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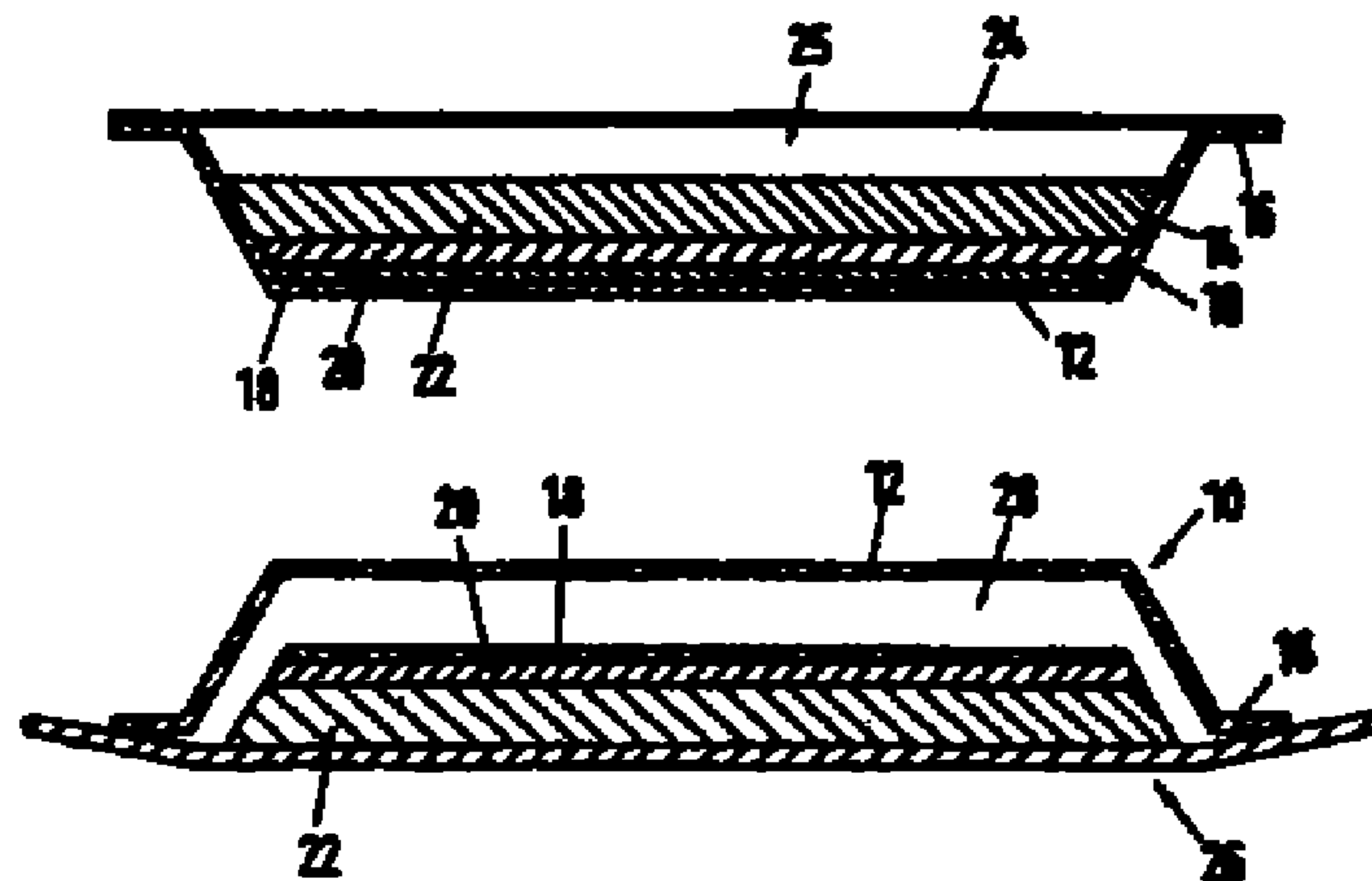
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(54) **EMBALLAGE POUR REPAS PRET A SERVIR ET PROCEDE
PERMETTANT DE FABRIQUER LEDIT EMBALLAGE**

