Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2614283 C 2015/03/24

(11)(21) **2 614 283**

(12) BREVET CANADIEN / CANADIAN PATENT

(13) **C**

(86) **Date de dépôt PCT/PCT Filing Date:** 2006/07/06
(87) **Date publication PCT/PCT Publication Date:** 2007/01/18
(45) **Date de délivrance/Issue Date:** 2015/03/24
(85) **Entrée phase nationale/National Entry:** 2008/01/10
(86) **N° demande PCT/PCT Application No.:** DE 2006/001166
(87) **N° publication PCT/PCT Publication No.:** 2007/006272
(30) **Priorité/Priority:** 2005/07/12 (DE10 2005 032 432.0)

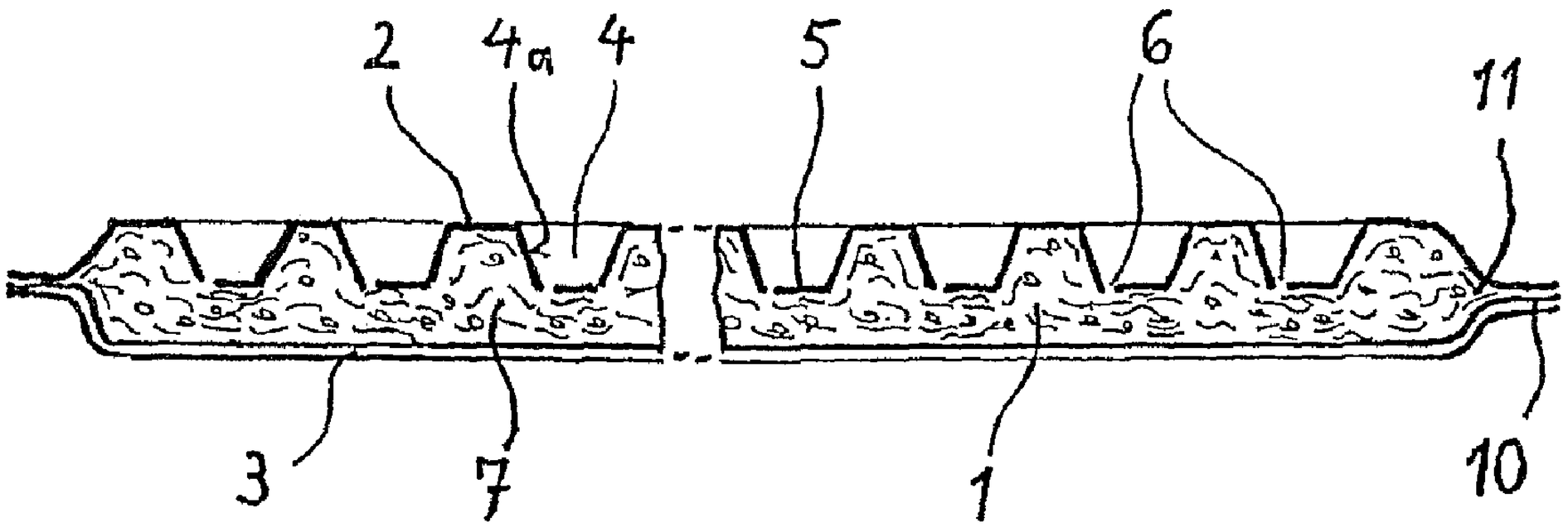
(51) **Cl.Int./Int.Cl.** ***B65D 81/26*** (2006.01)

(72) **Inventeur/Inventor:**
SCHMIDT, ANDREAS, DE

(73) **Propriétaire/Owner:**
MCAIRLAID'S VLIESSTOFFE GMBH, DE

(74) **Agent:** FETHERSTONHAUGH & CO.

(54) **Titre : INSERT ABSORBANT POUR EMBALLAGES ALIMENTAIRES**
(54) **Title: ABSORBENT INSERT FOR FOODSTUFF PACKAGING**



(57) **Abrégé/Abstract:**
The invention relates to an absorbent insert (9), in particular an absorbent insert for foodstuff packaging. Said insert comprises an upper cover layer (2), a lower cover layer (3) and an absorption layer (7) that is situated between the cover layers (2, 3). The invention also relates to a method for producing said absorbent insert (1) and to its use as a laminated insert for foodstuff packaging. According to the invention, at least one of the two cover layers (2, 3) is a film with a three-dimensional structure and openings (6) that are permeable to liquid. The outer edges of the absorbent insert (7) are at least partially sealed. According to the method for producing the absorbent insert, an absorbent layer, which is absorbent over its entire area is covered with two cover layers (2, 3). The upper cover layer (2) consists of a waterproof material and has a three-dimensional structure and the outer edges of the cover layers (2, 3) are at least partially heat- or pressure-sealed.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
18. Januar 2007 (18.01.2007)

