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

(11) EP 1 159 856 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
01.10.2003 Bulletin 2003/40

(21) Application number: **00909792.4**

(22) Date of filing: **06.03.2000**

(51) Int Cl.[7]: **H05B 6/64**

(86) International application number:
PCT/NL00/00147

(87) International publication number:
WO 00/052969 (08.09.2000 Gazette 2000/36)

(54) **HEATING A PRODUCT INTENDED FOR CONSUMPTION IN A MICROWAVE APPARATUS**

AUFHEIZUNG EINES ZUM VERZEHR BESTIMMTEN PRODUKTS IN EINER MIKROWELLENVORRICHTUNG

RECHAUFFAGE D'UN PRODUIT ALIMENTAIRE DANS UN APPAREIL A MICRO-ONDES

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: **04.03.1999 NL 1011443**

(43) Date of publication of application:
05.12.2001 Bulletin 2001/49

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EP 1 159 856 B1

Printed by Jouve, 75001 PARIS (FR)

Description

FIELD AND BACKGROUND OF THE INVENTION

[0001] The invention relates to a method for heating a product intended for consumption according to the introductory part of claim 1. The invention also relates to an apparatus for heating a product by means of a microwave field, according to the introductory part of claim 6.

[0002] Furthermore the present invention relates to an assembly of at least one product intended for consumption, according to the introductory part of claim 8.

[0003] An example of such a method is known from US Patent 4,439 656, which also describes an example of an apparatus as mentioned hereinabove.

[0004] The product is placed in a space within a shield against microwaves. This space communicates with a second space outside the shield which is filled with water. The water is heated by microwave energy and the heat is transferred to the product. The heating of the water is limited by the boiling temperature of the water.

SUMMARY OF THE INVENTION

[0005] It is an object of the invention to simplify the heating of a product intended for consumption, such as, for instance, an egg, by means of a microwave apparatus, while shielding the product from the microwave field, without negatively affecting the storage life of the product through contact with the water.

[0006] According to the invention, this object is realized by performing a method for heating a product intended for consumption in accordance with claim 1. The invention further provides an apparatus according to claim 6, which apparatus is specifically designed for performing the method according to claim 1. The invention further provides an assembly of a package and a product intended for consumption packaged therein according to claim 18, which assembly is ready-made for performing the method according to claim 1.

[0007] Since the conversion of microwaves into heat takes place in water in the container before the start of the heating, in an energy conversion unit which keeps the water separate from the product, the water can be placed in the container a considerable time before the heating of the product without this leading to storage life-limiting contact between the water and the product. For that reason, it is not necessary that the energy conversion unit be made ready for use directly prior to the heating of the product by filling it with water or the like and that, after use, the remaining water be removed again. Instead, an apparatus prepared a considerable time before heating can be used for heating an edible or potable product therein without performing any further operations thereto.

[0008] The invention is partly based upon the insight that also in respect of, inter alia, the organoleptic properties of many kinds of products intended for consumption other than eggs, it is advantageous to expose them to the microwave field only to a slight extent, if at all, during heating and not to have them contact water for a long time.

[0009] The present invention makes it possible on the one hand to profit in a very simple manner from the short heating time enabled by heating by means of a microwave field, but to prevent the adverse effect of a strong microwave field on products intended for consumption on the other. In particular, the invention enables packaging the water along with the product intended for consumption without this negatively affecting the storage life of the product. Accordingly, for heating the product, the user only needs to place the packaged product in a microwave oven and switch it on.

[0010] Particular, advantageous elaborations of the invention are laid down in the dependent claims.

[0011] Hereinafter, further objects, practical aspects, effects and details of the invention will be further described with reference to exemplary embodiment shown in the drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

Fig. 1 is a top plan view of an apparatus according to a first exemplary embodiment of the invention;
Fig. 2 is a side elevation in section taken on the line II-II in Fig. 1;
Fig. 3 is an enlarged representation of the left-hand half of the apparatus shown in Fig. 2;
Fig. 4 is a first example of an assembly of a product intended for consumption and a package according to the invention;
Figs. 5 and 6 are side elevations in longitudinal section of a second and third example of an assembly of a product intended for consumption and a package according to the invention;
Fig. 7 is a side elevation in longitudinal section of a fourth example of an assembly of a product intended for consumption and a package according to the invention, a left-hand portion being shown in a first condition and a righthand portion being shown in a second condition; and
Figs. 8 and 9 are side elevations in section of a fifth and sixth example of an assembly of a product intended for consumption and a package according to the invention.

DETAILED DESCRIPTION

[0013] The invention will first be specified and explained with reference of the exemplary embodiment shown in Figs. 1-3.

[0014] The apparatus according to the example shown in Figs. 1-3 has a container 1 from more or less

form-retaining material having cavities 4, 5, 6 and 7, each for receiving a product intended for consumption in the form of an egg. As appears from Figs. 2 and 3, the cavities 4, 5, 6 and 7 are recessed partly in an upper part 2 and partly in a lower part 3 of the container 1.

[0015] The material of these two parts 2 and 3 is suitable for absorbing microwave energy in a microwave field of a microwave oven, so that the material is heated. Suitable materials are, for instance, quartz, earthenware, different types of gels, some plastics, gypsum and various natural, organic materials. The frequency of the electromagnetic waves in such an oven is generally about 2450 Mhz and is in the range of infrared radiators and that of UHF television signals. Embedded into the material of the container 1 are thermally conductive microwave shields 8, 9, 10 and 11 for shielding the eggs 19 from microwaves.

[0016] Because the energy conversion medium, in which the conversion of microwaves into heat takes place, is present in an energy conversion unit in which the energy conversion medium is kept separate from the product, the laborious process of filling the container with an energy conversion medium is not necessary. Further, shortening of the storage life of the egg through contact with a liquid energy conversion medium is prevented, so that it is possible without any problem to place the eggs in the container already a long time before their preparation. Hence, the container can also be used for storing the eggs.

[0017] Because the material in which the energy conversion takes place is material of the container 1, the advantage achieved is that the same material is used for keeping the egg to be heated in position and for converting microwave energy, which enables an efficient construction. In this respect, it is advantageous that the material of the container 1 is located close to the egg 19 to be heated, which promotes an intensive energy transfer from the heated material to the egg 19.

[0018] Water, included in the form retaining material also, or optionally exclusively, serves to convert microwave energy into heat. To this end, for instance, a material or component having hygroscopic properties, such as gypsum, sugar, kitchen salt, or special salts may be applied, so that the material in cool condition absorbs moisture from the air, which subsequently serves as energy conversion medium. Further, the more or less form-retaining material may have pores for absorbing water or another microwave-absorbing medium.

[0019] By providing the upper and lower parts of the container, on the outer sides thereof, with a vapor-inhibiting barrier layer, such as a layer of plastic, the transport of water vapor to the outside is prevented and the condensation of evaporated water against the eggs, or at least closer to the eggs than where it has evaporated, thus contributing to an intensive but even heat transfer towards the eggs, is promoted. Moreover, water which initially condenses in cool spots outside the shield will be heated again through further absorption of microwave energy. This provides an enhanced heating of initially cold spots and a specific and even heating of the egg that is initially still cold.

[0020] It is also possible to incorporate the water into pores of material of the container by designing the container as an earthenware element. Two to six and generally about three ml of water per egg is sufficient for generating, through absorption of microwave energy, so much heat and transferring that energy to the egg, that this becomes a soft-boiled to hard-boiled egg. Such amounts of moisture are absorbed under normal conditions from the air by earthenware of usual thickness. However, if it is desired that the earthenware be used at short intervals for preparing boiled eggs in a microwave apparatus, it may be useful to slightly moisten the earthenware each time before use. At any rate, drying the container after preparing a boiled egg is not necessary.

[0021] Since the microwave energy-converting medium is driven from the material of the container 1 under the influence of a microwave field, the energy-absorbing capacity of the container 1 automatically decreases as it is exposed to the microwave field. Thus, the danger of overheating in the case of a long exposure to a microwave field - for instance because the user forgets that eggs are being boiled in the microwave apparatus - is limited.

[0022] The microwave shields 8-11 are likewise divided into parts included in the upper part 2 and the lower part 3 of the container 1. To effect a reliable electrically conductive contact between the parts of the microwave shield, the parts of the microwave shield are provided with flanged edges 16, 17 which are in flat abutment when the upper part 2 of the container 1 is positioned on the lower part 3 of the container 1. The edges are directed inwards or outwards and interconnect properly to prevent sparking in the area of the connection between the parts 2 and 3 of the container 1. In operation, the shields 8-11 each function as one whole.

[0023] In operation, during use of the apparatus according to this example, raw eggs 19 are positioned in the portions of the recesses 4-7 in the lower part 3 of the container 1. Next, the upper part 2 of the container 1 is placed onto the lower part 3 of the container 1. Thus, the egg is confined in material for converting microwave energy and at the same time, the provision of the shield of the egg against microwaves has been completed. The container 1 is placed in a microwave apparatus. As a matter of fact, these operations can in principle be performed in any desired order. Next, a field of microwaves is generated in the area of the egg, microwave energy in the area of the egg being converted into heat, which heat is transferred to the egg.

[0024] Since the conversion of microwaves into heat, at least for some time after the start of the generation of the field of microwaves in the area of the egg, takes place in the more or less form-retaining material, it is not necessary to fill a container with water or other loose materials to obtain the desired microwave-absorbing

properties. Hence, the apparatus is always immediately ready for use and can always be stored immediately after use. The release of water is at least substantially limited, thus preventing the corrosion-promoting precipitation of moisture in the microwave apparatus.