(54) **READY-TO-SERVE MEAL PACK AND METHOD FOR
PRODUCING SAID PACK SO THAT IT IS READY TO USE**



(57) L'invention concerne un emballage pour repas prêt à servir, qui comprend: une partie base (10) en forme de plateau, dont la paroi latérale périphérique (14) diverge vers l'extérieur depuis un fond (12) sensiblement plat jusqu'à un rebord supérieur, où elle se transforme en un rebord périphérique (16) faisant saillie vers l'extérieur et sensiblement parallèle au fond; un repas prêt à servir, disposé dans la partie base (10), constitué d'au moins deux parties de consistance différente, de préférence précuit et pouvant être congelé après avoir été placé dans la partie base; et un film alimentaire (24) posé sur le rebord après remplissage de la partie base.

(57) The invention relates to a ready-to-serve meal pack, comprising an essentially dish-shaped base part (10) whose peripheral side wall (14) diverges outwards from an essentially flat bottom (12) to the top edge, where it then forms an outwardly projecting, essentially flat peripheral edge flange (16) which is also parallel to the bottom. The base part (10) is filled with a ready-to-serve meal. Said ready-to-serve meal comprises at least two constituents of different consistency, is preferably pre-cooked and can be deep-frozen after it has been placed in the base part. The pack also comprises a film seal (24) which is sealed onto the edge flange



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L'emballage est caractérisé par le fait que la partie base (10) est constituée d'un matériau pouvant être traversé par les micro-ondes et capable d'absorber l'eau, au moins dans sa couche superficielle tournée vers le repas (18, 20, 22). Le coefficient de dilatation thermique dudit matériau est inférieur, dans la plage de température comprise entre -20 °C et la température ambiante, à celui du repas. Le rebord est flexible et déformable, de façon à pouvoir, après arrachage du film alimentaire (24), s'adapter d'une manière relativement étroite sur une surface périphérique opposée sensiblement parallèle, telle que le bord d'une assiette (26) ou similaire. Entre la surface supérieure du repas et la surface interne inférieure du film alimentaire se trouve un espace fonctionnel libre (25). L'invention concerne également un procédé permettant de fabriquer ledit emballage de repas prêt à servir.

after the ready-to-serve meal has been placed in the base part. The invention is characterised in that the base part (10) consists of a material which is penetrable to microwave energy and which can absorb water at least in the surface layer facing the ready-to-serve meal (18, 20, 22), the thermal expansion coefficient of the material being lower than that of the ready-to-serve meal at between minus 20°C and room temperature; in that the side flange is flexible and deformable so that after the film seal (24) has been pulled off, the side flange can adapt to the shape of an essentially parallel peripheral opposite surface, such as the rim of a plate or similar, relatively closely; and in that a functional space (25) is left between the surface of the ready-to-serve meal facing away from the bottom and the inner surface of the film seal. The invention also relates to a method for producing a pack of this type which is ready to use.



