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(54) Benævnelse: **Indpakning i fleksibelt materiale til fødevareprodukter som skal indtages efter opvarmning i ovnen**

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DESCRIPTION

[0001] The object of the present invention is packaging in flexible material of the stand-up type, i.e. self-supporting, suitable for containing a food product made up of at least two components kept separate, and to be mixed and heated before consumption. For example in the lower part of the packaging a solid wet component is contained, such as filled and unfilled fresh pasta, and in the upper part a liquid component which could be the pasta condiment.

[0002] The invention also relates to a kit comprising such a flexible packaging, a substantially rigid outer case and optional disposable cutlery, such as to make the heating in the oven and the consumption of the product easy. The invention also relates to a method of filling and use of the flexible packaging according to any one of appended claims 1 to 9.

[0003] Currently, due to the frenetic pace of modern living, which allows increasingly limited time for the consumption of meals, packagings of food products ready for consumption are becoming increasingly widespread, after heating in the oven, in particular in the microwave oven.

[0004] The packagings currently existing on the market consist, in the majority of cases, of rigid containers where the liquid component is already in contact with the solid component and all this is housed in an outer cardboard case. These solutions, in addition to a greater use of material, involve the solid component, for example the pasta, on the base of the packaging, remaining immersed in the liquid component, for example sauce, for the whole period between packaging and consumption, causing a possible deterioration of the quality of the product.

[0005] Other solutions exist which provide a tray, containing for example a condiment, placed or formed in a larger tray, containing for example pasta, both closed with a peelable film, and all this placed inside a cardboard case. These packagings, in addition to also requiring a greater use of material, are somewhat complicated in the phase of use, the consumer having to perform manually the mixing between the two components of the product.

[0006] WO 2007/142887 A1, which accords with the preamble of claim 1, describes a packaging with multiple compartments, in particular two compartments containing two liquid substances to be mixed in order to form a drink. The two compartments are separated by a fragile heat seal suitable for being broken by manual crushing of the packaging. A heating of the packaging is not foreseen.

[0007] The object of the invention is that of eliminating the disadvantages of the systems of the prior art relating to products to be mixed and heated before consumption.

[0008] More particularly one object of the invention is that of allowing that the components of the product come into contact, without manual intervention, only when they are warm and shortly before being consumed.

[0009] Another object of the invention is that of providing such a packaging which requires less use of packing material with respect to the packagings of the prior art.
Another object again of the invention is that of providing such a packaging which is simple to use.

[0010] Yet another object of the invention is that of providing such a packaging which is simple and economical to manufacture.

[0011] These and other objects are achieved according to the invention with the features of the appended independent claims 1 and 10.

[0012] Advantageous embodiments of the invention are disclosed by the dependent claims.

[0013] Substantially the packaging in flexible material of the stand-up type according to the invention, comprising a reinforced supporting base wherefrom two opposite side walls rise up, each one sealed to a respective half-perimeter of the base and sealed one to the other along the side edges and the upper edge, has in an intermediate area a continuous transverse sealing such as to divide up the interior of the packaging into two separate chambers, suitable for containing two different components of a food product to be heated and brought into contact at the time of consumption.

[0014] The abovementioned transverse sealing is such as to open due to the increase in pressure following heating in the oven, due to the expansion of the inner atmosphere of the lower chamber, normally containing a wet solid, causing the fall thereon of the component, normally liquid, contained in the upper chamber, thus determining a single chamber inside the packaging.

[0015] The aforesaid transverse sealing has preferably a V shape, with the top turned downwards, to facilitate the opening of the sealing during the expansion of the atmosphere in the lower chamber.

[0016] A second continuous transverse sealing is provided a short distance from the upper or head sealing of the packaging and between said second transverse sealing and the head sealing side openings are provided, determined for example by a lack of sealing between the side edges of the packaging in these areas.

[0017] Said second transverse sealing is such as to open with a sound effect following the further heating of the packaging, which causes further expansion of the atmosphere which pressurises the inner chamber.

[0018] The provision of the two side openings between the double head sealing allows the release of gas without the interior of the oven being soiled by possible sprays of liquid.