[0025] Mounted on the upper part 2 of the container 1 is a handgrip 12. The handgrip 12 is manufactured from a material which absorbs microwaves very little, if at all, and which forms a poor thermal conductor. For this, for instance, various types of glass and plastic can be used, for instance known for application in tableware intended for use in a microwave oven (other than for forming a crust). Hence, the handgrip 12 is hardly heated, if at all, despite the high temperature of the upper and lower parts 2 and 3 of the container 1 during use.

[0026] For determining what temperature has been reached, the container 1 comprises temperature indicators 14 and 15. These temperature indicators 14 and 15 enable accurate control of the degree of cooking of the eggs, such as hard-boiled or soft-boiled, also during cooking of the eggs in different types of microwave ovens. The optical temperature indicators 14, 15, visible from the outside, change color in accordance with the temperature of the container 1. It is also possible that the temperature indicators be coupled to the egg, so that they indicate the temperature of the egg.

[0027] When using an apparatus where the conversion of microwave energy into heat takes place in the container and in which the egg is not immersed in water, it is advantageous to heat the egg in the shell, because in that case, the container 1 does not have to be cleaned each time after the preparation of an egg.

[0028] In the example of an assembly according to the invention shown in Fig. 4, the container 51 is manufactured from fibrous material and a substantially form-retaining material in the form of molded composite material from wood fibers and cement. Such material is easy to mold into a shape, heats strongly in a microwave field and has a high flash point. However, it is also possible to use other materials, such as cardboard, preferably having hygroscopic and flash point-reducing components.

[0029] Located in the container 51 are eggs 69, each having an egg shell 70, egg-white 71 and a yolk 72. The container 51 forms part of a package in which the eggs 69 are packaged.

[0030] The eggs 69 are each provided with a shield 58 for shielding the egg 69 from microwaves, which shield 58 fits tightly around the shell 70. The tight fit of the shield 58 around the shell 70 is advantageous for promoting the heat transfer to the egg 69. Due to its hygroscopic properties, the material of the container 51 contains, at least in operative condition, water that has remained behind since the manufacture and/or that has been absorbed from the surroundings.

[0031] Under the influence of the heat produced, the water evaporates from the hygroscopic material of the container 51. To prevent the evaporated water from spreading through the microwave apparatus and to promote condensation of the water vapor against or adjacent the relatively cold eggs 69, hence optimally contributing to an effective heat transfer, there is provided around the container 51 a barrier in the form of a covering 73 from a vapor-inhibiting sheet.

[0032] The eggs 69 each carry the shields 58 against microwave radiation themselves, so that those shields can be realized with a very slight input of material. According to this example, the shields 58 are designed as electrically conductive sheet provided around the eggs 69.

[0033] However, the shields can also be obtained by, for instance, layers of an electrically conductive material applied to the relevant eggs.

[0034] The shields 58 against microwave radiation are further provided with passages 74, some of which are shown schematically. These passages 74 are so small that no or hardly any microwave energy penetrates therethrough into the eggs 69, but water vapor can actually penetrate therethrough to reach the shells 70 of the eggs 69. This further promotes the heat transfer. Moreover, upon longer heating of the material around the egg 69, water condensed against the shells of the eggs prevents overheating of the egg 69. Thus, the passages or perforations 74 on the one hand contribute to the shortening of the time required for giving an egg the desired degree of cooking, and on the other prevent overheating of the egg.

[0035] Fig. 5 shows an assembly of products 119-121 intended for consumption and a package 101 in which the products 119-121 are packaged. The package 101 is composed of a lower portion in the shape of a dish 103 and an upper portion in the form of a vaportight covering sheet 102.

[0036] There is further provided in the package 101 a shield 108 for shielding the products 119-121 from microwaves. According to this example, the shield 108 is designed as a nonperforated aluminum dish. Outside the shield 108, there is located in the container 101 water 125 for converting microwaves into heat. The water 125 is present in an energy conversion unit 126, so that the water 125, at least before the start of the generation of the microwave field, is kept separate from the product 119-121.

[0037] The food 119-121 packaged in the container 101 is prepacked in ready-to-eat condition and can be placed into a microwave oven for heating the food 119-121 therein without requiring any further operations. Since the water is kept separate from the food 119-121, this does not have a negative effect on the storage life of the products 119-121 in the package.

[0038] The energy converter 126 is composed of a volume of the water and a water container 127 enclosing the water, forming a barrier for keeping the food 119-121 separate from the water 125 prior to the heating of the water 125, and for releasing the water in reaction to the heating of the water by the microwave field. According

to this example, the water container is designed as a bag 127.

[0039] When the container 101 with the products 119-121 packaged therein is placed in a microwave oven and the microwave oven is switched on, the water 125 in the bag 127 is heated, while the microwaves do not heat the products directly, or at least do so to a minor degree. Due to the heating process, the water 125 is brought to the boil and the bag 127 bursts open. The bag 127 is constructed with a local weakening, so that the bursting open is not accompanied by an explosion which could result in damage to the container 101. Accordingly, the water 125 and the steam formed by heating that water spreads in an area of the container located on the side of the shield 108 facing away from the food 119-121. Due to the continuous heating of the water, steam is formed, which condenses against the shield 108. As a result, the shield is heated to about 100° C and this heat is transmitted to the food 119-121 on the other side of the shield 108. Thus, the food 119-121 is heated in a controlled manner without the direct action of microwaves or steam thereon.

[0040] Adjacent the bottom, the shield 108 is provided with passages, via which passages moisture egressing from the food due to heating can flow outside the shield 108. Subsequently, this moisture is also heated under the influence of the microwave field and, accordingly, contributes to the conversion of microwave energy into heat.

[0041] Since the bag 127 constitutes a barrier which keeps the water separate from the food, at least initially, and releases the water in reaction to the heating of the water by the microwave field, the water 125 is prevented from possibly having a negative effect on the storage life of the food 119-121 prior to the heating of that food. Because the water is automatically released upon the heating of the food 119-121, no additional operations are necessary for releasing the water 125. This adds to the convenience of use and the safety, the latter because risks involved in forgetting to release the water 125 prior to the heating of the food are thus avoided.

[0042] Because the water container 127 is designed in the form of a bag, such as a sachet, it can readily be prefabricated and added during the packaging of the food 119-121.

[0043] The covering sheet 102 and the dish 103 are adhered to one another along an edge 128 and the covering sheet 102 is provided with a lip 129 whereby it can readily be pulled loose from the dish 103.

[0044] The shield 108 is provided with an adhering edge 108' which, through this adhesion, forms part of a receiving trough 130 for run-out moisture coming from the food 119-121 and the water condensed against the shield 108". This edge 130 also forms a lip whereby the shield, adhered to the dish 103 along a raised rib 103', can be pulled loose from the dish 103 for access to the food 119-121.

[0045] The container 101 enveloping the food 119-121 forms a substantially hermetically sealed covering of the food 119-121, so that moisture is prevented from escaping to the interior of the microwave oven. To prevent the creation of an excess pressure in the container 101 during the heating of the food, which excess pressure could lead to the exploding of the container 101, this container is provided with a blow-off opening 131 closed off by a lip 132 for releasing the opening 131 in reaction to the exceeding of a given excess pressure within the container 101 relative to the surroundings.

[0046] If the pressure within the container 101 relative to the surroundings exceeds a given value, the lip 132 loosens and vapor and steam escape from the container 101, as a result of which the pressure therein drops again. It is observed that it is also possible to utilize the shield against microwaves as shield of the food against the water that serves as energy conversion medium. In that case, the shield against microwaves also forms the barrier of the energy conversion unit for keeping the energy conversion medium separate from the food.

[0047] Fig. 6 shows a variant of the example shown in Fig. 5. According to this example, the product 169 is a chicken (for instance precooked as coq au vin), packaged in a bag-shaped shield 158 with a layer of electrically conductive material for shielding the chicken 169.

[0048] The bag-shaped shield 158 containing the chicken 169 is in turn packaged in a hermetically sealing container 151 composed of a tray 153 and a covering sheet 152 adhered to the tray 153 along a circumferential edge thereof. According to this example, the bag-shaped shield 158 is provided with perforations 183 as shown in the enlarged insert in Fig. 6. According to this example, too, there is provided in the covering sheet 152 of the container a blow-off opening 181 with a closure 182 as a protection against undue excess pressure in the container 151.

[0049] According to this example, the water container is designed as a chamber 184 of the package 151, which chamber is separated, by a barrier 177 sealed against the tray 153, from an inner space of the container 151 for receiving the food and hence the chicken 169. The adhesion of the barrier 177 to the tray 153 is realized with a material which softens upon heating. When the package is placed in a microwave oven and the microwave oven is switched on, the barrier 177 becomes detached under the influence of heating of the water 175 in the chamber 184 and the excess pressure thus built up in the chamber 184, so that the water 175 can escape from the chamber 184.

[0050] During the heating up of food 169 in the package according to this example, the steam formed from the heated water 175 condenses against the shield 158 and, because it can pass through the perforations 183 in the shield 158, against the food 169. As a result, the food 169 is steamed, which adds to its tenderness and prevents drying out. If necessary, aromatic and/or flavoring substances can be added to the water 175, which pass on to the food during heating of the food.

[0051] Fig. 7 shows an example where the container 201 is designed as a box or tub 203 which is closed off with a transparent sheet 235 and which, after removal of the sheet 235, is closable with a lid 202.