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(54) Title: READY-TO-SERVE MEAL PACK AND METHOD FOR PRODUCING SAID PACK SO THAT IT IS READY TO USE		
(54) Bezeichnung: FERTIGMENÜPACKUNG SOWIE VERFAHREN ZUM HERSTELLEN UND GEBRAUCHSFERTIGMACHEN DERSELBEN		
(57) Abstract		
The invention relates to a ready-to-serve meal pack, comprising an essentially dish-shaped base part (10) whose peripheral side wall (14) diverges outwards from an essentially flat bottom (12) to the top edge, where it then forms an outwardly projecting, essentially flat peripheral edge flange (16) which is also parallel to the bottom. The base part (10) is filled with a ready-to-serve meal. Said ready-to-serve meal comprises at least two constituents of different consistency, is preferably pre-cooked and can be deep-frozen after it has been placed in the base part. The pack also comprises a film seal (24) which is sealed onto the edge flange after the ready-to-serve meal has been placed in the base part. The invention is characterised in that the base part (10) consists of a material which is penetrable to microwave energy and which can absorb water at least in the surface layer facing the ready-to-serve meal (18, 20, 22), the thermal expansion coefficient of the material being lower than that of the ready-to-serve meal at between minus 20°C and room temperature; in that the side flange is flexible and deformable so that after the film seal (24) has been pulled off, the side flange can adapt to the shape of an essentially parallel peripheral opposite surface, such as the rim of a plate or similar, relatively closely; and in that a functional space (25) is left between the surface of the ready-to-serve meal facing away from the bottom and the inner surface of the film seal. The invention also relates to a method for producing a pack of this type which is ready to use.		
(57) Zusammenfassung		
Fertigmenüpackung, mit einem im wesentlichen schalenförmigen Basisteil (10), dessen umlaufende Seitenwand (14) von einem im wesentlichen ebenen Boden (12) zu ihrer Oberkante nach außen divergiert und dort in einen nach außen vorstehenden, im wesentlichen ebenen, zum Boden parallelen, umlaufenden Randflansch (16) übergeht, einem in das Basisteil (10) eingefüllten, mindestens zwei Komponenten unterschiedlicher Konsistenz aufweisenden, vorzugsweise vorgegarten und nach dem Einfüllen in das Basisteil tiefgefrierbaren Fertigmenü und einer nach dem Einfüllen des Fertigmenüs auf den Randflansch aufgesiegelten Siegelfolie (24), dadurch gekennzeichnet, daß das Basisteil (10) aus von Mikrowellenenergie durchsetzbarem, zumindest in seiner dem Fertigmenü (18, 20, 22) zugewandten Oberflächenschicht wasserabsorptionsfähigem Material hergestellt ist, dessen Wärmeausdehnungskoeffizient im Temperaturbereich zwischen minus 20 °C und Raumtemperatur kleiner ist als derjenige des Fertigmenüs; daß der Randflansch derart flexibel-verformbar ausgebildet ist, daß er nach dem Abziehen der Siegelfolie (24) verhältnismäßig dicht an eine im wesentlichen zum Randflansch parallele umlaufende Gegenfläche, wie den Rand eines Tellers (26) oder dergleichen, anschmiegar ist; daß zwischen dem dem Boden abgewandten Spiegel des Fertigmenüs und der dem Boden zugewandten Innenfläche der Siegelfolie ein Funktionsraum (25) freigelassen ist; sowie Verfahren zum Herstellen und Gebrauchsfertigmachen einer derartigen Fertigmenüpackung.		

INSTANT MENU PACK AND METHOD FOR PRODUCING IT AND MAKING IT READY FOR USE

The invention relates to an instant menu pack according to the preamble of claim 1 and to a method for producing and making ready for use such an instant menu pack.

In the case of instant menu packs of the aforementioned type the base part is conventionally made from deep-drawn aluminium foil, whilst the sealing foil can also be made from aluminium or also coated plastics material or the like. The heating of such instant menu packs where, after filling the instant menu in the base part and applying the sealing foil, deep freezing takes place and the instant menu pack is then stored at a maximum of -18°C , generally takes place in a circulating air oven or the like and for after-cooking the instant menu which has only been pre-cooked prior to filling into the base part, a time of approximately 40 minutes is generally necessary.

The known instant menu pack has proved substantially satisfactory, but it is occasionally considered to be disadvantageous that in the case where certain components of the instant menu are e.g. liquid, on filling into the base part, which i.e. takes place in an order ensuring that during the subsequent consumption the last-filled upper layer is at the top and can firstly be consumed, the trickling of liquid components into the underlying layers, e.g. of sauces, can only be prevented in that the base part is subdivided into different compartments, so that then the user subsequently applies from a specific base part compartment the sauce or the like to the solid component and can consequently bring about pleasing consumption characteristics. The aforementioned problem e.g. more particularly arises with a spaghetti dish, which is to be covered with a tomato-based sauce and subsequently with a Parmesan cheese layer.