[0019] On the side walls of the packaging, above the level of the solid component, a weakening is created in the material in transverse direction with the laser engraving technique, or by means of an abrasion. At one end at least of the pre-engraving a notch is provided to facilitate the tearing, the depth of which must not obviously exceed the width of the corresponding side sealing of the packaging. With such a system the packaging will be easily opened, removing the upper part, in order to make it similar to a plate from which to consume the meal.
The packaging is conveniently made in a plastic laminate with two or more layers, where the outer layer is for example polyester (PET) with the possibility of offering a barrier to the gases, and the inner heat-sealing layer in contact with the product is in polyethylene (PE), polypropylene (PP), co-extruded films obtained from PE-EVOH, PE-PA (polyamide), PP-EVOH, PP-PA and the like, provided it is able to guarantee the opening of the sealing by means of the pressure which is created inside the packaging.

[0020] This effect can be obtained by means of peelable layers or by lacquering, with openable and heat-sealable products, the inner surface of the laminate at the sealings to be opened.

[0021] For structures with more than two layers, between the outer film and the inner sealing one a film of OPA or of PET can be inserted.

[0022] A packaging of this type is suitable for being heated in a microwave oven.

[0023] A use in electric oven with temperatures up to approximately 130°C cannot however be excluded, in which case laminates will be able to be used containing for example an aluminium film with barrier effect, immediately inside the outermost PET film.

[0024] Advantageously the packaging in flexible material according to the invention is provided housed in an outer cardboard case, for greater practicality of use, both in the phase of heating of the packaging and of consumption of the product, in fact the insulating action of the cardboard avoids the risk of bums to the hands in the case of excess heat.

[0025] Further features of the invention will be made clearer by the following detailed description, referred to a purely non-limiting example thereof, illustrated in the accompanying drawings in which:

Figure 1 is a schematic front view of a flexible packaging according to the invention, whereon the various sealing lines are given;

Figure 2 is a schematic perspective view of the packaging of Figure 1 filled with the product, before use;

Figure 3 is an axonometric view of the flexible packaging of Figure 2 inserted in an outer cardboard case;

Figures 4-7 are schematic front views, illustrating the phases of filling of the packaging;

Figure 8 is a schematic perspective view illustrating the opening of the outer case;

Figure 9 is a perspective view showing the opening of the flexible packaging;

Figure 10 shows finally how the product can be consumed directly from the packaging.

[0026] Referring to these drawings, and for the time being in particular to Figures 1 and 2, a packaging according to the invention has been denoted overall by reference numeral 10. This is a packaging known by the name of stand-up packaging,

formed in flexible material, with one or more layers, heat sealable at least on one face.

[0027] The packaging 10 has a reinforced supporting base 11 and two opposite side walls 12, each one sealed to a respective half-perimeter 13 of the base 11, and sealed one to the other at the side edges 14.

[0028] In order to allow a widening of the supporting base 11 of the packaging each lower sealing 13 is joined to the side sealings or edges 14 by means of respective pairs of slanted sealing sections 15. The packaging 10 structured in this way takes on an upward tapering shape and, after having been filled with the product, is closed above by means of a head sealing 16.

[0029] A packaging of this type can be considered in itself substantially known.

[0030] According to the invention in an intermediate zone of the packaging a continuous transverse sealing 17 is provided which, in the example illustrated, has a very wide V configuration, with the top turned downwards, such as to divide the interior of the packaging 10 into two separate chambers, a lower one 20 and an upper one 21.

[0031] At a short distance from the upper head sealing 16 of the packaging 10 a second continuous transverse sealing 18 is provided, which develops parallel thereto, and between said sealings 16 - 18 side openings 19 are provided, determined, for example, by an interruption of side sealings 14 in these zones.

[0032] On the side walls 12 of the packaging 10, at approximately the top of the lower chamber 20, a transverse weakening line 22 is formed of the material with the laser engraving technique or by means of an abrasion. At the ends of the weakening lines 22 a respective notch 23 is provided to facilitate the tearing, the depth of which does not exceed the width of the corresponding side sealing 14 of the packaging.

[0033] The intermediate transverse sealing 21 and the second upper head transverse sealing 18 are such as to open, making the side walls 12 of the packaging 10 separate on reaching a certain pressure inside the packaging, as will be explained in greater detail here below.

[0034] This can be obtained by providing, at the zones occupied by these openable sealings, peelable layers, or by lacquering with openable and heat-sealable products the inner surface of the laminate with which the packaging is made.

[0035] Referring to the schematic views of Figures 4 to 7 the step of filling and closure of the packaging 10 is now described briefly.