PCT

(10) Internationale Veröffentlichungsnummer
WO 2007/006272 A3

(51) Internationale Patentklassifikation:
B65D 81/26 (2006.01)

(21) Internationales Aktenzeichen: PCT/DE2006/001166

(22) Internationales Anmeldedatum:
6. Juli 2006 (06.07.2006)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
10 2005 032 432.0 12. Juli 2005 (12.07.2005) DE

(71) Anmelder *(für alle Bestimmungsstaaten mit Ausnahme von US)*: **MCAIRLAID'S VLIESSTOFFE GMBH & CO. KG** [DE/DE]; Kirchplatz 7, 48565 Steinfurt (DE).

(72) Erfinder; und

(75) Erfinder/Anmelder *(nur für US)*: **SCHMIDT, Andreas** [DE/DE]; Zum Wulftertal 11, 37115 Duderstadt (DE).

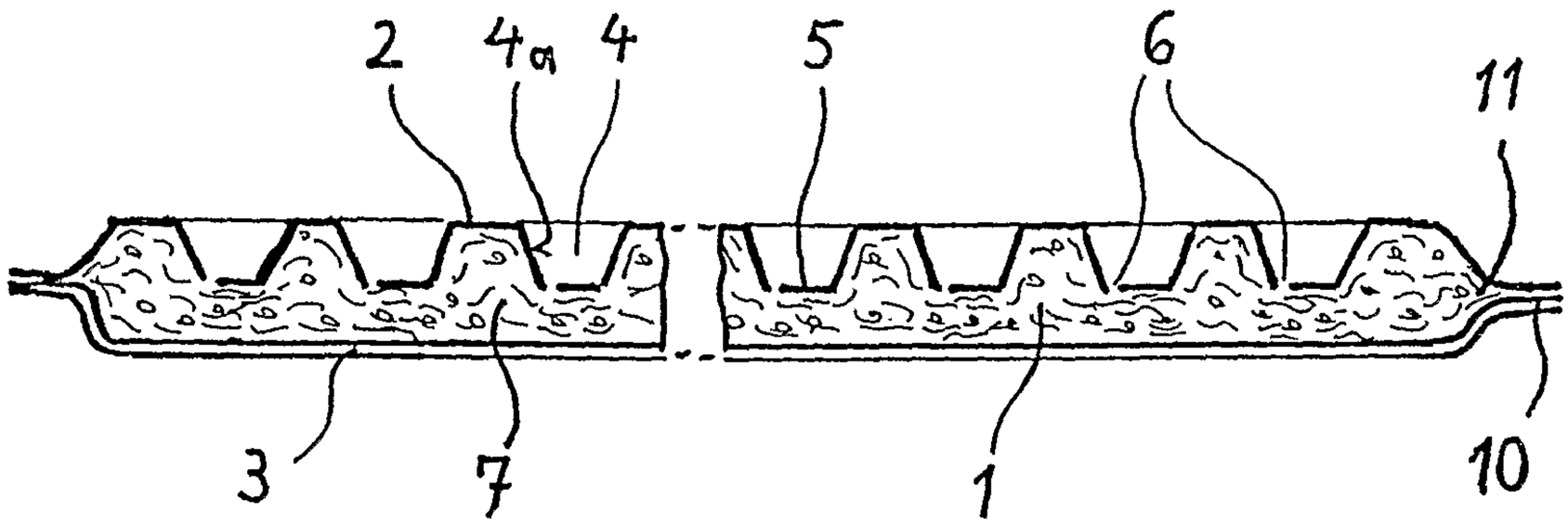
(74) Anwalt: **CHRISTOPHERSEN & PARTNER**; Feldstrasse 73, 40479 Düsseldorf (DE).

