced garlic

[000172] ½ tsp Italian seasoning

[000173] 8 oz. tomato basil spaghetti sauce

[000174] 4 oz. Pizza Sauce

[000175] The sausage, garlic, and Italian season were placed in a large non-stick skillet and cooked until the meat was browned and breaking into fine crumbles. The pizza and spaghetti sauces were then stirred into the meat. The sauce and sausage component was then placed in a large clear container (6-1/2 cup size). The clear container was then sealed, and the contents were frozen.

[000176] A pepperoni component was prepared by placing 10 slices of turkey pepperoni in a pouch and freezing.

[000177] A mozzarella cheese component was prepared by placing 4 oz. of shredded mozzarella cheese in a pouch and freezing.

[000178] A pasta component was prepared by placing ½ lb. (8 oz.) of cavatappi pasta in a pouch and freezing.

[000179] Components of the meal kit configured for sale to a consumer included the container including the frozen sauce and sausage component, the pouch including the

frozen pasta component, the pouch including the frozen pepperoni component, and the pouch including the frozen mozzarella cheese component.

[000180] Meal Preparation

[000181] Tools used: multifunction pressure cooker and spoon.

[000182] The frozen sauce and sausage component was emptied into a pot of a multifunction pressure cooker along with 2 cups of water. The pressure cooker was set to a sauté setting and the sauce and sausage component was heated for 12 minutes, while stirring occasionally. The cancel button on the pressure cooker was then pressed.

[000183] The frozen pasta component was emptied from the pouch and stirred into to the sausage and sauce component in the pot. After closing the lid of the pressure cooker, the pressure relief valve of the pressure cooker was set to the sealing position, and the contents of the pressure cooker were heated at a high pressure cook setting for 8 minutes. After the timer went off, the cancel button on the pressure cooker was pressed, a quick release of the pressure in the pressure cooker was activated, and the lid was removed. Using a meat thermometer, the temperature of each piece of meat was ensured to have reached a temperature above 165° F. The pepperoni and mozzarella cheese components were then emptied from the pouches and stirred into the sauce, sausage, and pasta components in the pot until the cheese melted.

[000184] The total time to prepare the five-serving meal from the kit was 32 minutes (including 13 minutes of active preparation).

EXAMPLE E - Salmon, Rice & Peas with Lemon-Herb Sauce

[000185] A salmon, rice & peas with lemon-herb sauce meal kit was prepared as follows.

[000186] A lemon-herb sauce component included the following ingredients:

[000187] 2 tbsp. butter

[000188] 1 medium yellow onion, chopped

[000189] 1/3 cup all-purpose flour

[000190] ¾ cup chardonnay white wine

[000191] 2 lemons, zested and juiced

[000192] 1 cup chicken broth

[000193] 1 cup heavy whipping cream

[000194] 1 tbsp. dried chives

[000195] 2 tsp. dried marjoram

[000196] 1 tsp. dried oregano

[000197] 1 tbsp. Dijon mustard

[000198] 1 tbsp. sea salt

[000199] 2 tbsp. chopped fresh parsley

[000200] The onion was sautéed in butter for 5 to 6 minutes until golden brown, while whisking in flour. Cooking was then continued for 2 to 3 minutes, while deglazing with wine. The lemon zest, juice, broth, cream, dried herbs and salt were then stirred in and the mixture was brought to a simmer. The mixture was then removed from heat. The mixture was then placed in a blender and processed until smooth. Parsley was then stirred into the mixture. The lemon-herb sauce was then poured into an ice cube tray (16 ice cubes). The tray was then sealed and the contents frozen. Three of the frozen lemon-herb sauce cubes were placed in a pouch, and the pouch was sealed.

[000201] A rice component was prepared by rinsing 1 ½ cups of Minute Rice brand brown rice, and draining. The rinsed rice was then placed in a pouch and frozen.

[000202] A pea component was prepared by placing 3/4 cup of frozen peas in a pouch and freezing.

[000203] A salmon component was prepared by cutting 1 lb. of skinless salmon filets into 16 uniform size cubes (cutting of thin brown layer next to flesh), placing the cubes in a pouch and freezing.

[000204] Components of the meal kit configured for sale to a consumer included the container including the pouch including the three cubes of the frozen lemon-herb sauce component, the pouch including the frozen rice component, the pouch including the frozen pea component, the pouch including the frozen salmon component, and two foil pans.

[000205] Meal Preparation

[000206] Tools used: multifunction pressure cooker, aluminum foil, whisk, pressure cooker trivet.

[000207] A trivet and 1 cup of water were place in a pot of a multifunction pressure cooker. The rice and pea components were broken up in the pouches and then emptied into a first foil pan along with 1 ½ cups of water. The full first foil pan was then covered and sealed with foil and placed on top of the rack of the trivet in the pot.

[000208] The pouch including the lemon-herb sauce component was placed in the bottom of a second foil pan. Pieces of salmon were then broken up within the pouch and then emptied on top of the pouch including the lemon-herb sauce component. The second pan was then placed directly on top of the first pan within the pressure cooker, without covering the second pan.

[000209] After closing the lid of the multifunction pressure cooker, the pressure relief valve of the pressure cooker was set to the sealing position, and the contents of the pressure cooker were heated at a high pressure cook setting for 10 minutes. After the timer went off, the cancel button on the pressure cooker was pressed, a quick release of the pressure in the pressure cooker was activated, and the lid was removed. The trivet and the first and second pans were removed from the pot and set aside.

[000210] The salmon was removed from the pouch including the lemon-herb sauce component and the sauce component was whisked until blended. Using a meat thermometer, the temperature of each piece of meat was ensured to have reached a temperature above 165° F. The salmon was served over the rice and peas and then topped with the sauce.

[000211] The total time to prepare the five-serving meal from the kit was 30 minutes (including 5 minutes of active preparation).

[000212] While particular food product configurations have been shown in the accompanying figures and described above for purposes of example in connection with some embodiments, it is contemplated that in other embodiments, various other product configurations may be employed. In some embodiments, particularly embodiments where a food product is to be heated to a particular temperature throughout, the food product may be generally bowl-shaped, hollow, or otherwise configured to facilitate efficient heating of the entire food item by a multifunctional pressure cooker transferring heat to

bottom and side surfaces of the food product that are in contact with the bottom and sides of the cooker receptacle.

[000213] In a composite food item having variations in heat capacity, high density and/or high thermal conductivity among its components, efficient heating may be promoted by locating components with high heat capacity, high density and/or high thermal conductivity at or near the bottom and/or sides of the food item, and locating components with lower density, lower heat capacity and/or lower thermal conductivity at positions spaced from the bottom and sides.

[000214] Similarly, where it is desired that some components be heated longer or to higher temperatures than others, such components may be positioned at the bottom, or at the bottom and sides, with other components being spaced from the bottom, or from the bottom and sides.

[000215] It is contemplated that the molding processes and other production processes described herein may be adapted for high-speed, high-volume commercial production using form-fill-seal machines, as intermittent or continuous processes. Such processes may take place under subatmospheric pressures and/or using modified atmosphere packaging techniques such that food items are sealed under vacuum, with oxygen having been displaced by nitrogen, carbon dioxide, or other gases to help maintain freshness and stability.