[0052] A portion of Fig. 7 to the right of the line 236 shows the container 201 in a condition in which the upper side thereof is closed off by the transparent cover 235 adhered to the box 203 along a strip 237 around the opening of the box 203. In this condition, the lid 202 has been snapped against the lower side of the box 203 and may optionally be secured by means of a hook edge. The sheet 235 is provided with a lip 239 to facilitate pulling the sheet 235 loose from the box 203.

[0053] A portion of Fig. 7 to the left of the line 236 shows the container 201 in a condition in which the transparent cover 235 has been removed and the upper side of the box 203 is closed off by the lid 202. The lid 202 has a circumferential edge 238 which fits tightly in the opening of the box 203 along a strip 237 around the opening of the box 203. Before this condition, the lid 202 was clamped against the lower side of the box 203 and may optionally be secured by means of a snap connection provided under the box 203. Provided on the sidewalls is a wrapper 240 which also serves as shield. The shield 208 for shielding the food 219 against microwaves is partly formed by the lid which is provided with a microwave shield 202 and which is snapped to a bottom side of the container 201 prior to the heating of the food 219. The rest of the shield against microwaves is formed by a wrapper 240 provided around the box 203 and comprising electrically conductive material.

[0054] Next, the container 201 is placed in a microwave oven and exposed to a microwave field. As a result, the water 225 in the bag 227 is heated and the bag 227 opens. Under the influence of further heating by the microwave field, the released water converts into steam and condenses inter alia against the food 219, causing it to be steamed.

[0055] Because prior to the heating of the food 219, the lid 202 is located below the box 203, the food 219 is visible through the sheet 235 with which the box 203 is closed off. When one wishes to heat up the food 219, the sheet 235 is removed from the box 203 first and the lid 202 is detached from the box 203 and placed on the upper side of the box 203. Thus, the food is shielded from above against microwaves, as can be seen in the portion of Fig. 7 to the left of the line 236. Shielding at the lower side is of relatively little importance, but may for instance be designed as an inner tub in the box 203 or as an electrically conductive version of a tray 241 on which the food 219 sits. This offers the advantage that the consumer can view the food in the shop before deciding whether or not to buy it. The lid may be provided with a relatively thick layer of electrically conductive material or, for instance, be formed from thin-walled aluminum to form an effective shield. The sheet 235 is provided with anticondensing material, so that the food 219 is also properly visible when presented in a refrigerated display.

[0056] Fig. 8 shows an assembly in which medicines can be prepared for taking by mixing with hot water. The apparatus comprises a container 251 having a lower portion 253 and a lid 252. Located in the container 251 is a microwave shield 258 in the lowermost portion of the container 251, consisting of an electrically conductive material provided with perforations 283 as shown in enlarged view in the insert of Fig. 8, and which is integrated as an insertion into the formed material in the form of a bag 258.

[0057] Located in the lowermost portion 253 is a medicine 292. In the lid 252, there is placed a sachet 277 containing bacteria-free water 275. If one wishes to prepare the medicine, the container 251 with said content is placed in a microwave oven. Through action of the microwaves, the water 275 in the sachet 277 is heated. Further, the lower portion 253 is manufactured from a material such that under the influence of the microwave field, it is likewise heated, in the prescribed time, to about 100°C. According to this example, the lower portion 253 and the lid 252 are manufactured from glass.

[0058] When the water 275 in the sachet 277 reaches the boiling point, the sachet bursts open and the hot water is mixed with the medicine 292. Because the lower portion 253 of the container 251 is heated as well, it is ensured that the water 275 is warm for a sufficiently long period to be able to prepare the medicine with that water. For this purpose, it suffices to take the container 251, after it has been heated in the microwave oven for the prescribed period, from the microwave oven and shake it. Then, the medicine in the container is ready for administration. Since the water 275 can only contact the medicine 292 when the medicine 292 is being prepared, it has no negative effect on the storage life of the medicine up to the moment of preparation.

[0059] Fig. 9 shows a variant of the example shown in Fig. 8, where the shield 308 is composed as bag from a lower portion 343 and an upper portion 344 with closure. The shielded bag 308 is placed in the lower portion 343 of the container and closed off with the upper portion 344 as lid which, if the container is placed in an operative microwave oven, can be turned partially open to prevent excess pressure. According to this example, the shield 308 may or may not be provided with perforations. The thread 301' of the container 301 and the upper portion 302 have some play to allow, during partial opening, the excess pressure in the container to flow off during heating. In the upper portion 302, there is a space for placing a sachet 327 with liquid 325, which opens under the influence of the microwaves and then heats the contents of the bag 308. It is possible to have the material from which the container 301 is made participate in the heating up of the contents of the bag 308 by selecting the appropriate material for the container 301.

[0060] From the foregoing, it will be understood by anyone skilled in the art that within the framework of the invention, still many other variants and modes of carry-

ing out the invention are possible, for instance implemented in a package or in a form in which the product can be served.

Claims

1. A method for heating a product intended for consumption, comprising the steps of: placing the product (19; 69; 119-121;169; 219; 292) in a container (1; 51; 101; 151:201; 251; 301), fitting a shield (8-11; 58; 108; 158; 208; 258; 308) against microwaves around the product, providing water (51; 125; 175; 225; 275; 325) in an area near or around the product (19; 69; 119-121;169; 219; 292), outside the shield (8-11; 58; 108; 158; 208; 258; 308) and in the container (1; 51; 101; 151;201; 251; 301), and subsequently generating a field of microwaves in said area, microwave energy being converted in the water (51; 125; 175; 225; 275; 325) into heat, said heat being at least partially transferred to the product (19; 69; 119-121;169; 219; 292), **characterized in that**, at least before the start of the generation of said field of microwaves in said area, the water (51; 125; 175; 225; 275; 325) is located outside the shield (8-11; 58; 108; 158; 208; 258; 308) and in the container (1; 51; 101; 151:201; 251; 301) in an energy conversion unit (1; 51; 126; 175, 177, 184; 225,227; 275, 277; 325, 327) in which the water (51; -125; 175; 225; 275; 325) is kept separate from the product (19; 69; 119-121;169; 219; 292) in a water container (1; 51; 127; 177, 184; 227; 277; 327), said water container at least initially keeping the water separate from the product and releasing the water in reaction to the heating of the water by said microwave field.

2. A method according to claim 1, wherein the water container is a bag (127; 227; 277; 327) which opens in reaction to heating of the water.

3. A method according to claim 1 or 2, wherein, at least up to some time after the start of the generation of said field of microwaves in said area, the water (125, 175, 225, 275, 325) evaporates from a first area and condenses in a second area which, at least on average, is located closer to the product (19; 69; 119-121; 169; 219; 292) than said first area.

4. A method according to claim 3 wherein the water (125; 175; 225; 275; 325) is obstructed from moving away from the product (19; 69; 119-121; 169; 219; 292) beyond a specific barrier (73; 101; 151; 201; 251; 301).

5. A method according to any one of the preceding claims, wherein the product is an egg (19; 69) which, starting from a raw condition, is heated in its shell (70) to become a boiled egg.

6. An apparatus for heating a product (19; 69; 119-121; 169; 219; 292) intended for consumption by means of a microwave field, comprising: a container (1; 51; 101; 151; 201; 251; 301) for enveloping the product (19; 69; 119-121; 169; 219; 292), a shield (8-11; 58; 108; 158; 208; 258; 308) for shielding the product (19; 69;119-121; 169; 219; 292) from microwaves, and water (51; 125; 175; 225; 275; 325) located outside said shield (8-11; 58; 108; 158; 208; 258; 308) and in said container (1; 51; 101; 151; 201; 251; 301) for, at least in operative condition, converting microwaves into heat, **characterized by** a water container (1; 51; 126; 175, 177,184; 225, 227; 275, 277; 325, 327) for keeping a volume of the water (51; 125; 175; 225; 275; 325) therein separate from the product (19; 69; 119-121; 169; 219; 292), at least in a condition prior to the generation of said microwave field in said area, the water container (1; 51; 127; 177, 184; 227; 277; 327) enclosing the water and forming a barrier for, at least prior to the heating of the water, keeping the water separate from the product (19; 69; 119-121; 169; 219; 292) and for releasing the water (125; 175; 225; 275; 325) in reaction to the heating of the water by said microwave field.

7. An apparatus according to claim 6, wherein the water container is a bag (127; 227; 277; 327).

8. An apparatus according to claim 7, wherein the water container is designed as a chamber (184) of said container (151), said chamber being separated by a barrier (177) from an inner space of said container for receiving a product (169).

9. An apparatus according to any one of claims 6-8, wherein said barrier (127; 177; 227; 277; 327) is designed to form an opening in reaction to heating of the water.

10. An apparatus according to any one of claims 6-9, wherein the energy conversion unit (1; 51) comprises a volume of a substantially form-retaining material.

11. An apparatus according to claim 10, wherein water is included in said substantially form-retaining material (1; 51).

12. An apparatus according to claim 11, wherein at least a portion of said water is included in pores of said substantially form-retaining material (1; 51).

13. An apparatus according to claim 11 or 12, wherein at least a portion of said water is bound to a hygroscopic component of said substantially form-retain-

ing material (1; 51).

14. An apparatus according to any one of claims 6-13, further comprising a vapor-inhibiting barrier (73; 101; 151; 201; 251; 301) for obstructing the water from moving from said product (69; 119-121; 169; 219; 292).

15. An apparatus according to any one of claims 6-14, wherein said substantially form-retaining material (1; 51) is composite material having a fibrous material and a binding material.