[0036] In Figure 4 the packaging is open above and in it a wet solid component is inserted, for example pasta which is placed on the base of the packaging. Subsequently the V-shaped transverse sealing 17 is performed, which confines the aforesaid solid component in the lower chamber 20 (Figure 5).

[0037] In the upper chamber 21 a liquid or pasty component is then inserted, in this case a sauce serving as condiment for the pasta (Figure 6).

[0038] Finally the two head sealings 18 and 16 are formed, leaving the side vents or openings 19.

[0039] Figure 3 shows the flexible packaging 10 according to the invention housed in a substantially rigid outer cardboard case 30.

[0040] The case 30 has a base 31 in the form of a rectangular tray in which the packaging 10 is placed, wherefrom two side walls 32 rise up with width decreasing upwards which are joined one to the other with known means, for example tab and slot, to close the packaging 10 above, as shown in Figure 3.

[0041] The aforesaid side walls 32 are joined to the base 31 by means of respective preperforated lines 33 suitable, if necessary, for facilitating the separation thereof.

[0042] Moreover cutlery 34 can also be inserted in the case 30 for the consumption of the product, as will now be described.

[0043] Figure 8 shows schematically the opening of the outer cardboard case 30 with removal of the side walls 32 facilitated by the pre-perforated lines 33, in such a way that the flexible packaging 10 remains housed in the base tray 31 and can be placed for example in a microwave oven for heating.

[0044] During the first phase of heating the synergic action of expansion between the steam developed by the wet solid component placed in the lower chamber 20 and the inner atmosphere of the same chamber cause the opening of the transverse sealing 17 and the fall onto the solid component of the liquid component contained in the upper chamber 21, determining in this way a single chamber inside the packaging.

[0045] Continuing the heating, the steam generated by the components mixed in the single expansion chamber, again synergically with the inner atmosphere, will pressurise this chamber, causing the opening of the head sealing 18, opening which will be able to be perceived by a sound effect, like a light explosion, with the release of the gases through the side vents or openings 19, which avoid soiling of the oven due to possible sprays of liquid.

[0046] Having ended the step of heating, the packaging 10 contained in the base 31 of the external cardboard case can be extracted from the oven and opened along the weakening lines 22, as schematised in Figure 9.

[0047] At this point the meal can be consumed directly in the packaging 10 using the cutlery 34 optionally provided, as shown schematically in Figure 10.

[0048] The laminates which can be used for the flexible packaging 10 can be with two or more layers, where the outer layer is for example PET with barrier to the gases and the inner layer of the heat-sealing type, in contact with the product, in PE, PP, co-extruded films obtained from PE-EVOH, PE-PA, PP-EVOH, PP-PA and the like, provided it is able to guarantee the opening of the transverse sealings 17 and 18 by means of the pressure which is created inside the packaging 10. This effect can be obtained by means of peelable layers or by lacquering, with openable and heat-sealable products, the inner surface of the laminate of the packaging at the sealings to be opened.

[0049] Laminates of the aforesaid type are suitable for packagings 10 suitable for being heated in a microwave oven.

[0050] A use of the packaging 10 according to the invention in an electric or gas oven with temperatures up to approximately 130°C cannot be excluded, in which case laminates will also be able to be used with aluminium, interposing for example an aluminium film immediately inside the outermost PET film.

[0051] From what has been disclosed the advantages appear clear of the packaging according to the invention with respect to the similar packagings of the prior art.

[0052] One advantage comes from the fact that the liquid product (in the example given the condiment) comes into contact with the wet solid product (in the example pasta) automatically only when the two components are warm and shortly before being consumed, thus preserving the aroma of the product.

[0053] A further advantage comes from the extreme simplicity of use of the packaging, which stands out by its lightness.

[0054] In the preferred embodiment described previously the lower chamber 20 contains a fresh solid component and the upper chamber 21 a liquid component.

[0055] However the packaging according to the invention could also be used by placing in the lower chamber 20 a liquid component and in the upper chamber 21 a dry solid component, such as pasta.

[0056] In this case, following the opening of the transverse sealing 17, the solid component falls into the liquid component, mixing with it.

[0057] Although the transverse sealing 17 has preferably a V shape with top turned downwards, without departing from the scope of the invention, the top of the V could be turned upwards.