(81) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Fortsetzung auf der nächsten Seite]

(54) Title: ABSORBENT INSERT FOR FOODSTUFF PACKAGING

(54) Bezeichnung: SAUGEINLAGE FÜR LEBENSMITTELVERPACKUNGEN



(57) **Abstract:** The invention relates to an absorbent insert (9), in particular an absorbent insert for foodstuff packaging. Said insert comprises an upper cover layer (2), a lower cover layer (3) and an absorption layer (7) that is situated between the cover layers (2, 3). The invention also relates to a method for producing said absorbent insert (1) and to its use as a laminated insert for foodstuff packaging. According to the invention, at least one of the two cover layers (2, 3) is a film with a three-dimensional structure and openings (6) that are permeable to liquid. The outer edges of the absorbent insert (7) are at least partially sealed. According to the method for producing the absorbent insert, an absorbent layer, which is absorbent over its entire area is covered with two cover layers (2, 3). The upper cover layer (2) consists of a waterproof material and has a three-dimensional structure and the outer edges of the cover layers (2, 3) are at least partially heat- or pressure-sealed.

(57) **Zusammenfassung:** Die Erfindung betrifft eine Saugeinlage (1), insbesondere eine absorbierende Saugeinlage für Lebensmittelverpackungen aus einer oberen Abdecklage (2), einer unteren Abdecklage (3) sowie einer zwischen den Abdecklagen (2, 3) befindlichen Absorptionslage (7). Ein weiterer Gegenstand der vorliegenden Erfindung ist ein Verfahren zur Herstellung der Saugeinlage (1) sowie deren Verwendung als Laminat-Einlage für Lebensmittelverpackungen. Gemäß der Erfindung wird vorgeschlagen, dass mindestens eine der beiden Abdecklagen (2, 3) eine Folie darstellt und eine dreidimensionale Struktur aufweist und für Flüssigkeit durchlässige Öffnungen (6) hat, und dass die Saugeinlage (7) an ihren Außenkanten wenigstens teilweise verschlossen ist. In Bezug auf das Verfahren zur Herstellung der Saugeinlage wird u.a. vorgeschlagen, dass eine Absorptionslage, die Sauggröße aufweist, beidseitig mit Abdecklagen

[Fortsetzung auf der nächsten Seite]

WO 2007/006272 A3

WO 2007/006272 A3

(84) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Veröffentlicht:

— *mit internationalem Recherchenbericht*

— *vor Ablauf der für Änderungen der Ansprüche geltenden Frist; Veröffentlichung wird wiederholt, falls Änderungen eintreffen*

(88) Veröffentlichungsdatum des internationalen Recherchenberichts: 7. Juni 2007

Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(2, 3) bedeckt wird, wobei die obere Abdecklage (2) aus einem wasserundurchlässigen Material besteht und eine dreidimensionale Struktur aufweist, und die Abdecklagen (2, 3) thermisch oder durch Druck an ihren Außenkanten wenigstens teilweise verschlossen werden.

Absorbent Insert for Foodstuff Packaging

The object of the present invention is an absorbent insert, in particular, an absorbing absorbent insert for foodstuff packaging, comprised of an upper cover layer, a lower cover layer as well as an absorption layer arranged between the two cover layers. Another object of the present invention is a method for producing the absorbent insert as well as its use as laminate insert for foodstuff packaging.

Laminate inserts for foodstuff packaging are known. They are provided to ensure a clean separation between the foodstuff, in particular, fresh meat from which meat juices can leak, and the packaging. The known laminate inserts comprise an absorption layer that contains generally a super absorbent plastic material in order to absorb the leaking liquids, to convert it into a gel, and to retain it within the interior of the laminate insert. WO 90/03320 discloses an insert for meat and poultry products into which an absorber is incorporated. The absorber comprises top and bottom layers of plastic material, at least one being perforated, and an intermediate layer that is arranged between the two other layers. The central absorber layer contains a plurality of non-directional and overlapping fibers of absorption material and contains granules of super absorber distributed therein. The granules are secured within this layer of fiber material against displacement and sliding and remain in this position even when liquid has been absorbed. The top and bottom layers of plastic film are at least partially connected to one another at least along their oppositely positioned edges in order to hold the absorber layer between the top and bottom layers.

In German patent application 103 01 171 A1 a further absorbent laminate insert for foodstuff packaging, in particular, meat packaging is disclosed. The insert is comprised of two film layers of a thermoplastic synthetic material, of which at least the upper film layer is perforated, and comprised of at least one absorption layer that is positioned between the film layers and is essentially comprised of

nondirectional laid pulp fibers with particles of a super absorbent material. The perforations converge from the exterior to the interior of the laminate insert. At the base of the perforation the pulp fiber layer is greatly compressed, the pulp fibers are fused by pressure at the base of the perforation without a binder.