16. An apparatus according to any one of claims 6-15, wherein said container (101; 151) for enveloping a product forms a substantially hermetically sealed covering and is provided with a blow-off opening (131; 181) closed off for releasing said opening (131; 181) in reaction to the exceeding of a given excess pressure within the container (101; 151) relative to the surroundings.

17. An apparatus according to any one of claims 6-16, wherein said container (201) for enveloping the product is designed as a box (203) having an upper side closed by a transparent cover (235), said shield (208) for shielding the product (219) from microwaves comprising a lid (202) located at a bottom side of said container (201) and engaging said box (203), and said box (203) and said cover (202) being designed to close said box (203) after removal of said sheet, by placing said lid (202) on said top side of said box (203).

18. An assembly of at least one product (69; 119-121; 169; 219; 292) intended for consumption and a package (51; 101; 151; 201; 251; 301) in which said at least one product (69; 119-121; 169; 219; 292) is packaged, further comprising at least one shield (58; 108; 158; 208; 258; 308) for shielding said at least one product (69; 119-121; 169; 219; 292) against microwaves and water (51; 125; 175; 225; 275; 325) which, at least in an operative condition, is located outside said shield and in said package for converting microwaves into heat, said water (51; 125; 175; 225; 275; 325) being located in an energy conversion unit (1; 51; 126; 175, 177,184; 225,227; 275, 277; 325, 327) for keeping said water (51; 125; 175; 225; 275; 325) therein separate from the product (19; 69; 119-121; 169; 219; 292), at least in a condition prior to the generation of said microwave field in said area, wherein the energy conversion unit (1; 51; 126; 175, 177, 184; 225, 227; 275,277; 325, 327) comprises a water container (1; 51; 127; 177, 184; 227; 277; 327) enclosing the water, said water container forming a barrier for, at least prior to the heating of the water, keeping the water separate from the product (19; 69; 119-121; 169; 219; 292) and for releasing the water (125; 175; 225; 275; 325) in reaction to the heating of the water by said microwave field.

19. An assembly according to claim 18, wherein said at least one product is an egg (69) with an egg shell (70) and wherein said package forms a container (51) from a substantially form-retaining material and wherein the material of said container (51), at least in an operative condition, contains the water (51) for converting microwaves into heat.

20. An assembly according to claim 19, wherein said at least one egg (69) carries said at least one shield (58) against microwave radiation and wherein said shield tightly encloses the egg shell of the egg (69).

21. An assembly according to claim 20, wherein said at least one shield (58) is designed as a sheet-shaped covering of said at least one egg (69).

22. An assembly according to claim 20 or 21, wherein said at least one shield is designed as a layer of electrically conductive material provided on the egg.

23. An assembly according to claim 22, wherein said layer of electrically conductive material is applied by vaporization.

24. An assembly according to any one of claims 26-31, wherein said at least one shield (58) against microwave radiation is provided with passages (74).

Patentansprüche

1. Verfahren zum Erwärmen eines für den Verzehr bestimmten Produkts mit den Schritten Setzen des Produkts (19; 69; 119 - 121, 169; 219; 292) in einen Behälter (1; 51; 101; 151; 201; 251; 301); Anbringen einer Abschirmung (8- 11; 58; 108; 158; 208; 258; 308) gegen Mikrowellen um das Produkt; Bereitstellen von Wasser (51; 125; 175; 225; 275; 325) in einem Bereich nahe dem oder um das Produkt (19; 69; 119 - 121; 169; 219; 292) außerhalb der Abschirmung (8 - 11; 58; 108; 158; 208; 258; 308) und in dem Behälter (1; 51; 101; 151; 201; 251; 301); und anschließendes Erzeugen eines Mikrowellenfelds in dem Bereich, wobei Mikrowellenenergie in dem Wasser (51; 125; 175; 225; 275; 325) in Wärme umgewandelt wird und die Wärme zumindest teilweise auf das Produkt (19; 69; 119 - 121, 169; 219; 292) übertragen wird, **dadurch gekennzeichnet, dass** zumindest vor dem Beginn der Erzeugung des Mikrowellenfelds in dem Bereich sich das Wasser (51; 125; 175; 225; 275; 325) außerhalb der Abschirmung (8 - 11, 58; 108; 158; 208; 258; 308) und in

dem Behälter (1; 51; 101; 151; 201; 251; 301) in einer Energieumwandlungseinheit (1; 51; 126; 175, 177, 184; 225, 227; 275, 277; 325, 327) befindet, in der das Wasser (51; 125; 175; 225; 275; 325) von dem Produkt (19; 69; 119 - 121; 169; 219; 292) getrennt in einem Wasserbehälter (1; 51; 127; 177, 184; 227; 277; 327) gehalten wird, wobei der Wasserbehälter zumindest am Anfang das Wasser getrennt von dem Produkt hält und das Wasser in Reaktion auf die Erwärmung des Wassers durch das Mikrowellenfeld abgibt.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** der Wasserbehälter ein Beutel (127; 227; 277; 327) ist, der sich in Reaktion auf die Erwärmung des Wassers öffnet.

3. Verfahren nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** zumindest bis zu einem g ewissen Zeitpunkt nach dem Beginn der Erzeugung des Mikrowellenfelds in dem Bereich das Wasser (125, 175, 225, 275, 325) aus einem ersten Bereich verdampft und in einem zweiten Bereich kondensiert, der sich zumindest durchschnittlich näher an dem Produkt (19; 69; 119- 121; 169; 219; 292) befindet als der erste Bereich.

4. Verfahren nach Anspruch 3, **dadurch gekennzeichnet, dass** das Wasser (125; 175; 225; 275; 325) daran gehindert wird, sich von dem Produkt (19; 69; 119 - 121; 169; 219; 292) weg über eine bestimmte Barriere (73; 101; 151; 201; 251; 301) hinaus zu bewegen.

5. Verfahren nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Produkt ein Ei (19; 69) ist, das von einem rohen Zustand aus an seiner Schale (70) so erwärmt wird, dass es ein gekochtes Ei wird.

6. Vorrichtung zum Erwärmen eines für den Verzehr bestimmten Produkts (19; 69; 119 - 121; 169; 219; 292) mittels eines Mikrowellenfelds, die Folgendes aufweist: einen Behälter (1; 51; 101; 151; 201; 251; 301) zum Umschließen des Produkts (19; 69; 119 - 121; 169; 219; 292); eine Abschirmung (8 - 11; 58; 108; 158; 208; 258; 308) zum Abschirmen des Produkts (19; 69; 119 - 121; 169; 219; 292) gegen Mikrowellen; und Wasser (51; 125; 175; 225; 275; 325), das sich außerhalb der Abschirmung (8- 11; 58, 108; 158; 208; 258; 308) und in dem Behälter (1; 51; 101; 151; 201; 251; 301) befindet, um zumindest im Betriebszustand Mikrowellen in Wärme umzuwandeln, **gekennzeichnet durch** einen Wasserbehälter (1; 51; 126; 175, 177, 184; 225, 227; 275, 277; 325, 327) zum Getrennthalten eines darin befindlichen Volumens Wasser (51; 125; 175; 225; 275; 325) von dem Produkt (19; 69; 119 - 121; 169; 219; 292) zumindest in einem Zustand vor der Erzeugung des Mikrowellenfelds in dem Bereich, wobei der Wasserbehälter (1; 51; 127; 177, 184; 227; 277; 327) das Wasser umschließt und eine Barriere bildet, um zumindest vor der Erwärmung des Wassers das Wasser von dem Produkt (19; 69; 119 - 121; 169; 219; 292) getrennt zu halten und das Wasser (125; 175; 225; 275; 325) in Reaktion auf die Erwärmung des Wassers **durch** das Mikrowellenfeld abzugeben.

7. Vorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** der Wasserbehälter ein Beutel (127; 227; 277; 327) ist.

8. Vorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** der Wasserbehälter als Kammer (184) des Behälters (151) gestaltet ist, wobei die Kammer durch eine Barriere (177) von einem Innenraum des Behälters zum Aufnehmen eines Produkts (169) getrennt ist.

9. Vorrichtung nach einem der Ansprüche 6 bis 8, **dadurch gekennzeichnet, dass** die Barriere (127; 177; 227; 277; 327) so gestaltet ist, dass sie in Reaktion auf die Erwärmung des Wassers eine Öffnung bildet.

10. Vorrichtung nach einem der Ansprüche 6 bis 9, **dadurch gekennzeichnet, dass** die Energieumwandlungseinheit (1; 51) ein Volumen eines weitgehend formbeständigen Materials aufweist.

11. Vorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** Wasser in dem weitgehend formbeständigen Material (1; 51) eingeschlossen ist.

12. Vorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass** zumindest ein Teil des Wassers in Poren des weitgehend formbeständigen Materials (1; 51) eingeschlossen ist.

13. Vorrichtung nach Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** zumindest ein Teil des Wassers an eine hygroskopische Komponente des weitgehend formbeständigen Materials (1; 51) gebunden ist.

14. Vorrichtung nach einem der Ansprüche 6 bis 13, die außerdem eine dampfhemmende Barriere (73; 101; 151; 201; 251; 301), um das Wasser daran zu hindern, sich von dem Produkt (69; 119-121; 169; 219; 292) weg zu bewegen, aufweist.

15. Vorrichtung nach einem der Ansprüche 6 bis 14, **dadurch gekennzeichnet, dass** das weitgehend formbeständige Material (1; 51) ein Verbundmaterial mit einem Fasermaterial und einem Bindemate-

rial ist.