Quite apart from the fact that instant menu packs of the aforementioned type cannot be heated by microwave energy, because the aluminium foil lower part is not permeable to microwave energy, the aforementioned disadvantages can also not be avoided when the lower part is made from a microwave energy-permeable material, because even then prior to the deep-freezing process, there is a trickling of e.g. liquid sauce components into the underlying solid layers of the instant menu, said effect being further intensified on

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warming up by microwave energy. In addition, microwave heating of instant menus has generally hitherto suffered from the disadvantage that it is impossible to cross surface layers, so that it is very difficult to give pleasing consumption characteristics to pizzas or meat dishes in the case of microwave heating.

DE 91 05 684 U1 discloses an instant menu pack in which the layer order of the food prior to preparation or cooking is different from that in the ready-to-eat state, because after heating the pack container provided with the deep-frozen food located therein in the delivery state, the layer-like constituents of the heated food are rearranged prior to consumption. No reference is made to the problem of avoiding the trickling of liquid sauce components, etc. into the solid layers of an instant menu.

The problem of the invention is to improve the aforementioned instant menu pack in that on the one hand an undesired mixing of the individual components without subdividing the base part into different compartment is avoided and on the other the obtaining of corresponding consumption characteristics is ensured, even with microwave heating. The invention also provides a method for producing and making ready for use such an instant menu pack.

In a further development of the instant menu pack according to the prior art, the invention solves this problem through the feature combination of claim 1.

Preferred embodiments of the instant menu pack according to claim 1 form the subject matter of subclaims 2 to 6.

In the method category the problem of the invention is solved by the feature combination of claim 7. Preferred embodiments of the method according to the invention form the subject matter of claims 8 and 9.

The invention is based on the surprising finding that it is possible to solve the above problem and eliminate the disadvantages of the hitherto known instant menu packs in that the individual components of the instant menu are filled into a lower part not subdivided into compartments in the

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form of vertically succeeding layers in an order ensuring that the layer at the top during subsequent consumption is introduced first and the bottom layer or component for subsequent consumption is introduced last. This e.g. makes it possible to fill a spaghetti dish with sauce layer and Parmesan layer without any undesirable mixing of the individual components.

In the lower part there remains an upper functional area, which together with the fact that the thermal expansion coefficient of the material from which the lower part is made is lower than that of the instant menu, ensures that on inverting the deep-frozen instant menu pack onto a plate or the like, the instant menu is detached from the lower part now serving as a cover and drops onto the plate and between the cover and the instant menu a cooking area is formed, which is relatively tightly sealed to the outside by the marginal flange of the lower part supported on the plate rim. If the instant menu is now rapidly heated by microwave energy, where in this case only about four minutes are needed for heating and after-cooking, compared with the roughly 40 minutes when heating up conventional instant menus of the aforementioned type in a circulating air oven or the like, the sauce which is at the top, i.e. in the presently described example above the spaghetti layer, only trickles into the latter to such an extent that pleasing consumption characteristics are acquired and e.g. a Parmesan layer located above the sauce layer in the consumption position is crossed.

The instant menu pack according to the invention is eminently suitable for the preparation of "difficult" instant menus, in which particular importance is attached to the separation of the different components of the instant menu until immediately prior to consumption and in particular makes it possible as a result of the cover remaining on the plate or the like, to transport the finished menu following heating in a central kitchen, e.g. of a hospital or the like, in the covered state to the sick bed and only there remove the cover, so that not only is the instant menu protected against contamination, but also an undesirable cooling between heating and consumption is avoided.

Further features and advantages of the invention can be gathered from the following description of an embodiment relative to the attached drawings,

wherein show:

Fig. 1 An embodiment of an instant menu pack according to the invention in the transportation state and in section through the normally perpendicular median longitudinal axis.

Fig. 2 The instant menu pack of fig. 1 after removing the sealing foil and inverting onto a plate in the warming up position.