Conventionally, fresh meat is placed with intermediate positioning of the absorbent insert on a support, a so-called self-service meat plate or a so-called tray. The absorbent insert has the task of absorbing the liquid that leaks without pressure and suction forces from the meat. However, the meat should not be actively drained because it would then dry out and flaws similar to freezer burn would result. On the other hand, any leaking of liquid and absorption material from the insert in the direction of the fresh meat or the stored goods should be prevented.

The absorbent inserts known from the prior art often exhibit the disadvantage:

- that the liquid that is leaking from the fresh meat is absorbed more or less badly as a result of its composition;
- that the perforation openings in the cover film will plug quickly because of the meat juices;
- that the meat will cover tightly the inlet openings for the meat juices in case of smooth surfaces so that in this way absorption is greatly impaired and/or prevented;
- that no super absorbent granules can be used because of the open cut edges;
- that the pressure caused by the weight of the meat when resting on the insert causes at these contact locations more liquid to be absorbed (so-called wick effect) than would be the case when the meat would be contacting “pressureless” the absorbent body of the insert - this can easily lead to the meat drying out.

30484-10

Some embodiments of the present invention may provide absorbent inserts that will solve the aforementioned usual problems, that are particularly suitable as inserts for foodstuff packaging for absorbing liquids leaking from fresh meat, fish, poultry and fruits so that the foodstuff must not lie in the leaked liquid; however, it is to be prevented that more liquid than the amount that will leak from the foodstuff without weight-caused pressure will be absorbed which would lead to the foodstuff drying out.

Therefore some embodiments of the present invention may provide an absorbent insert of the aforementioned kind which absorbs liquid independent of the weight-caused pressure of the goods, which however at points where the foodstuff or the meat has direct contact will absorb only the liquid that leaks by itself. An active water removal from the meat is to be prevented by constructive means and a safe handling of the super absorbent granules is to be ensured by constructive means.

Some embodiments of the present invention may therefore provide an absorbent insert comprised of a upper cover layer and a lower cover layer as well as an absorption layer positioned between the cover layers which insert is characterized in that at least one of the two cover layers has a three-dimensional structure and liquid-permeable openings and in that the absorbent insert is at least partially sealed at its outer edges.

The absorbent insert according to some embodiments of the invention may have the advantage that the foodstuff resting on this insert rests primarily on areas and exerts such weight-caused pressure which areas project in the direction of the foodstuff or the goods to be placed thereon, i.e., on raised portions. The leaking liquid can pass through the permeable openings in the direction of the absorption layer and is absorbed by it only then. Preferably, the cover layer is stiffened such that it counteracts the weight-caused pressure of the meat with a maximum of stability against deformation.

In one possible embodiment of the present invention, the upper cover layer is a

film. The three-dimensional structure is configured in the cover layer preferably such that the film has depressions that are oriented inwardly. They can be conical or pyramid-shaped in the inward direction. In this embodiment, the liquid-permeable openings are located at the bottom of the depressions, i.e., in those sections of the three-dimensional structure that is closest to the absorption layer. The openings can be located within the bottom at the center or the edge. Preferably, the openings have the form of slots or are small dot-shaped openings. This embodiment has the advantage that, when foodstuff such as meat is resting on the absorbent insert, the leaking liquid will collect in the depressions and pass through the permeable openings at the bottom of these depressions into the absorption layer. At the locations where the foodstuffs rests completely on the absorbent insert, i.e., exerts pressure thereon that is so great that the film will deform, these three-dimensional structures will be compressed at points which, at the same time, causes the liquid-permeable openings to close similar to a valve lip. For the foodstuff to be stored, this embodiment has the advantage that liquid leaking without pressure will be absorbed immediately while in the areas with great pressure exertion on the absorption layer the openings will close so that no significant additional amount of liquid will be absorbed. Logically, from a surface that is covered at points in this way no product liquid will leak anymore. In this way, in these proximal areas, i.e., where the meat is very close to the absorption core and where usually water is actively removed in the case of a simple perforated film, there are no openings present anymore or these openings have been reduced to a very small size. Furthermore, by closing the openings, a migration of components from the absorption core outwardly in the direction of the meat is extremely minimized or even prevented.

The upper cover layer is preferably selected from a stretchable and/or thermally deformable material available in the form of films, preferably made of thermoplastic synthetic material. Such synthetic materials can be polyolefins such as polyethylene of high-density, medium-density or low-density, polypropylene of high-density, medium-density, or low-density, polyethylene

terephthalate, diverse copolymers of these materials or also co-extruded materials thereof. Also suitable and excellently processable are biodegradable films.