[000216] The packaged food products described herein may include instructions specifically associated with specific multifunction pressure cookers or other types of cookers to guide users in selecting specific heating times, temperatures and other parameters.

[000217] The food items described herein may be heated in pressure cookers or other devices with or without the aid of devices such as trivets, racks, spacers, cake rings, pie pans, or plates.

[000218] The method steps described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or language describing an example (e.g., "such as") provided herein, is intended to illuminate and does not pose a limitation. Any statement herein as to the nature or benefits of embodiments is not intended to be limiting. Any combination

of the above-described elements in all possible variations thereof is contemplated unless otherwise indicated herein or otherwise clearly contradicted by context.

CLAIMS

What is claimed is:

1. A packaged frozen food product configured for cooperation with a particular multifunction pressure cooker having a receptacle that includes a cavity with a predetermined bottom surface area and a peripheral surface having a predetermined diameter, comprising:

a package;

a food item disposed within the package, the food item having a bottom surface area substantially equal to that of the cavity, and a diameter slightly less than or equal to that of the peripheral surface of the cavity; and

instructions for heating the food item in the multifunction pressure cooker.

2. The packaged frozen food product of claim 1, wherein the instructions are printed on the package, and wherein the food item includes a concave bottom portion to facilitate handling.

3. The packaged frozen food product of claim 1, wherein when the frozen food item has a diameter substantially equal to that of the cavity, such that when the frozen food item is placed in the inner cavity, there is no gap between the frozen food item and the peripheral surface of the cavity.

4. The frozen food product of claim 1, wherein the frozen food item has a diameter slightly less than that of the cavity.

5. The frozen food product of claim 4 wherein the diameter of the frozen food item is at least about 1 mm. less than that of the cavity.

6. The frozen food product of claim 4, wherein the diameter of the frozen food item allows interposition of at least a part of a cooking implement between the frozen food item and the cavity when the frozen food item is placed in the cavity.

7. The frozen food product of claim 6, wherein the cooking implement comprises a trivet.

8. A container comprising a cavity configured for use in molding a food item into a circular cylindrical shape during freezing so as to provide a frozen food item having a bottom surface area substantially equal to that of a cavity of a multifunction pressure cooker, and a diameter slightly less than or equal to that of the cavity.

9. The container of claim 8 comprising a polymeric pouch configured to be placed in a mold when freezing the food item.

10. The container of claim 8 comprising a bottom wall and a peripheral wall, the peripheral wall having a rim extending outward about its upper periphery to facilitate handling, wherein the bottom wall has a convex upper surface so that the molded frozen food item will have a concave bottom portion.

11. A method of using a packaged frozen food product comprising a solid, one-piece unitary frozen food item having a predetermined diameter, a package containing the food item, and instructions for preparation, the method comprising:

transferring the frozen food item from the package to a cavity of a multifunction pressure cooker having a diameter equal to or slightly greater than that of the food item such that the bottom of the frozen food item covers or substantially covers the bottom of the cavity, in contact therewith; and

heating the food item in the cavity.

12. The method of claim 11, wherein the package has at least one flexible wall, and wherein transferring the frozen food item from the package to the cavity comprises manually deforming a flexible wall of the package to push the frozen food item out of the package.