As can be seen in fig. 1, the instant menu pack in the embodiment shown therein has a tray-like base part 10, which is produced by press punching cardboard. The base part 10 has a substantially flat bottom 12 and a circumferential side wall 14 upwardly diverging in sloping manner therefrom in fig. 1 and to which is connected an also circumferential marginal flange 16, which is substantially flat and substantially parallel to the bottom 12. It is particularly important that as a result of the material selection the marginal flange 16 is substantially flexible-deformable and optionally for this purpose, other than in the embodiment shown in fig. 1, the marginal flange 16 can be made thinner than the bottom 12 and/or the side wall 14 of the base part 10.

At least on its surface inwardly bounding the resulting tray, the base part 10 does not have a water-repelling treatment, but is instead constructed in water vapour-absorbing manner throughout.

Engaging on the bottom 12, in the base part 10 are provided in succeeding manner a Parmesan layer 18, a tomato-based sauce layer 20 and a spaghetti layer 22. Onto the marginal flange 16 is sealed a coated aluminium sealing foil 24 and between the inner face of the sealing foil 24 facing the bottom 12 and the level of the spaghetti layer 22 remote from the bottom 12 is left a functional space 25, which in the embodiment shown has a height in the direction of the perpendicular representing approximately 1/3 of the spacing between the upper bearing surface of the bottom 12 and the level of the spaghetti layer 22.

Whilst omitting the sealing foil 24 shown in fig. 1, in fig. 2 the base part

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10 is in the inverted position on a circular plate 26, the marginal flange 16 of the base part 10 resting in closely engaging manner on the plate rim and the spaghetti layer 22 resting on the bearing surface of the plate 26. Between the upper face of the now top Parmesan layer 18 and the inner face of the now top bottom 12 of the base part 10 is formed a cooking area 28.

In the method according to the invention, the instant menu pack is produced and made ready for use in the form according to figs. 1 and 2 in the following way:

In the position shown in fig. 1, in which the bottom 12 of the base part 10 rests on a substrate, such as e.g. a conveyor belt or the like, the base part 10 is filled with the individual components of the instant menu in such a way that the component which is to be at the top after heating, i.e. in the use position, is filled first and that which is filled last is the component which is to be at the bottom when consuming the instant menu. Thus, into the base part 10 is firstly filled the Parmesan layer 18, then the sauce layer 20 and only then the spaghetti layer 22. Filling takes place at the room or pre-cooking temperature of the individual components and which are consequently not completely cooked after filling into the base part 10. Then the sealing foil 24 is sealed onto the marginal flange 16 of the base part 10. The now finished instant menu pack is then deep-frozen, namely to a core temperature of -18°C .

Subsequently during transportation, storage, etc., the instant menu pack is kept below or at the most at said deep-freezing temperature.

If the instant menu is now to be consumed and for which purpose a prior warming up is required, the sealing foil 24 is removed and then, as shown in fig. 2, the base part 10 freed from the sealing foil and with the instant menu 18, 20, 22 located therein is inverted onto a conventional plate 26. Due to gravity and the functional space 25 left free during the production of the instant menu pack according to fig. 1 and which is located between the upper level of the spaghetti layer 22 and the sealing foil 24, under the influence of gravity the instant menu comprising the three aforementioned components drops downwards in the manner visible in fig. 2, a cooking area

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28 being formed between the Parmesan layer 18, which is now at the top, and the bottom 12 of the base part 10. To ensure that on inverting the base part 10 with the instant menu 18, 20, 22 located therein onto the plate 26, under the influence of gravity an immediate release of the instant menu 18, 20, 22 from the base part 10 takes place, it is also important that the thermal expansion coefficient of the material from which the base part 10 is made is lower than that of the instant menu 18, 20, 22, so that the latter during deep-freezing shrinks more than the base part 10, so that the instant menu 18, 20, 22 in the transportation position shown in fig. 1 is located relatively loosely, i.e. with a slight clearance, in the base part 10.