[0058] A further advantage again comes from the lower use of packing material.
Naturally the invention is not limited to the particular embodiment previously described and illustrated in the accompanying drawings, but numerous detailed changes may be made thereto, within the reach of the person skilled in the art, without thereby departing from the scope of the invention itself as defined by the appended claims.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO2007142887A1 [0006]

Patentkrav

1. Indpakning (10) i fleksibelt materiale, omfattende en bærebase (11) hvorfra to modstående sidevægge (12) rejser sig, hvor de begge er forseglet til en halvperimeter (13) af basen (11) og forseglet med hinanden langs respektive sidekanter (14) og langs den øvre kant med en hovedforsegling (16), hvor, i et mellemliggende område af indpakningen (10), mindst en kontinuerlig tværgående forsegling (17) er tilvejebragt, egnet til at inddele det indre af indpakningen (10) i to separate kammer, et nedre kammer (20) og et øvre kammer (21), egnede til at indeholde to forskellige komponenter af et produkt som skal bringes i kontakt med hinanden ved tidspunktet for indtagelse, hvor den tværgående forsegling (17) er således til at åbne, når et bestemt tryk nås i det nedre kammer (20), efterfølgende opvarmning, for derved at danne et enkelt kammer inden i indpakningen (10) og **kendetegnet ved at** ved en kort afstand fra den øvre eller hovedforseglingen (16) er en anden tværgående hovedforsegling (18) tilvejebragt, og mellem hovedforseglingerne (16, 18) er mindst en sideventilation eller -åbning (19) tilvejebragt, hvor den anden tværgående hovedforsegling (18) er således til at åbne når et bestemt tryk nås i det forenede kammer (20, 21).

2. Indpakning (10) ifølge krav 1, **kendetegnet ved at** den tværgående forsegling (17) har en V-form.

3. Indpakning (10) ifølge krav 1 eller 2, hvor den mindst ene sideventilation eller –åbning (19) opnås ved at afbryde den tilsvarende sideforsegling (14) af indpakningen i området mellem hovedforseglingerne (16, 18).

4. Indpakning (10) ifølge et hvilket som helst af de foregående krav, **kendetegnet ved at** på sidevæggene (12) af indpakningen, cirka ved toppen af kammeret (20), er respektive svækkelseslinjer (22) af materialet tilvejebragt, egnede til at gøre åbningen af indpakningen lettere.

5. Indpakning (10) ifølge krav 4, **kendetegnet ved at** mindst ved en ende af svækkelseslinjerne (22) er et indsnit (23) tilvejebragt for at gøre afrivningen lettere, hvis dybde ikke overskrider bredden af den tilsvarende sideforsegling (14) af indpakningen (10).

6. Indpakning (10) ifølge et hvilket som helst af de foregående krav, **kendetegnet ved at** den er indeholdt i en i alt væsentligt stiv udvendig papæske (30) med en base (31) formet som en bakke og egnet til at huse og bære den fleksible indpakning (10), fra hvilken base rejser sig to modstående sidevægge (32) med bredden aftagende opad, egnet til at sammenslutte og dække indpakningen.

7. Indpakning (10) ifølge krav 6, hvor de modstående sidevægge (32) af den udvendige papæske (30) er forbundet med basen (31) ved hjælp af respektive præperforerede linjer (33), egnet til at gøre fjernelse deraf lettere.

8. Indpakning (10) ifølge krav 6 eller 7, **kendetegnet ved at** inden i papkassen (30) er tilvejebragt engangsbestik (34) til indtagelsen af produktet.

9. Kit omfattende en indpakning i fleksibelt materiale til fødevareprodukter som skal indtages efter opvarmning i ovnen ifølge et hvilket som helst af de foregående krav, en udvendig papæske (30) og engangsbestik (34).

10. Fremgangsmåde til påfyldning og anvendelse af den fleksible indpakning (10) ifølge et hvilket som helst af de foregående krav, omfattende de følgende trin:

- at indsætte i indpakningen åben for oven en første komponent egnet til positionering på bunden af indpakningen;
- at danne den kontinuerligt tværgående forsegling (17) for at inddele indpakningen i et nedre kammer (20) og et øvre kammer (21);
- at indsætte en anden komponent i det øvre kammer (21);
- at danne den dobbelte hovedforsegling (16, 18), efterladende mindst en sideventilation eller –åbning (19);
- første trin til opvarmning af indpakningen i ovnen indtil den tværgående forsegling (17) åbner;
- andet trin til opvarmning indtil hovedforseglingen (18) åbner og gasser udledes igennem den mindst ene sideåbning (19);
- at åbne indpakningen ved at bryde svækkelseslinjerne (22);
- at indtage produktet ved hjælp af det eventuelt tilvejebragte bestikket (34).