FIG. 1

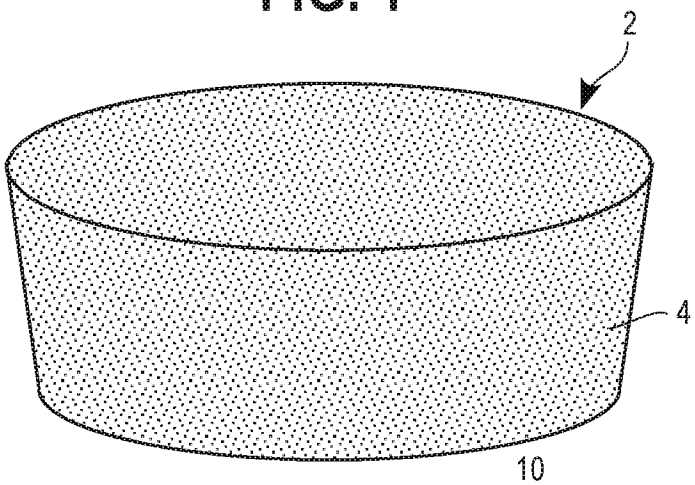


FIG. 2

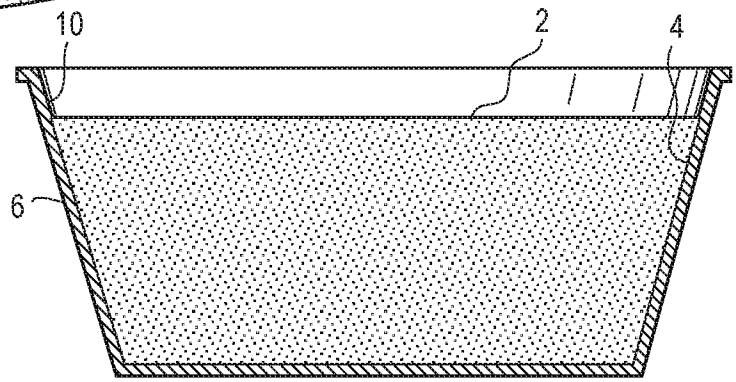


FIG. 3

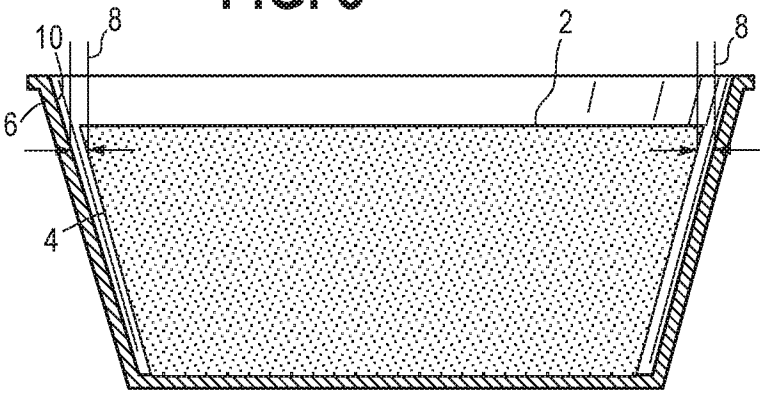


FIG. 4

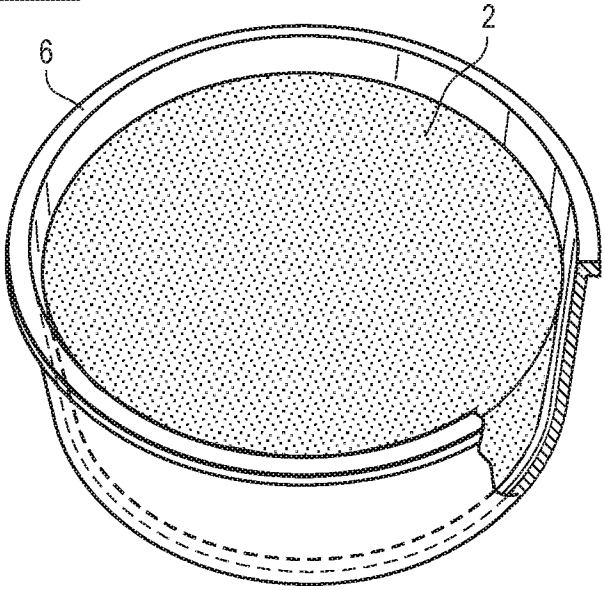


FIG.5

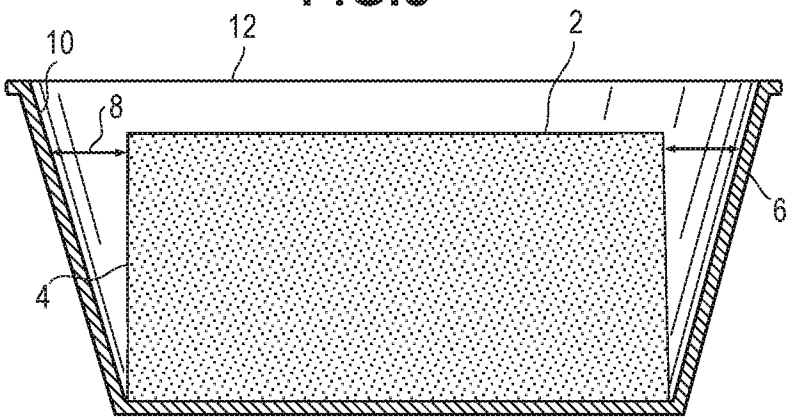


FIG.6

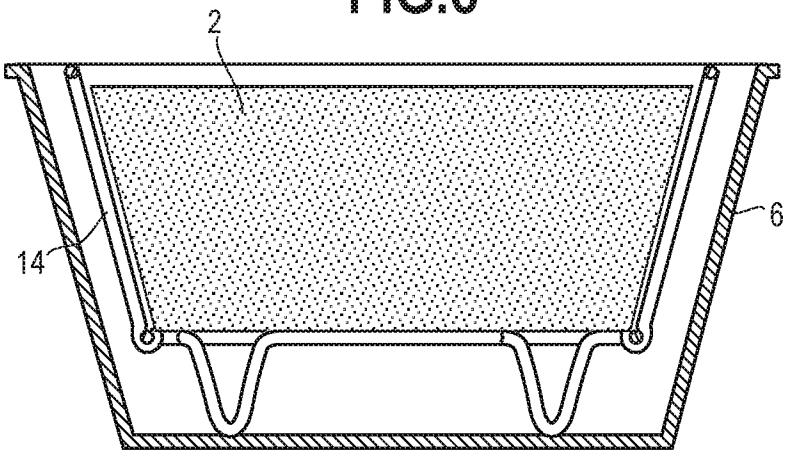


FIG. 7

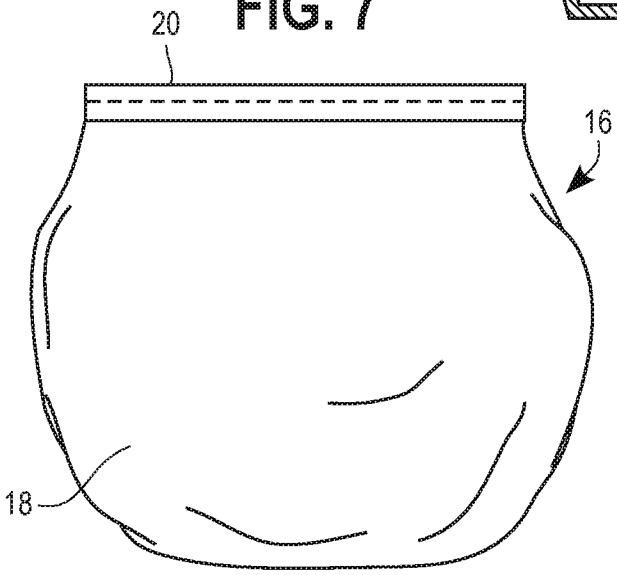


FIG. 8

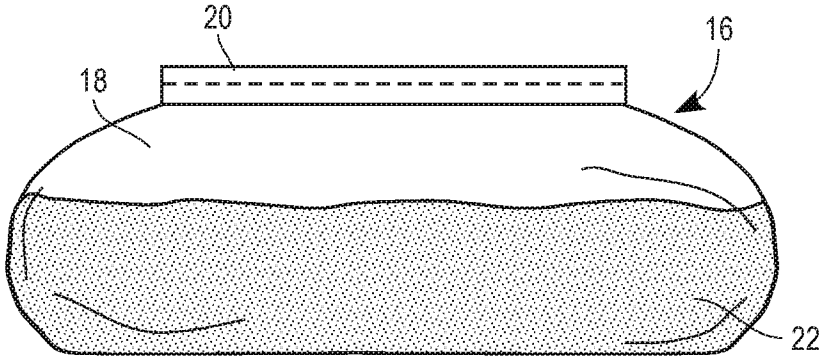


FIG. 9

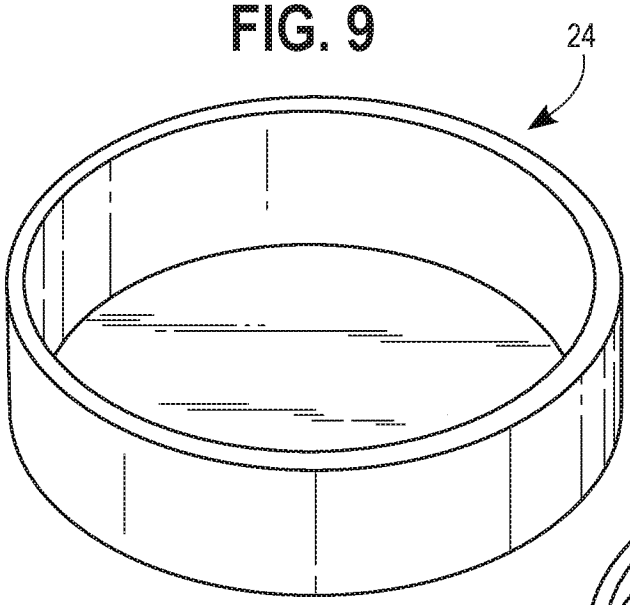


FIG. 10

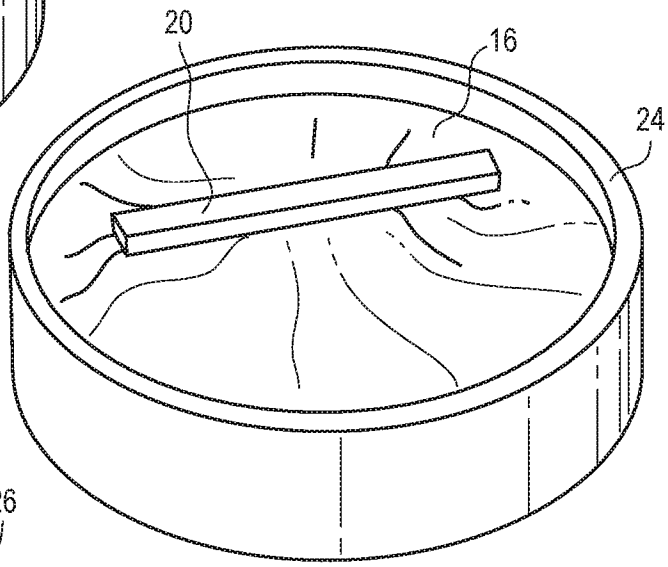


FIG. 11

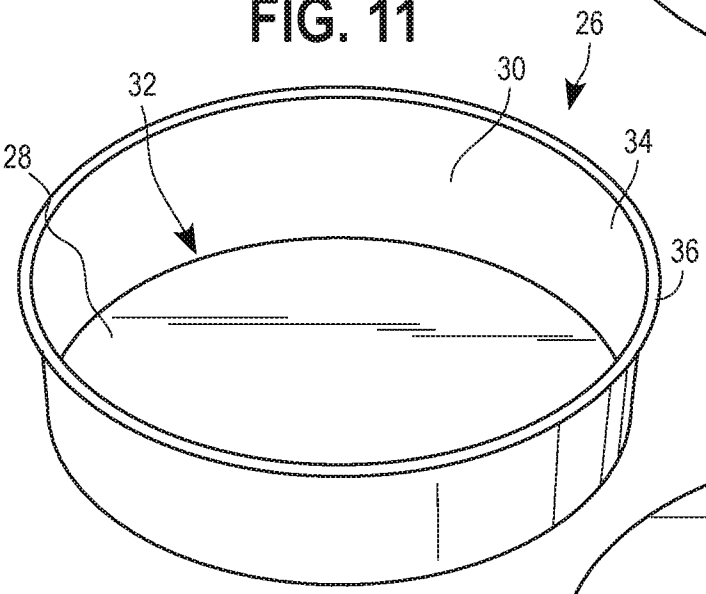


FIG. 12