16. Vorrichtung nach einem der Ansprüche 6 bis 15, **dadurch gekennzeichnet, dass** der Behälter (101; 151) zum Umschließen eines Produkts eine weitgehend hermetisch verschlossene Ummantelung bildet und mit einer Ausblasöffnung (131; 181) versehen ist, die so verschlossen wird, dass diese Öffnung (131; 181) in Reaktion auf das Übersteigen eines bestimmten Überdrucks in dem Behälter (101; 151) relativ zur Umgebung geöffnet wird.

17. Vorrichtung nach einem der Ansprüche 6 bis 16, **dadurch gekennzeichnet, dass** der Behälter (201) zum Umschließen des Produkts als Kasten (203) mit einer Oberseite gestaltet ist, die mit einem transparenten Deckel (235) verschlossen wird, wobei die Abschirmung (208) zum Abschirmen des Produkts (219) gegen Mikrowellen einen Deckel (202) aufweist, der an einer Unterseite des Behälters (201) angeordnet ist und in den Kasten (203) einrastet, und wobei der Kasten (203) und die Abdeckung (202) so gestaltet sind, dass der Kasten (203) nach Entfernen der Folie durch Aufsetzen des Deckels (202) auf die Oberseite des Kastens (203) verschlossen wird.

18. Gruppe aus mindestens einem für den Verzehr bestimmten Produkt (69; 119 - 121; 169; 219; 292) und einer Verpackung (51; 101; 151; 201; 251; 301), in der das mindestens eine Produkt (69; 119 - 121; 169; 219; 292) verpackt ist, wobei die Gruppe außerdem mindestens eine Abschirmung (58; 108; 158; 208; 258; 308) zum Abschirmen des mindestens einen Produkts (69; 119 - 121; 169; 219; 292) gegen Mikrowellen und Wasser (51; 125; 175; 225; 275; 325) aufweist, das sich zumindest in einem Betriebszustand außerhalb der Abschirmung und in der Verpackung befindet, um Mikrowellen in Wärme umzuwandeln, wobei sich das Wasser (51; 125; 175; 225; 275; 325) in einer Energieumwandlungseinheit (1; 51; 126; 175, 177, 184; 225, 227; 275, 277; 325, 327) befindet, um das Wasser (51; 125; 175; 225; 275; 325) darin zumindest in einem Zustand vor der Erzeugung des Mikrowellenfelds in dem Bereich von dem Produkt (19; 69; 119 - 121; 169; 219; 292) getrennt zu halten, **dadurch gekennzeichnet, dass** die Energieumwandlungseinheit (1; 51; 126; 175, 177, 184; 225, 227; 275, 277; 325, 327) einen das Wasser umschließenden Wasserbehälter (1; 51; 127; 177, 184; 227; 277; 327) aufweist, wobei der Wasserbehälter eine Barriere bildet, um zumindest vor der Erwärmung des Wassers das Wasser von dem Produkt (19; 69; 119 - 121; 169; 219; 292) getrennt zu halten und um das Wasser (125; 175; 225; 275; 325) in Reaktion auf die Erwärmung des Wassers durch das Mikrowellenfeld abzugeben.

19. Gruppe nach Anspruch 18, **dadurch gekennzeichnet, dass** das mindestens eine Produkt ein Ei (69) mit einer Eierschale (70) ist; dass die Verpackung einen Behälter (51) aus einem weitgehend formbeständigen Material bildet und dass das Material des Behälters (51) zumindest in einem Betriebszustand das Wasser (51) zum Umwandeln von Mikrowellen in Wärme enthält.

20. Gruppe nach Anspruch 19, **dadurch gekennzeichnet, dass** das mindestens eine Ei (69) die mindestens eine Abschirmung (58) gegen Mikrowellenstrahlung trägt und dass die Abschirmung die Eierschale des Eies (69) dicht umschließt.

21. Gruppe nach Anspruch 20, **dadurch gekennzeichnet, dass** die mindestens eine Abschirmung (58) als folienförmige Abdeckung des mindestens einen Eies (69) gestaltet ist.

22. Gruppe nach Anspruch 20 oder 21, **dadurch gekennzeichnet, dass** die mindestens eine Abschirmung als Schicht aus elektrisch leitendem Material, die auf dem Ei vorgesehen ist, gestaltet ist.

23. Gruppe nach Anspruch 22, **dadurch gekennzeichnet, dass** die Schicht aus elektrisch leitendem Material durch Bedampfen aufgebracht wird.

24. Gruppe nach einem der Ansprüche 26 bis 31, **dadurch gekennzeichnet, dass** die mindestens eine Abschirmung (58) gegen Mikrowellenstrahlung mit Kanälen (74) versehen ist.

Revendications

1. Procédé destiné à chauffer un produit destiné à la consommation, comprenant les étapes consistant à : placer le produit (19 ; 69 ;119 à 121 ; 169 ; 219 ; 292) dans un récipient (1 ; 51 ; 101 ; 151 ; 201 ; 251 ; 301), ajuster un blindage (8 à 11 ; 58 ; 108 ; 158 ; 208 ; 258 ; 308) contre les micro-ondes autour du produit, fournir de l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) dans une zone près ou autour du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292) en dehors du blindage (8 à 11 ; 58 ; 108 ; 158 ; 208 ; 258 ; 308) et dans le récipient (1 ; 51 ; 101 ; 151 ; 201 ; 251 ; 301), et ensuite générer un champ hyperfréquence dans ladite zone, l'énergie hyperfréquence étant convertie dans l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) en chaleur, ladite chaleur étant au moins partiellement transférée au produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292), **caractérisé en ce que**, au moins avant le démarrage de la génération dudit champ hyperfréquence dans ladite zone, l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) est située à l'extérieur du blindage (8 à 11 ; 58 ; 108 ; 158 ; 208 ; 258 ; 308)

et dans le récipient (1 ; 51 ; 101 ; 151 ; 201 ; 251 ; 301) dans une unité de conversion de l'énergie (1 ; 51 ; 126 ; 175, 177, 184 ; 225, 227 ; 275, 277 ; 325, 327) dans laquelle l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) est maintenue séparée du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292) dans un récipient d'eau (1 ; 51 ; 127 ; 177, 184 ; 227 ; 277 ; 327), ledit récipient d'eau retenant au moins initialement l'eau séparée du produit et libérant l'eau en réaction au chauffage de l'eau par ledit champ hyperfréquence.

2. Procédé selon la revendication 1, dans lequel le récipient d'eau est un sachet (127 ; 227 ; 277 ; 327) qui s'ouvre en réaction au chauffage de l'eau.

3. Procédé selon la revendication 1 ou 2, dans lequel, au moins jusqu'à un certain temps après le démarrage de la génération dudit champ hyperfréquence dans ladite zone, l'eau (125, 175, 225, 275, 325) s'évapore d'une première zone et se condense dans une seconde zone qui, au moins en moyenne, est située plus près du produit (19 ; 69 ; 119 à 121; 169 ; 219 ; 292) que ladite première zone.

4. Procédé selon la revendication 3, dans lequel l'eau (125 ; 175 ; 225 ; 275 ; 325) est empêchée de s'écarter du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292) au-delà d'une barrière spécifique (73 ; 101 ; 151 ; 201 ; 251 ; 301).

5. Procédé selon l'une quelconque des revendications précédentes, dans lequel le produit est un oeuf (19 ; 69) qui, en partant d'un état brut est chauffé dans sa coquille (70) pour devenir un oeuf à la coque.

6. Dispositif destiné à réchauffer un produit (19 ; 69 ; 119 à 121 ; 219 ; 292) destiné à la consommation, au moyen d'un champ hyperfréquence, comprenant : un récipient (1 ; 51 ; 101 ; 151 ; 201 ; 251 ; 301) pour envelopper le produit (19 ; 69 ; 119 à 121 ; 219 ; 292), un blindage (8 à 11 ; 58 ; 108 ; 158 ; 208 ; 258 ; 308) pour blinder le produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292) vis à vis des micro-ondes, et de l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) située à l'extérieur dudit blindage (8 à 11 ; 58 ; 108 ; 158 ; 208 ; 258 ; 308) et dans ledit récipient (1 ; 51 ; 101 ; 151 ; 201 ; 251 ; 301) pour, au moins dans un état fonctionnel, convertir des micro-ondes en chaleur, **caractérisé par** un récipient d'eau (1 ; 51 ; 126 ; 175, 177, 184 ; 225, 227 ; 275, 277 ; 325, 327) pour maintenir un certain volume de l'eau (51 ; 125 ; 175 ; 225 ;275 ; 325) de celui-ci séparé du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292), au moins dans un état avant la génération dudit champ hyperfréquence dans ladite zone, le récipient (1 ; 51 ; 127 ; 177, 184 ; 227 ; 277 ;327) renfermant l'eau et formant une barrière pour, au moins avant le chauffage de l'eau, maintenir l'eau séparée du produit (19 ; 69 ; 119 à 121 ; 169 ;219 ; 292) et pour libérer l'eau (125 ; 175 ; 225 ; 275 ; 325) en réaction au chauffage de l'eau par ledit champ hyperfréquence.

7. Dispositif selon la revendication 6, dans lequel le récipient d'eau est un sachet (127 ; 227 ; 277 ; 327).

8. Dispositif selon la revendication 7, dans lequel le récipient d'eau est conçu comme une chambre (184) dudit récipient (151), ladite chambre étant séparée par une barrière (177) d'un espace intérieur dudit récipient pour recevoir un produit (169).

9. Dispositif selon l'une quelconque des revendications 6 à 8, dans lequel ladite barrière (127 ; 177 ; 227 ; 277 ; 327) est conçue pour former une ouverture en réaction au chauffage de l'eau.