In the warming up position shown in fig. 2, the marginal flange 16 engages gently on the rim of the plate 26, so that the cooking area 28 is at least sealed with respect to the ambient air to such an extent that the base part 10 in the position shown in fig. 2 can protect the instant menu 18, 20, 22 against contamination, e.g. until after bringing the heated instant menu to a sick bed or the like, the base part 10 now serving as a cover can be raised from the plate 26.

In the position shown in fig. 2 the plate 26 with the instant menu 18, 20, 22 located on it and the base part 10, now serving as a cover, is introduced into a microwave oven and then in a period of approximately 4 minutes thawing and final cooking and heating of the instant menu 18, 20, 22 to the consumption temperature take place. Due to the fact that the warming up period is relatively short, it is possible in an ideal manner to ensure that the sauce layer 20 only trickles slightly into the spaghetti layer 22, as is desired for the preparation e.g. in a private kitchen, i.e. in the case of an immediate consumption of the thus prepared spaghetti menu. The Parmesan layer 18 is slightly gratinated, because water vapour passing out of the instant menu is absorbed by the inner face of the base part 10 or is at least partly adsorbed there, so that the cooking area 28 does not have a saturated water vapour atmosphere and is instead relatively "dry", so that there is a gratinating and browning effect on the surface of the Parmesan layer 18. This is not particularly significant with a spaghetti menu, but is of decisive importance when the instant menu is in the form of pizzas, meat cutlets, etc. and then the generally otherwise observed disadvantage of

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microwave heating, namely not permitting the crossing of surface layers, is avoided as a result of the inventively provided cooking area 28 and the atmosphere set therein.

On terminating the heating of the instant menu 18, 20, 22, the plate 26 is brought to the consumption location and only then is the base part 10 serving as a cover removed and the now ready-to-consume instant menu is consumed.

The features of the invention disclosed in the description, drawings and claims can be essential to different embodiments of the invention, either singly or in random combination.

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CLAIMS

1. Instant menu pack having a substantially tray-like base part, whose circumferential side wall diverges outwards from a substantially flat bottom towards the upper edge thereof and passes there into an outwardly projecting, substantially flat, bottom-parallel, circumferential marginal flange, an instant menu filled into the base part having at least two components with a different consistency, which is preferably pre-cooked and deep-freezable after filling into the base part, and a sealing foil sealed onto the marginal flange after filling the instant menu, characterized in that the base part (10) is made from a material permeable to microwave energy and which can absorb water at least in its surface layer facing the instant menu (18, 20, 22) and whose thermal expansion coefficient in the temperature range between -20°C and room temperature is lower than that of the instant menu, that the marginal flange (16) is given a flexible-deformable construction in such a way that following the removal of the sealing foil (24) it engages relatively closely on a circumferential opposite face, which is substantially parallel to the marginal flange (16), such as the rim of a plate (26) or the like, that between the level of the instant menu (18, 20, 22) remote from the bottom (12) and the inner face of the sealing foil (24) facing the bottom (12) is left a functional space (25), and that the components (18, 20, 22) of the instant menu are filled into the base part (10) in a layer arrangement perpendicular to the bottom (12) in such a way that the individual layers have an order opposite to the intended order of the individual components on consumption.

2. Instant menu pack according to claim 1, characterized in that the height of the functional area (25) corresponds to at least 1/4 of the height of the filled instant menu (18, 20, 22).

3. Instant menu pack according to claim 2, characterized in that the height of the function area (25) is approximately 1/3 of the height of the filled instant menu (18, 20, 22).

4. Instant menu pack according to one of the preceding claims, characterized in that the base part (10) is made from a plastics material provided on

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its inside facing the instant menu (18, 20, 22) with a water-absorbing coating.

5. Instant menu pack according to one of the claims 1 to 3, characterized in that the base part (10) is made from shaped cardboard, shaped carton, etc.

6. Instant menu pack according to one of the preceding claims, characterized in that the base part (10) is substantially circular.