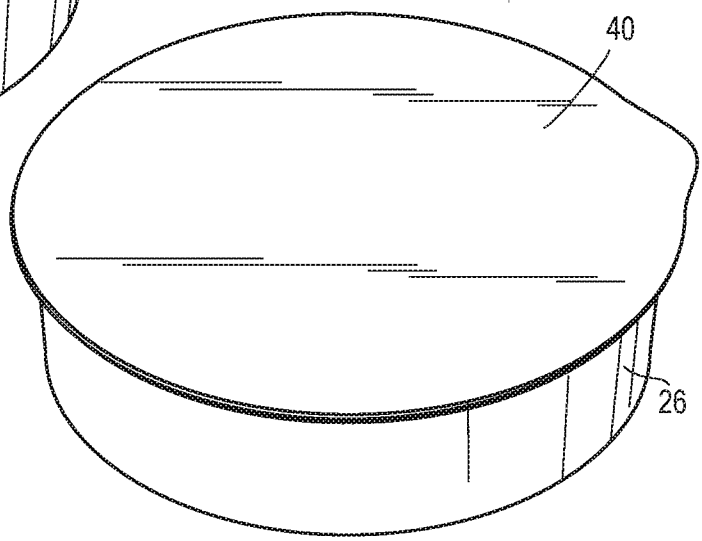


FIG. 13

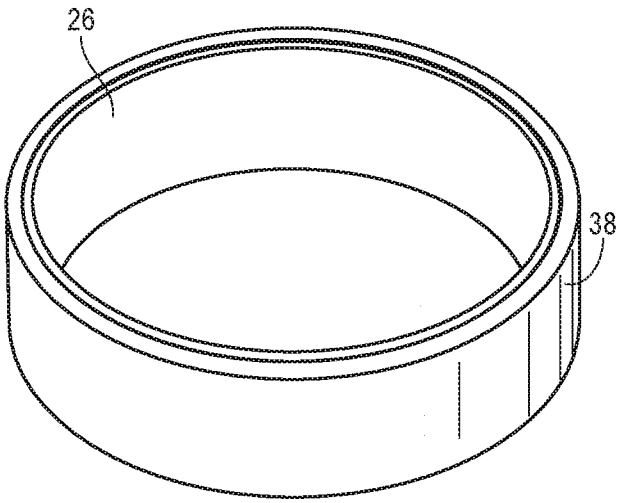


FIG. 14

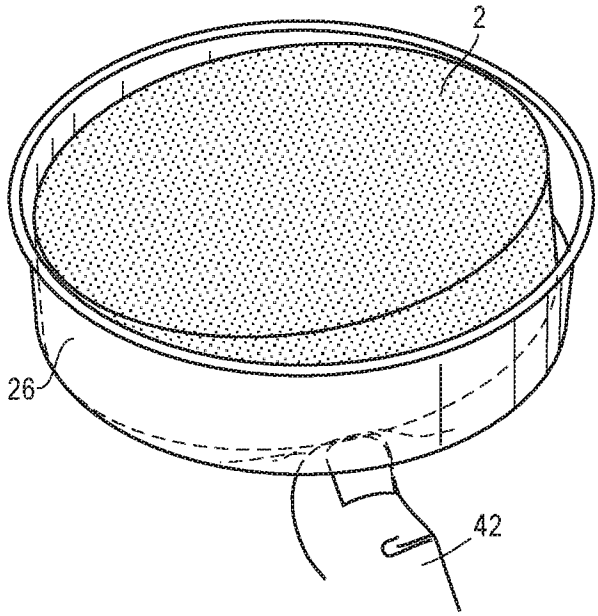


FIG. 15

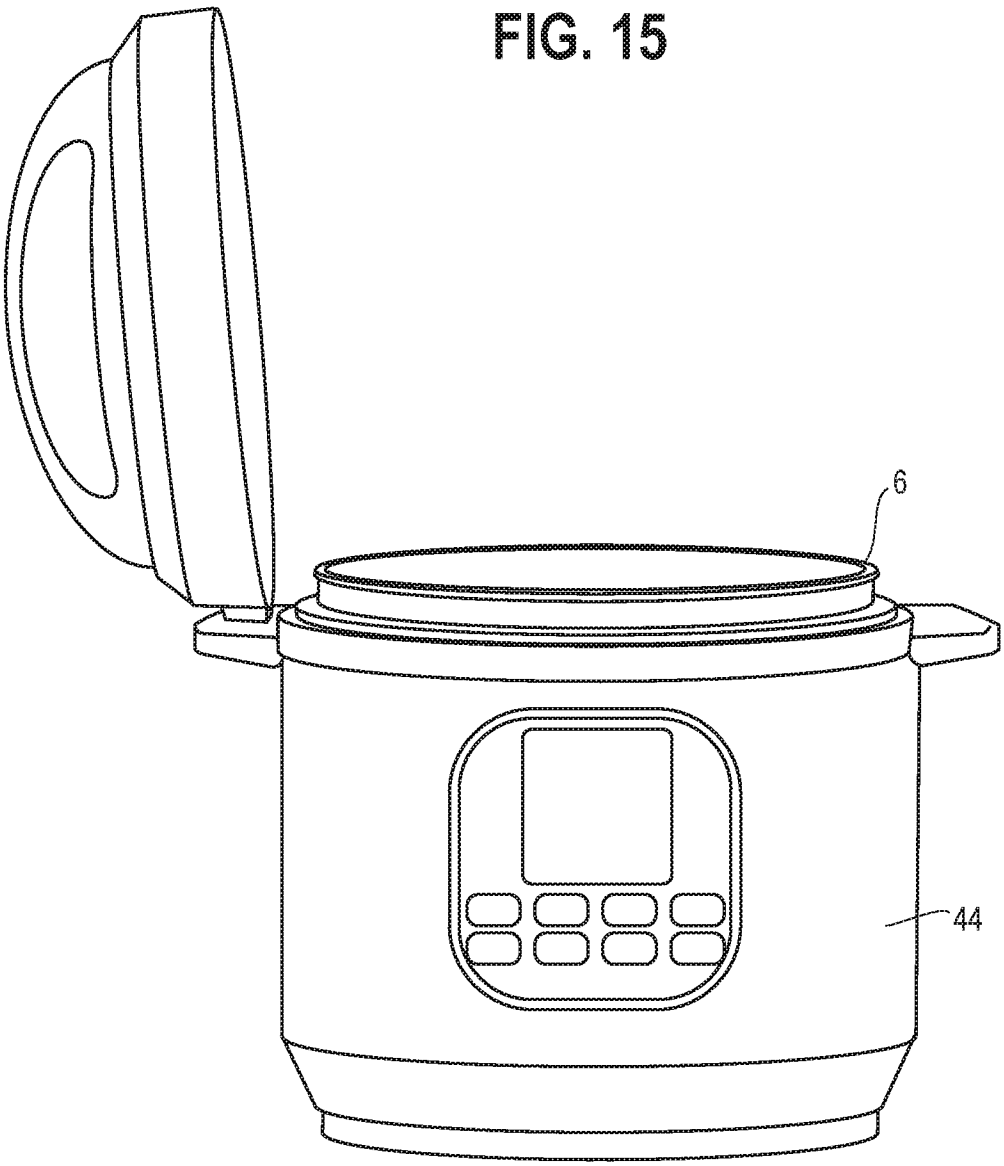


FIG. 16

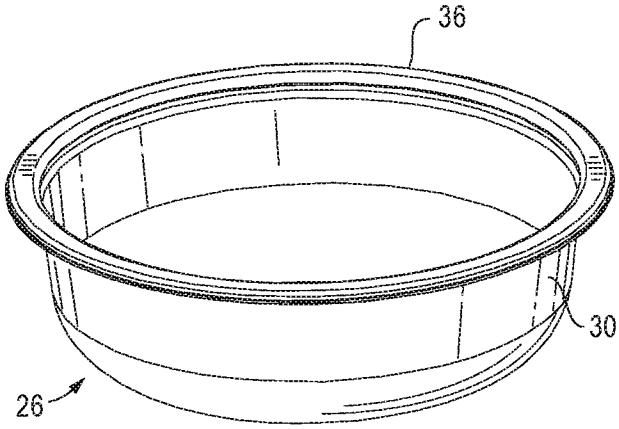


FIG. 17

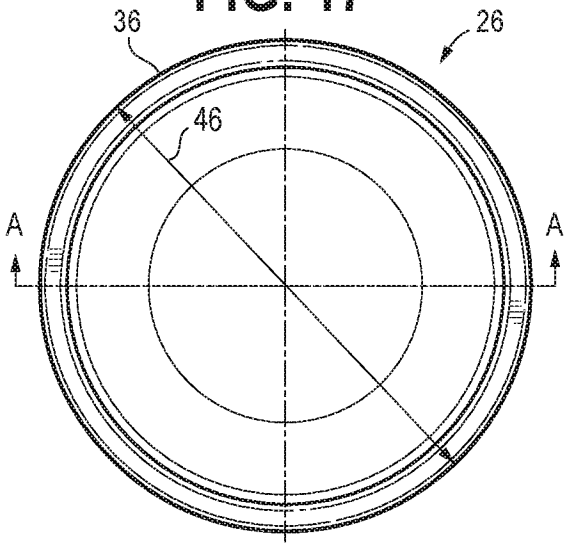


FIG. 18

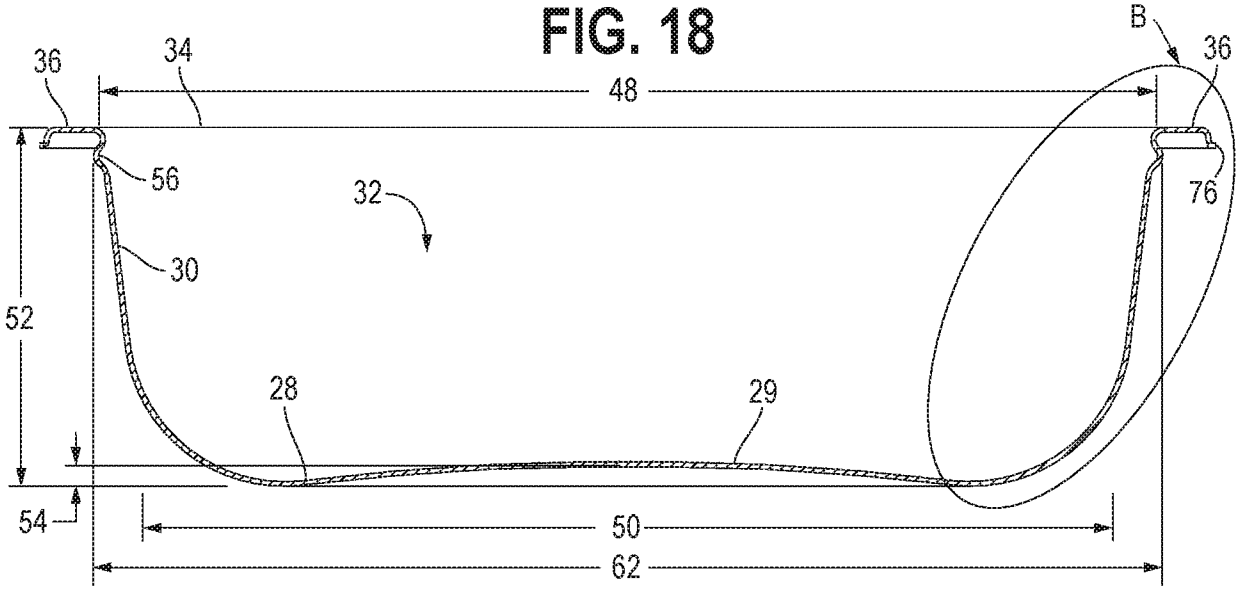


FIG. 19

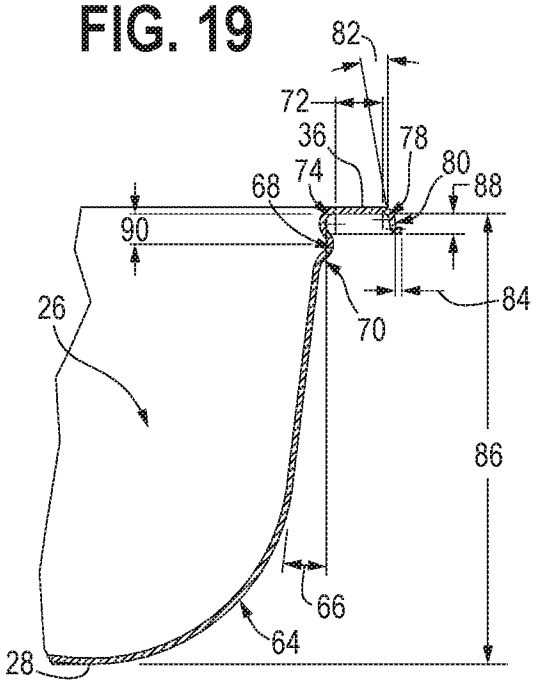


FIG. 20

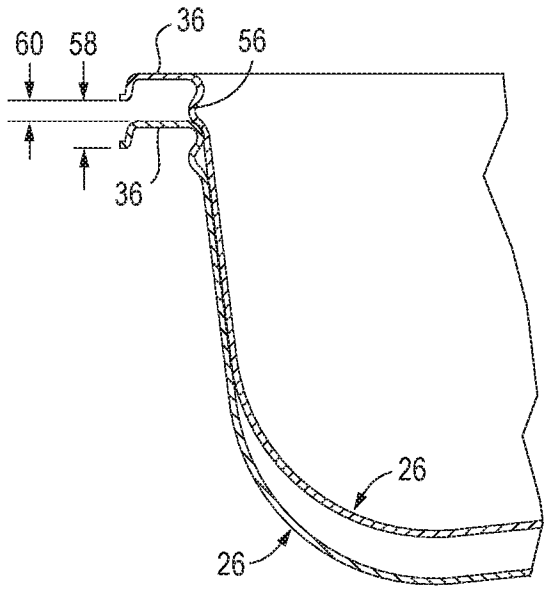


FIG. 21

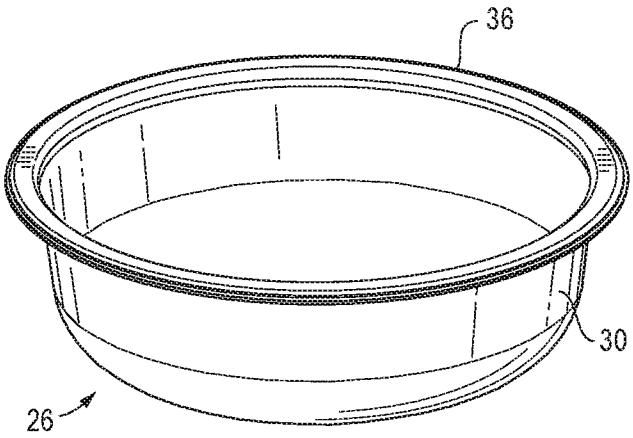


FIG. 22

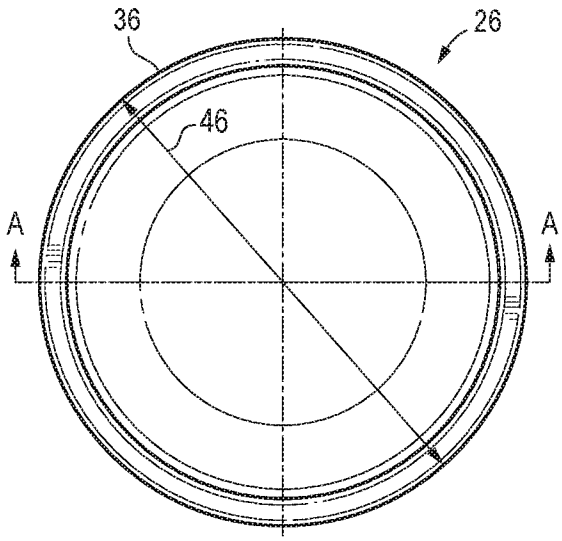


FIG. 23