10. Dispositif selon l'une quelconque des revendications 6 à 9, dans lequel l'unité de conversion d'énergie (1 ; 51) comprend un certain volume de matériau conservant substantiellement une forme.

11. Dispositif selon la revendication 10, dans lequel de l'eau est incluse dans ledit matériau conservant substantiellement une forme (1 ; 51).

12. Dispositif selon la revendication 11, dans lequel au moins une partie de ladite eau est incluse dans les pores dudit matériau conservant substantiellement une forme (1 ; 51).

13. Dispositif selon la revendication 11 ou 12, dans lequel au moins une partie de ladite eau est liée à un composant hyroscopique dudit matériau conservant substantiellement une forme (1 ; 51).

14. Dispositif selon l'une quelconque des revendications 6 à 13, comprenant en outre une barrière d'inhibition de vapeur (73 ; 101 ; 151 ; 201 ; 251 ; 301) pour faire obstruction à la sortie de l'eau dudit produit (69 ; 119 à 121, 169 ; 219 ; 292).

15. Dispositif selon l'une quelconque des revendications 6 à 14, dans lequel ledit matériau conservant substantiellement une forme (1 ; 51) est un matériau composite ayant un matériau fibreux et un matériau de liaison.

16. Dispositif selon l'une quelconque des revendications 6 à 15, dans lequel ledit récipient (101 ; 151) destiné à envelopper un produit forme une couverture scellée pratiquement hermétiquement rendu étanche et est muni d'une ouverture de vidange (131 ; 181) fermée, pour libérer ladite ouverture (131 ; 181) en réaction au dépassement d'une pression en excès donnée à l'intérieur du récipient (101 ; 151) par rapport à l'environnement.

17. Dispositif selon l'une quelconque des revendications 6 à 16, dans lequel ledit récipient (201) destiné à envelopper le produit est conçu comme une boîte (203) ayant un côté supérieur refermé par une protection transparente (235), ledit blindage (208) destiné à blinder le produit (219) vis à vis des hyperfréquences comprenant un couvercle (202) situé d'un côté inférieur dudit récipient (201) et en prise avec ladite boîte (203), et ladite boîte (203) ainsi que ledit couvercle (202) étant conçus pour refermer ladite boîte (203) après enlèvement de ladite feuille, en plaçant ledit couvercle (202) sur ledit côté supérieur de ladite boîte (203).

18. Ensemble d'au moins un produit (69 ; 119 à 121 ; 169 ; 219 ; 292) prévu pour la consommation et d'un conditionnement (51 ; 101 ; 151 ; 201 ; 251 ; 301) dans lequel ledit au moins un produit (69 ; 119 à 121 ; 169 ; 219 ; 292) est conditionné, comprenant en outre au moins un blindage (58 ; 108 ; 158 ; 208 ; 258 ; 308) pour blinder ledit au moins un produit (69 ; 119 à 121 ; 169 ; 219 ; 292) contre des micro-ondes et de l'eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) qui, au moins dans un état fonctionnel, est situé à l'extérieur dudit blindage et dans ledit conditionnement afin de convertir des micro-ondes en chaleur, ladite eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) étant située dans une unité de conversion d'énergie (1 ; 51 ; 126 ; 175, 177, 184 ; 225, 227 ; 275, 277 ; 325, 327) pour maintenir ladite eau (51 ; 125 ; 175 ; 225 ; 275 ; 325) dans celle-ci séparée du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292), au moins dans un état avant la génération dudit champ hyperfréquence dans ladite zone, dans lequel l'unité de conversion d'énergie (1 ; 51 ; 126 ; 175, 177, 184 ; 225, 227 ; 275, 277 ; 325, 327) comprend un récipient d'eau (1 ; 51 ; 127 ; 177, 184 ; 227 ; 277 ; 327) renfermant l'eau, ledit récipient d'eau formant une barrière pour, au moins avant le chauffage de l'eau, maintenir l'eau séparée du produit (19 ; 69 ; 119 à 121 ; 169 ; 219 ; 292) et pour libérer l'eau (125 ; 175 ; 225 ; 275 ; 325) en réaction au chauffage de l'eau par ledit champ hyperfréquence.

19. Ensemble selon la revendication 18, dans lequel ledit au moins un produit est un oeuf (69) avec une coquille d'oeuf (70) et dans lequel ledit conditionnement forme un récipient (51) d'un matériau conservant substantiellement une forme et dans lequel le matériau dudit récipient (51), au moins dans un état fonctionnel, contient l'eau (51) pour convertir les micro-ondes en chaleur.

20. Ensemble selon la revendication 19, dans lequel ledit au moins un oeuf (69) porte ledit au moins un blindage (58) contre un rayonnement hyperfréquence et dans lequel ledit blindage entoure étroitement la coquille d'oeuf de l'oeuf (69).

21. Ensemble selon la revendication 20, dans lequel ledit au moins un blindage (58) est conçu comme une enveloppe en forme de feuille dudit au moins un oeuf (69).

22. Ensemble selon la revendication 20 ou 21, dans lequel ledit au moins un blindage est conçu sous forme d'une couche d'un matériau électriquement conducteur disposée sur l'oeuf.

23. Ensemble selon la revendication 22, dans lequel ladite couche de matériau électriquement conducteur est appliquée par vaporisation.

24. Ensemble selon l'une quelconque des revendications 26 à 31, dans lequel ledit au moins un blindage (58) contre un rayonnement hyperfréquence est muni de passages (74).

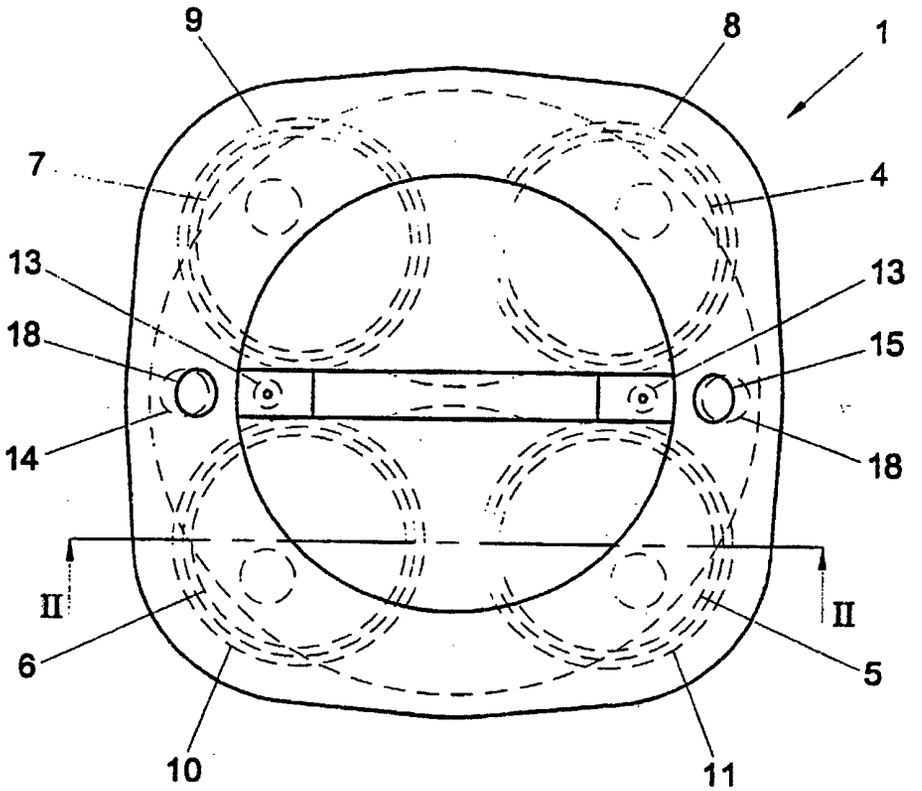
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Fig. 1

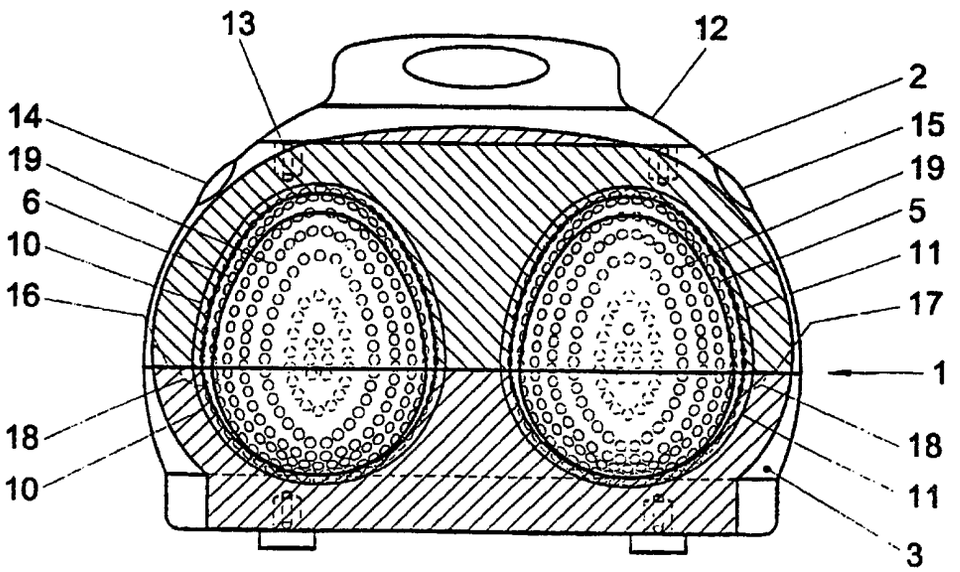
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Fig. 2