DRAWINGS

FIG. 1

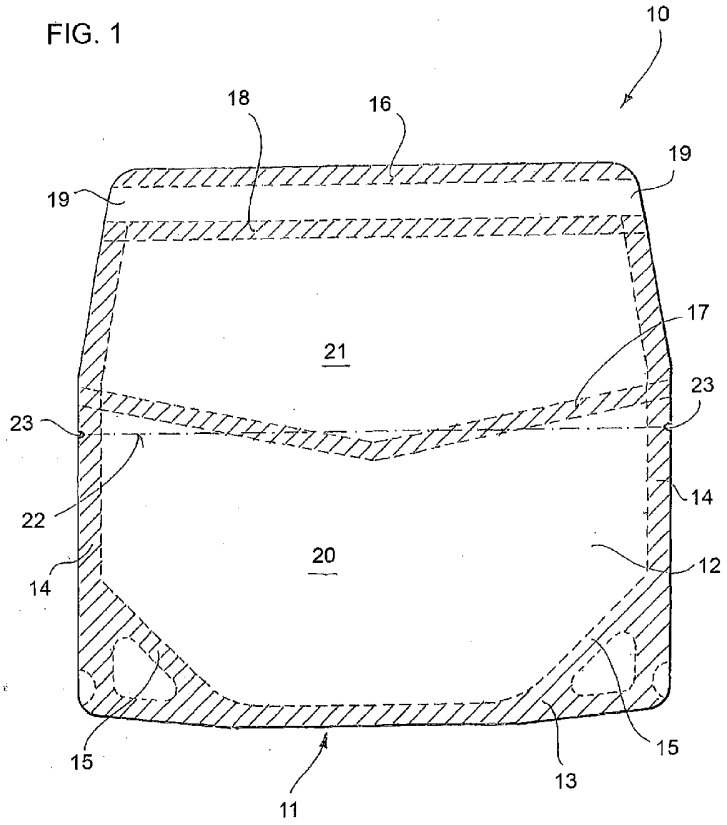
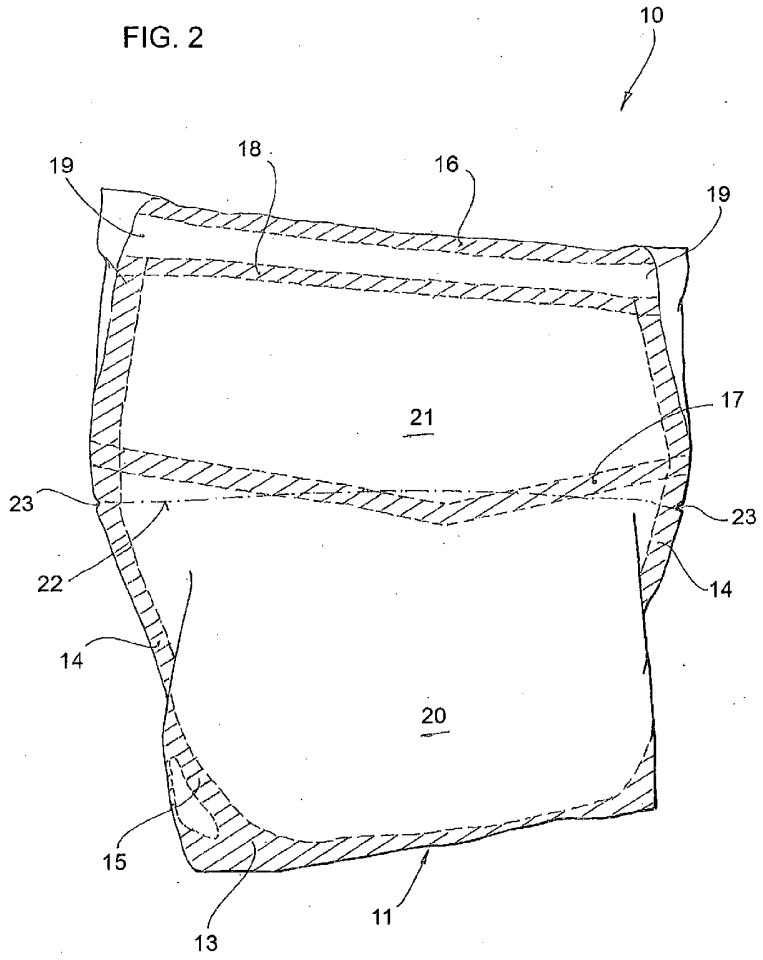