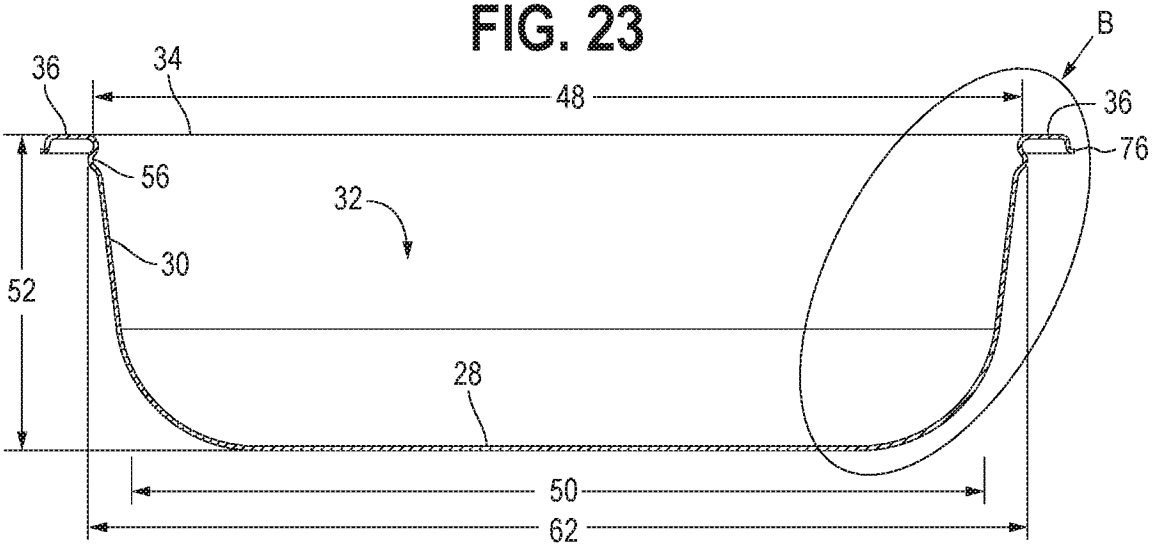


FIG. 24

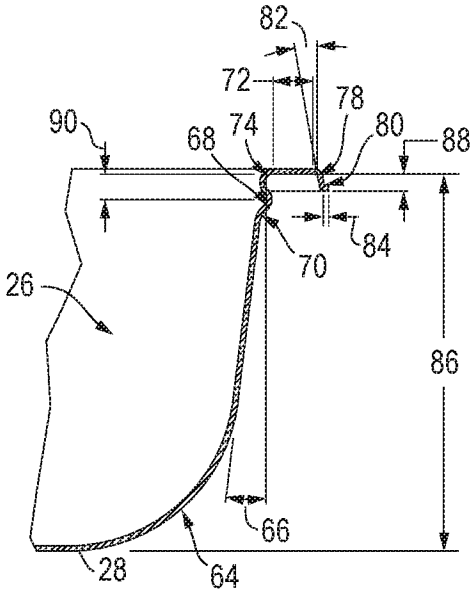


FIG. 25

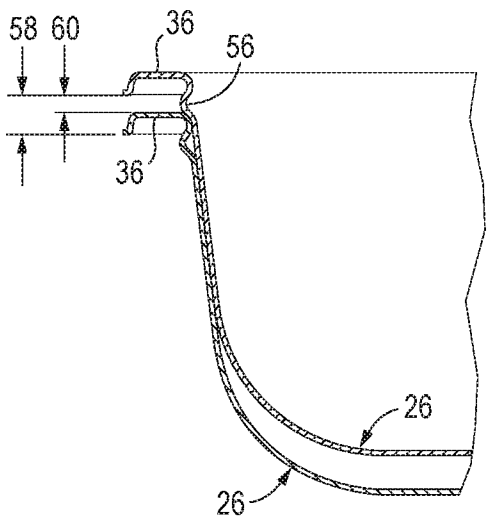


FIG. 26

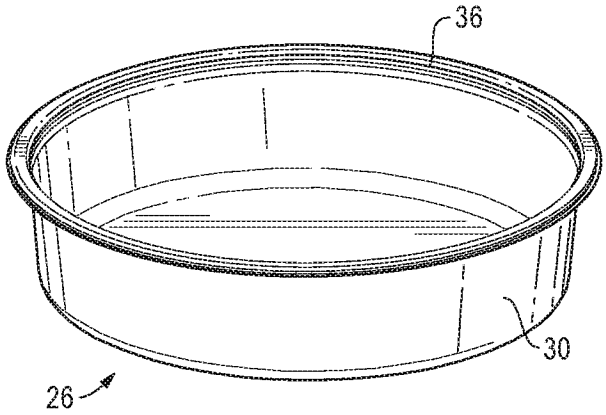


FIG. 27

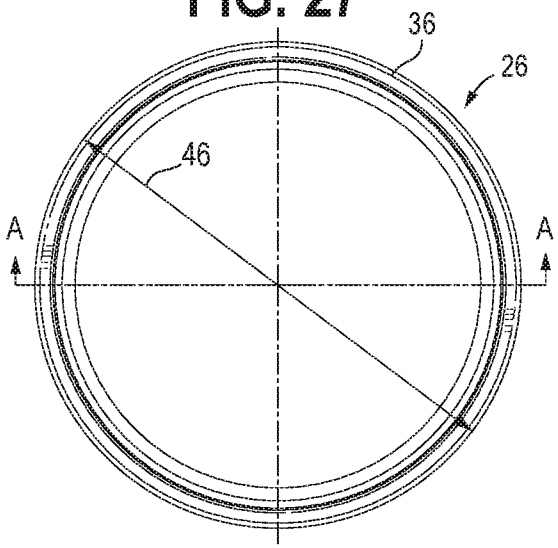


FIG. 28

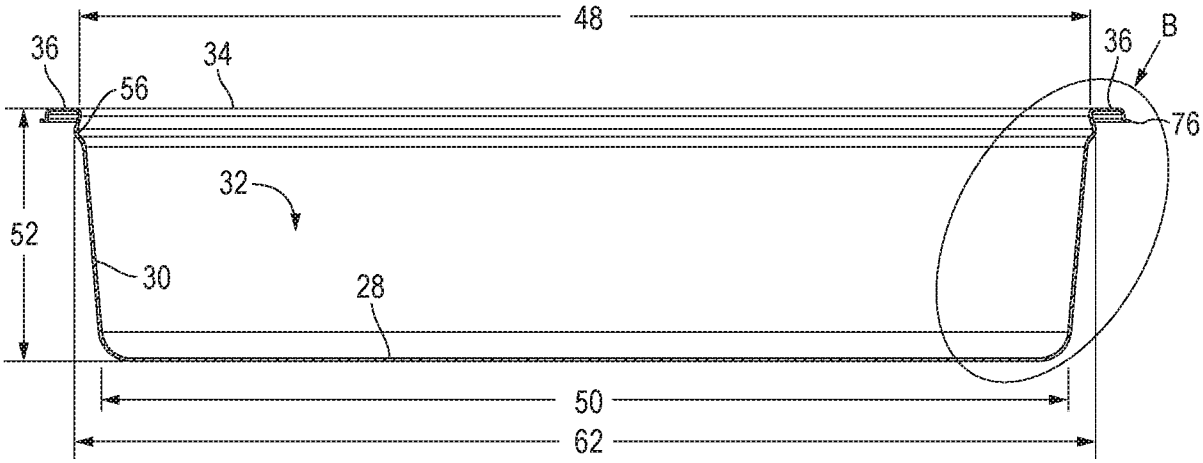


FIG. 29

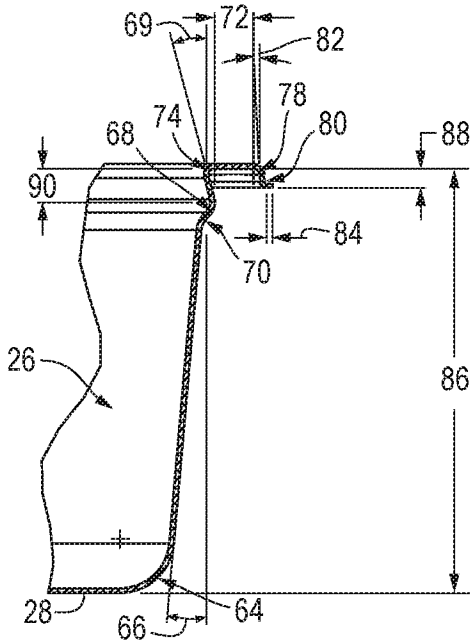


FIG. 30

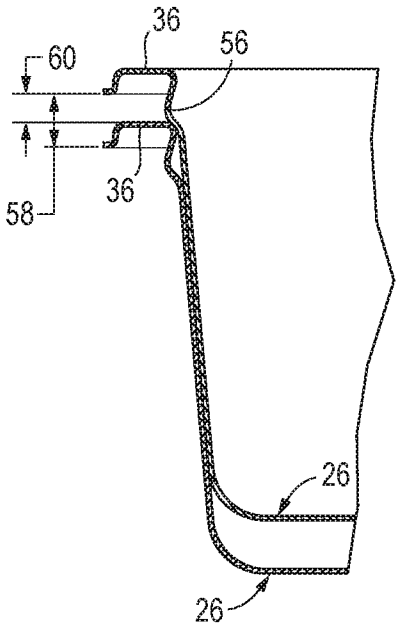


FIG. 31

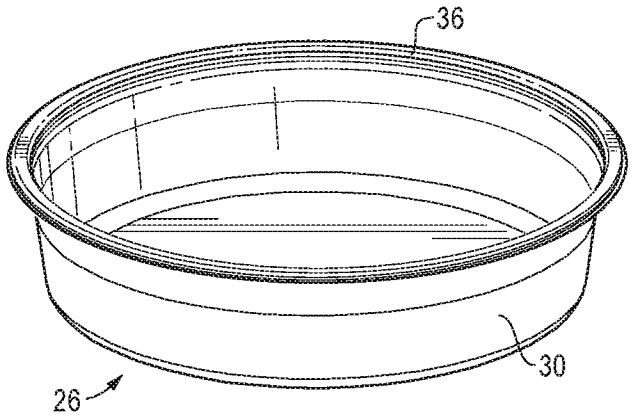


FIG. 32

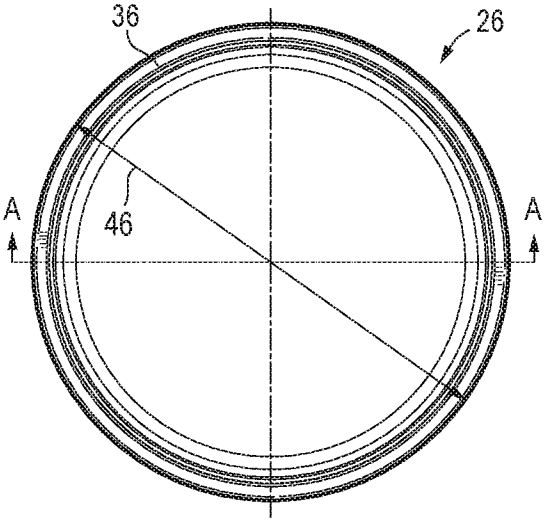


FIG. 33

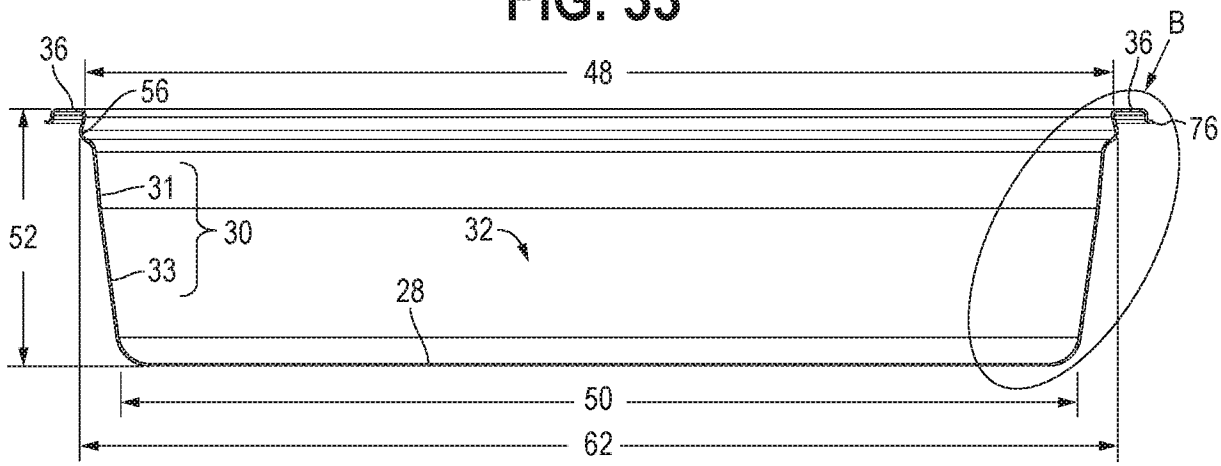


FIG. 34