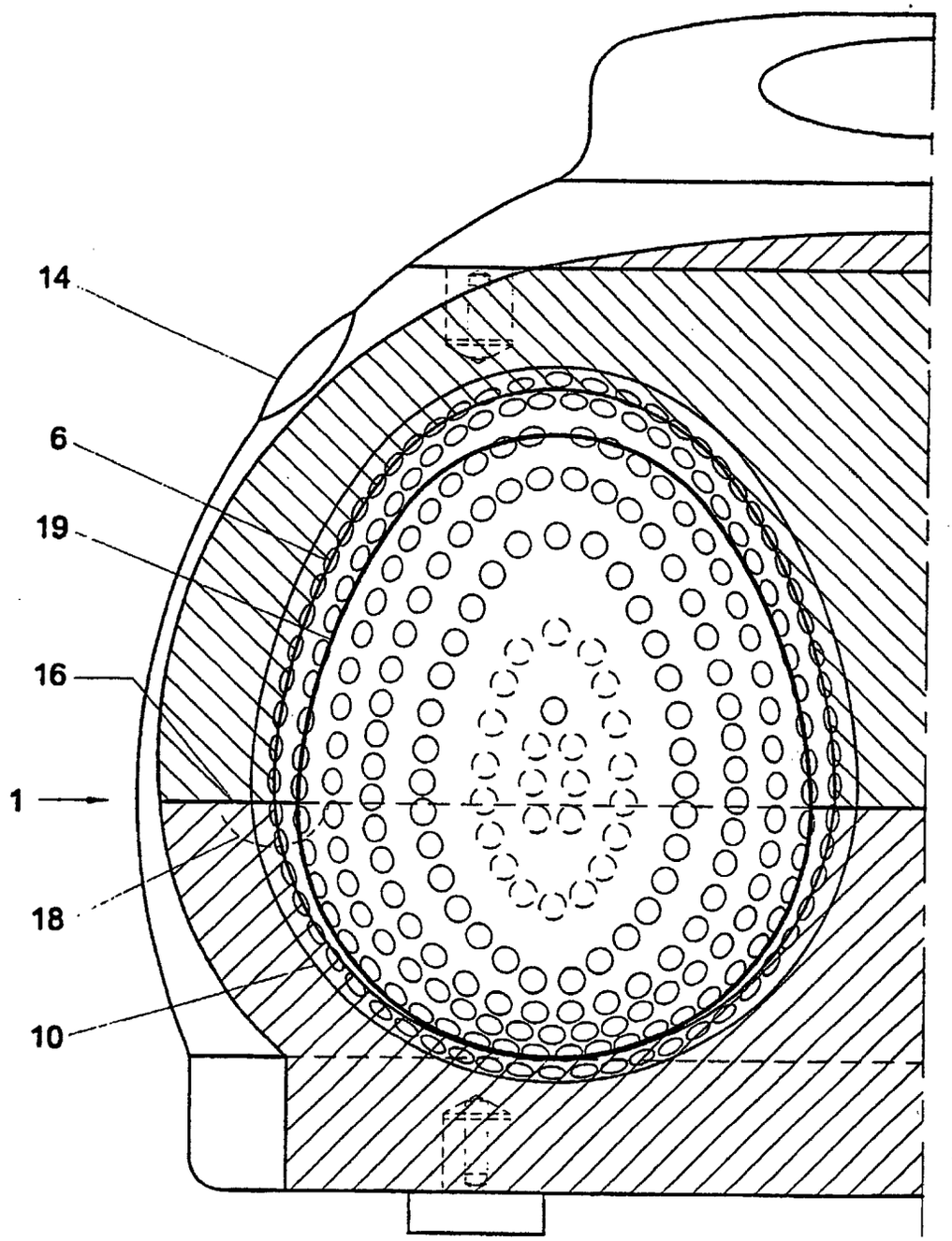


Fig. 3

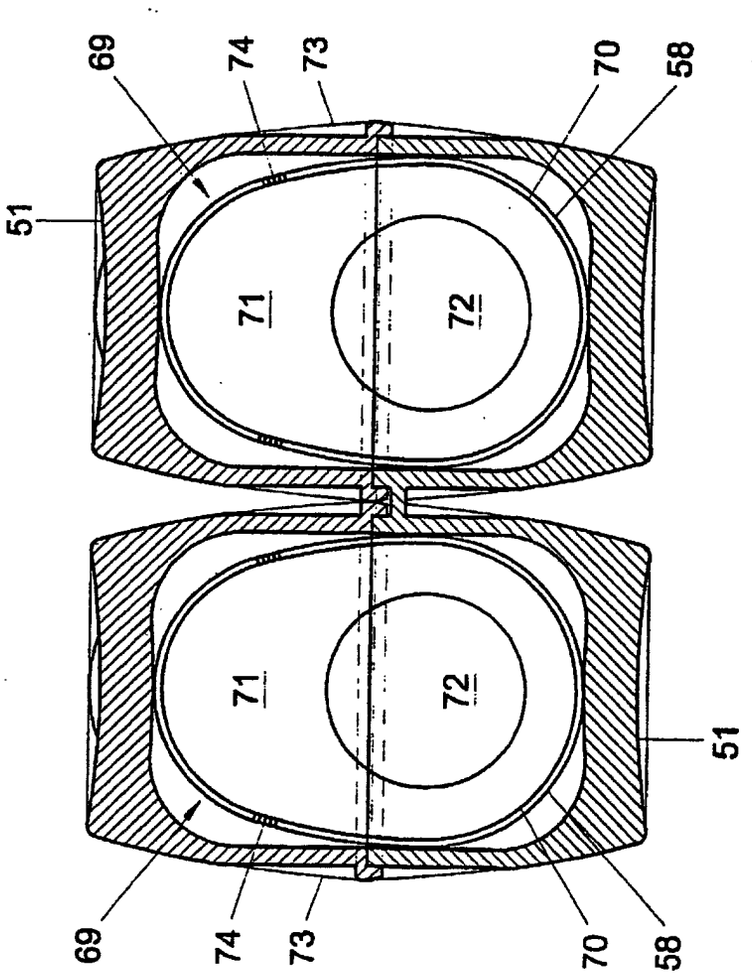
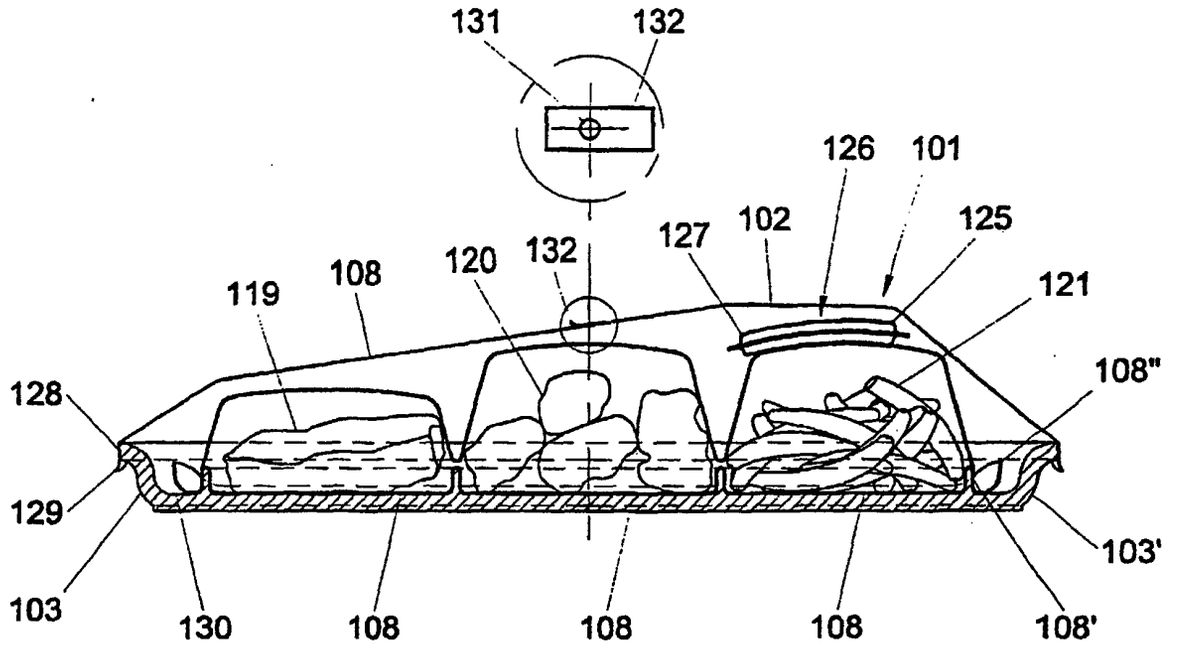


Fig. 4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126
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108"
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108'
103'