FIG. 2



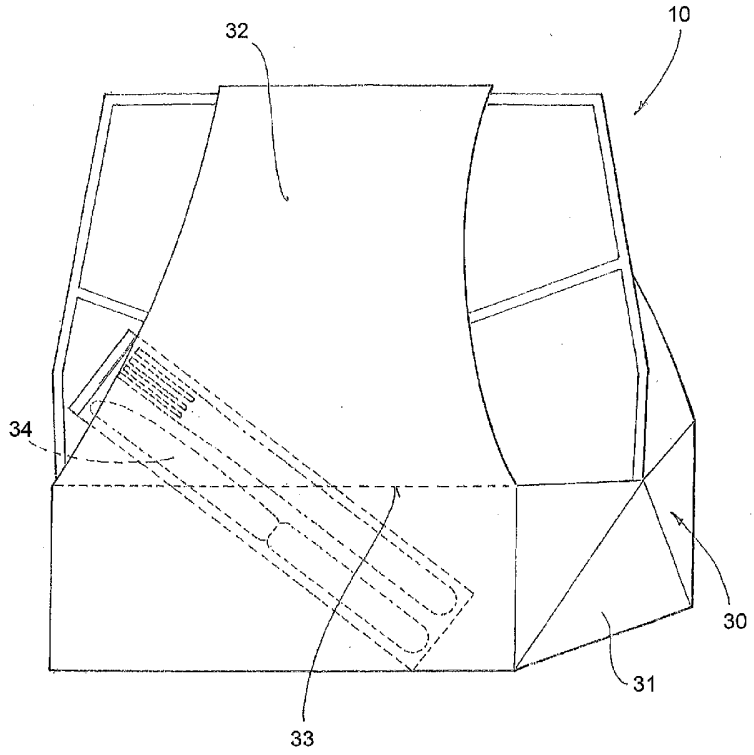


FIG. 3

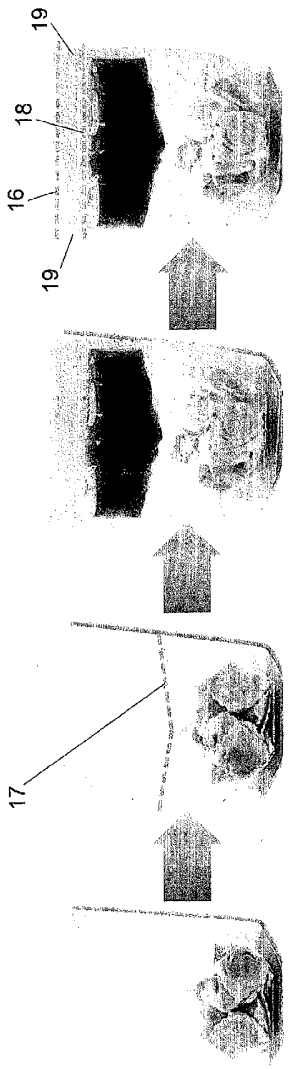


FIG. 4

FIG. 5

FIG. 6

FIG. 7

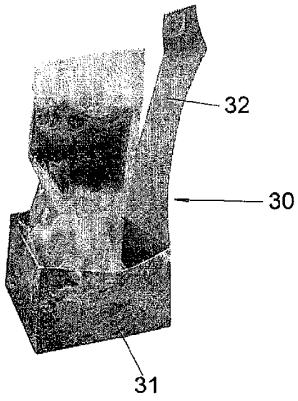


FIG. 8



FIG. 9

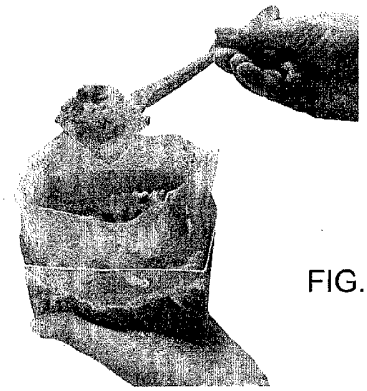


FIG. 10