7. Method for producing and making ready for use an instant menu pack according to one of the preceding claims, characterized in that the components of the instant menu are introduced into the base part at room temperature or cooking temperature in the pre-cooked state, successively and in an order which is the reverse of that of the components during after-cooking or heating and on consuming the instant menu, that subsequently in a random order the instant menu is deep-frozen and the sealing foil is sealed onto the marginal flange, that at the end of deep-frozen storage and directly prior to heating and making ready for consumption of the instant menu the sealing foil is removed from the marginal flange, the base part with the instant menu located therein then being inverted onto a plate or the like, in which under the influence of gravity the instant menu is detached from the lower part supported as a cover on the plate rim and between the instant menu and the inner face of the lower part is formed a cooking area bounded by the bottom of the lower part and part of its side wall, that then the instant menu is heated and that finally, prior to consumption, the lower part is lifted off the plate and consequently the instant menu is exposed for consumption.

8. Method according to claim 7, characterized in that the instant menu is heated by microwave energy.

9. Method according to claim 7 or 8, characterized in that for inverting the base part with the instant menu located therein use is made of a plate, whose external diameter is at least slightly larger than the internal diameter of the marginal flange of the base part.

Fig.1

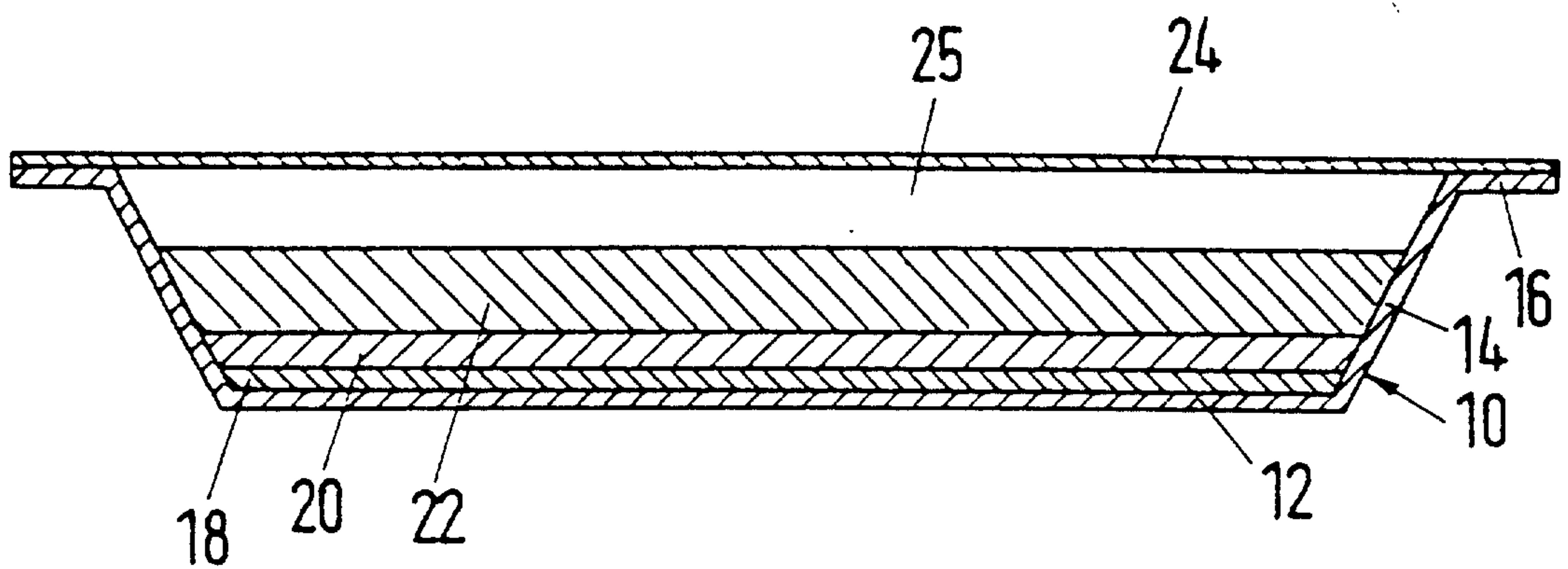


Fig.2