Fig. 5

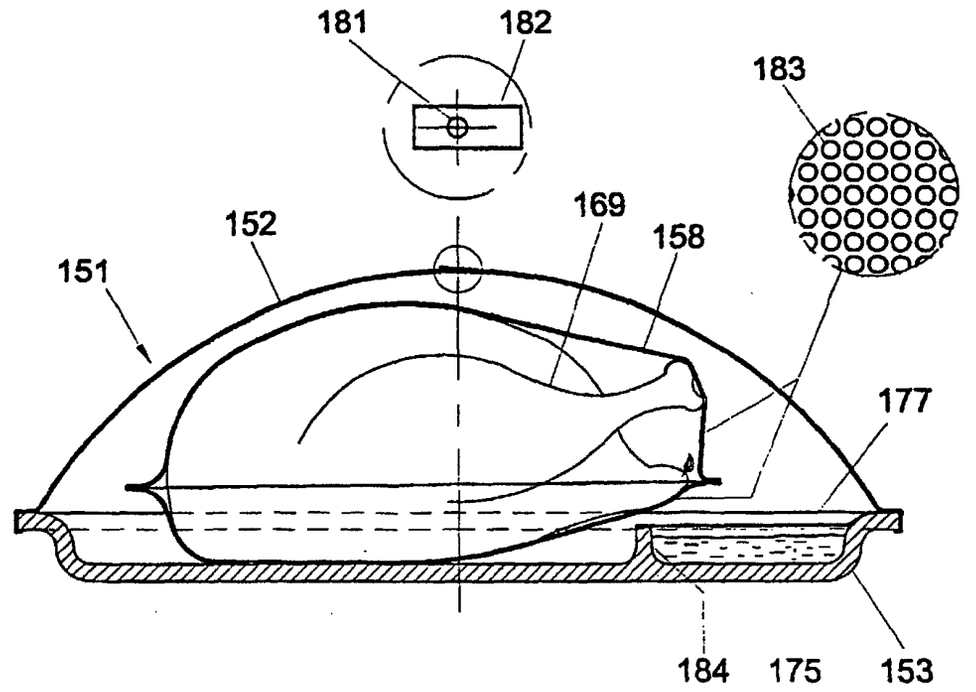
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Fig. 6

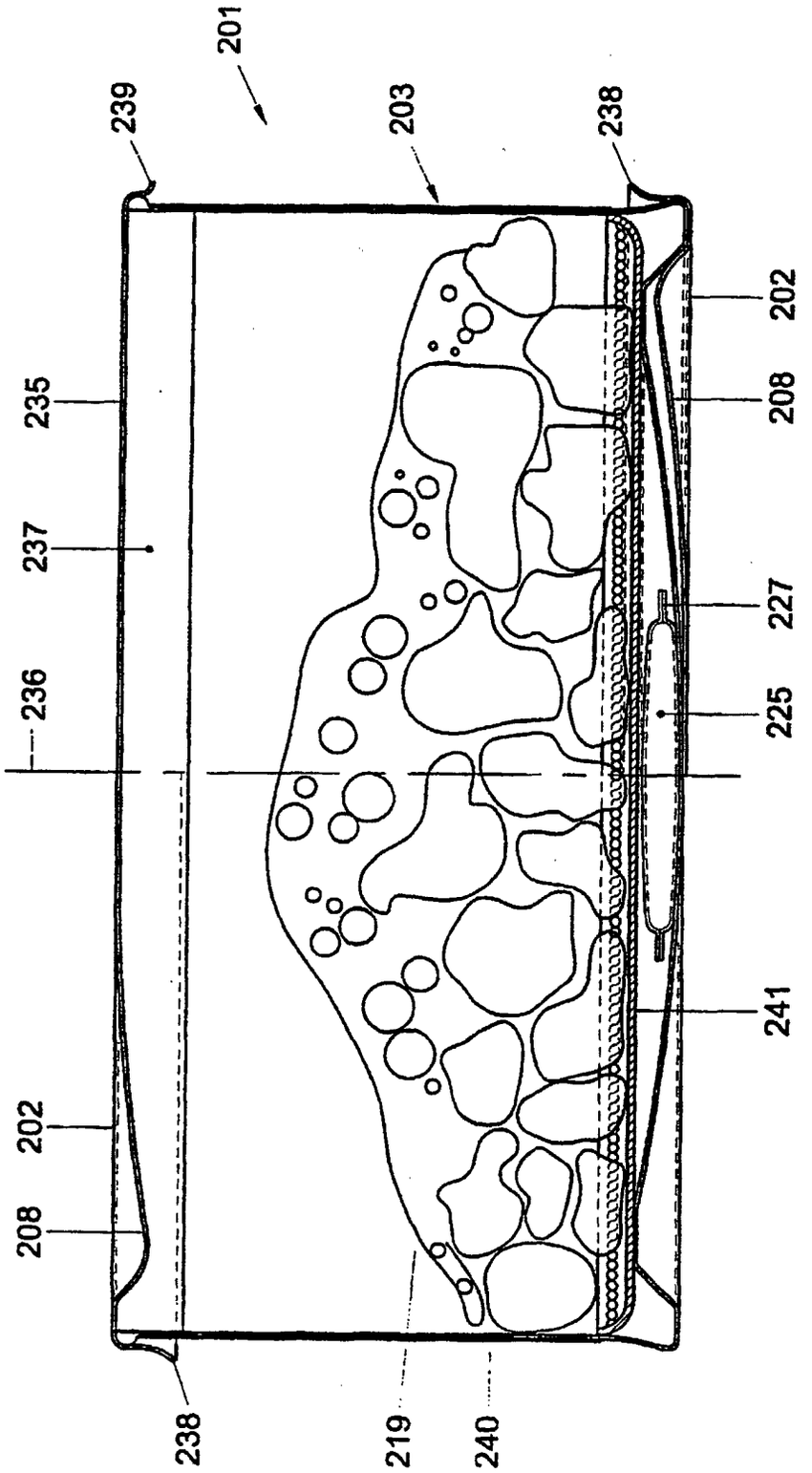
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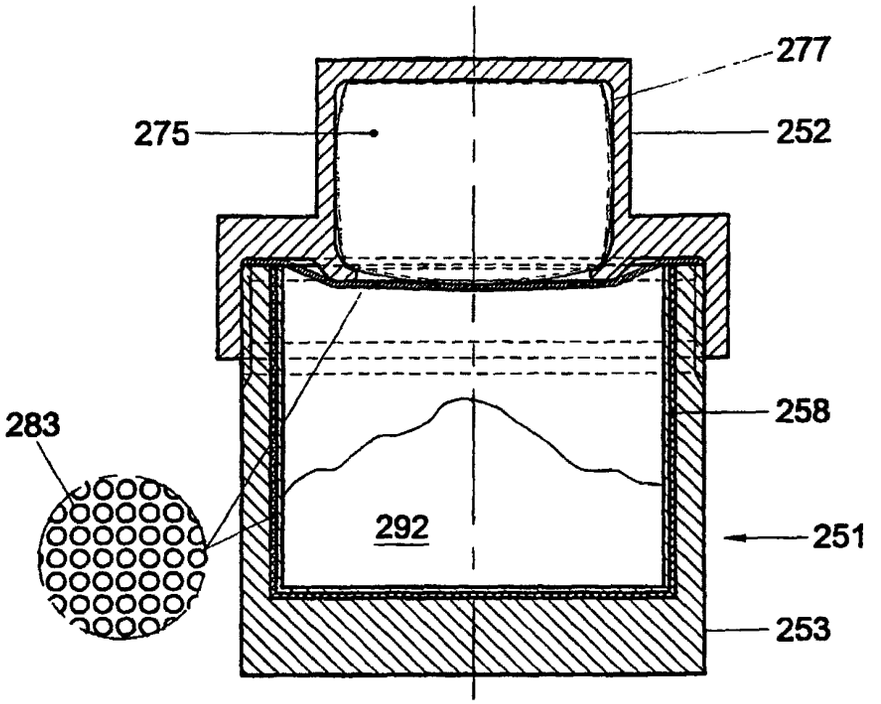
Fig. 7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292
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Fig. 8

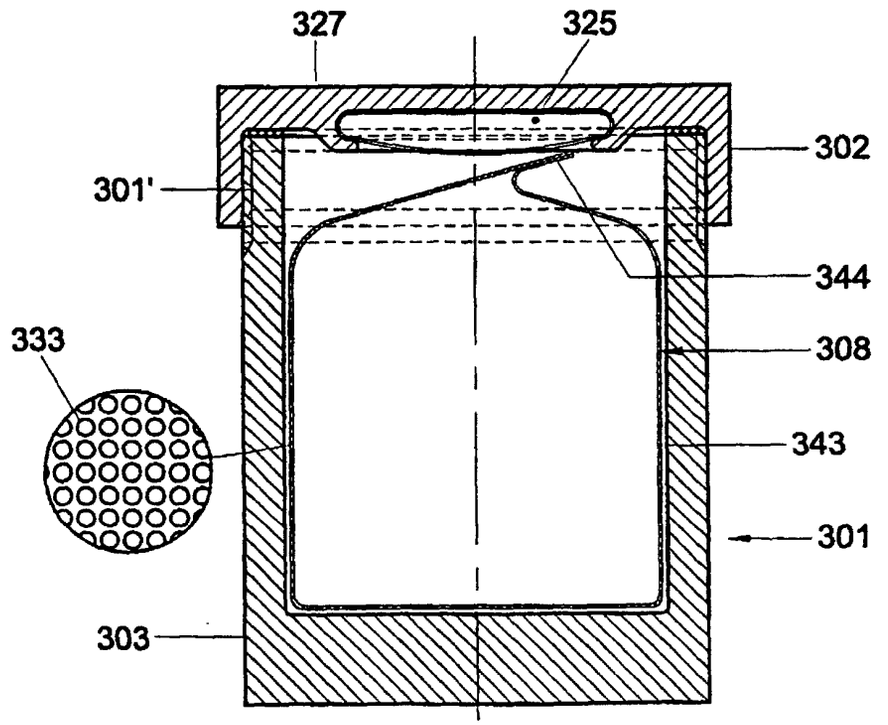
327
325
302
301'
344
333
308
343
301
303

Fig. 9