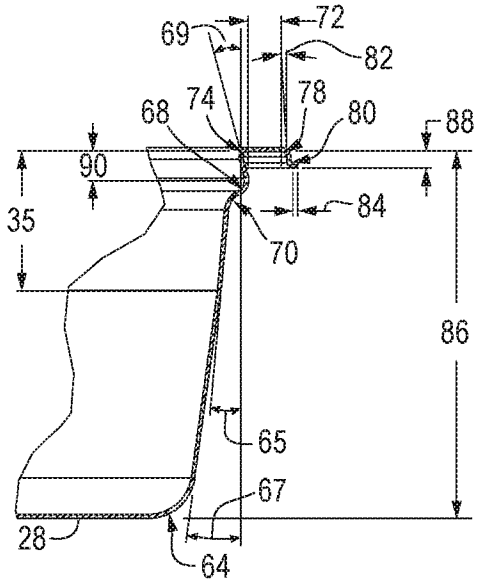
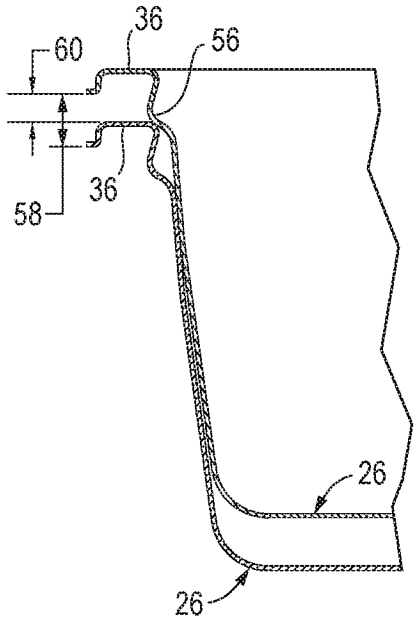


FIG. 35



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/018253

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D77/18 B65D77/20 B65D81/34
ADD.

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 188 520 A (HOUSE FOOD INDUSTRIAL COMPANY LIMITED) 30 September 1987 (1987-09-30) page 3, line 10 - line 76; claim 1; figure 1	1-7,11, 12
X	US 2016/107780 A1 (CARRÉ ERIC A [US] ET AL) 21 April 2016 (2016-04-21) paragraph [0041] - paragraph [0043]; claims 1,16; figure 11	1-7,11, 12
A	US 2011/250323 A1 (MARTIN AARON K [US] ET AL) 13 October 2011 (2011-10-13) paragraph [0044] - paragraph [0055]; figure 1	1-7,11, 12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 May 2020	21/07/2020

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Segerer, Heiko

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2020/018253

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7, 11, 12

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7, 11, 12

"Package being shape-conform to a contained frozen food product to be heated"

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2. claims: 8-10

"Container enabling a shape-conformation to the dimensions of a heating device"

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2020/018253

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2188520 A	30-09-1987	AU 591252 B2	30-11-1989
		DE 3709867 A1	01-10-1987
		FR 2596366 A1	02-10-1987
		GB 2188520 A	30-09-1987
		IT 1202671 B	09-02-1989
		JP H0825583 B2	13-03-1996
		JP S62235080 A	15-10-1987
		KR 870008556 A	19-10-1987
		US 4834247 A	30-05-1989
US 2016107780 A1	21-04-2016	NONE	
US 2011250323 A1	13-10-2011	NONE	