The upper cover layer is preferably arranged on the side of the absorbent insert according to the invention that is facing the foodstuff. In the following, this side will be referred to as top side.

The lower cover layer that is arranged at the bottom side of the absorbent insert, i.e., on the side that is facing away from the foodstuff, can be made of any suitable material that has covering properties. Preferably, this further film layer at the bottom side of the absorbent insert is made of the same material as the film layer of the top side or of a nonwoven material made of plastic material or pulp fibers.

For different applications, for example, pre-tailored individual pads for meat trays, it has been found to be advantageous to provide both sides with the same modified film. When both sides are identical, the time-consuming orientation of the products when placing them into the packaging is no longer required.

According to an embodiment of the invention, the two film layers are at least partially sealed at their outer edges. Preferably, they are connected along the outer edges with one another. Such a configuration prevents that material from the absorption layer will laterally escape and come into contact with the foodstuff. In one possible embodiment only the film layers are connected to one another, preferably welded to one another, without the absorption layer being included. In this embodiment, the absorption layer is essentially completely enveloped by the two film layers. In this embodiment, a relatively soft product is obtained that can slide within the film envelope.

In another embodiment, the edges of the absorption layer are engaged when

connecting the film layers. In this way, a relatively hard and stiff product is obtained because the absorption layer cannot slide within the envelope.

According to a further embodiment, the layers are additionally connected to one another across their surface areas by means of adhesives such as hot melt, cold glue etc. In this way, a relatively stiff product with at least partially closed-off and sealed edge areas will result wherein the product itself has a sandwich character. The absorption layer which is arranged between the two film layers is preferably selected from a nonwoven or woven material of plastics or cellulose. Well absorbing nonwoven materials of cellulose are preferred. So-called airlaid nonwovens or tissue papers have been found to be especially well suited as absorption layers. For increasing the absorption capacity of the absorption layer, super absorbent materials are preferably incorporated in the absorption materials. These super absorbent materials are preferably homogeneously distributed in the absorption layer so that a uniform absorption of liquid is ensured. When airlaid nonwovens are used in combination with super absorbent materials as an absorption layer, these super absorbers are generally directly mixed with the initial fibers for the airlaid method so that these super absorbers are simultaneously secured by the fibers in the airlaid nonwoven. These super absorbent materials can be selected from any suitable super absorbent; usually, they are selected from polymers of crosslinked polyacrylic acid, carboxymethylcellulose (CMC), pectins or gelatins.

In a further embodiment, for increasing the absorption capacity in the absorption layer, super absorbent materials are strewn or glued in layers between layers of tissue paper or nonwoven.

The absorption layer can also contain substances that produce carbon dioxide when exposed to water, in particular, a mixture of carbonates and acids such as carbonate or bicarbonate and citric acid. Additives can also be contained that absorb oxygen and/or odorous compounds and/or inhibit growth of bacteria

and/or mold.

According to a further embodiment of the invention, above and below the absorption layer there are one or several nonwoven fabrics or similar layers arranged or the absorption layer is coated with such fabrics. By means of these fabrics the blocking effect when pressure is exerted on the absorbent insert is significantly improved.

The absorbent insert can be tailored as individual inserts or can be present in the form of a single-layer or multi-layer product web wherein the individual absorbent inserts are connected to one another by perforations or other weakened sections. In a further configuration of this embodiment, the product web is placed into a packaging in a zigzag arrangement wherein the ends of the absorbent insert are connected to one another, respectively.

Some embodiments of the present invention may provide a method for producing an absorbent insert in which an absorption layer having the desired absorbent size is covered on both sides with cover layers, wherein the upper cover layer is comprised of a water-impermeable material and has a three-dimensional structure and wherein the cover layers are at least partially sealed at their outer edges thermally or by pressure.

According to another possible method for producing the absorbent insert according to the invention, an absorption layer having the desired absorbent size is covered on both sides with film layers, the upper cover layer is provided with a three-dimensional structure, and the cover layers are at least partially sealed at the outer edges thermally or by pressure.

Preferably, in a first method step the absorption layers are produced and cut to the desired absorbent size. Subsequently, the cover layers for forming the top side and the bottom side of the absorbent insert are supplied. When no pre-

structured cover layer is used, in the subsequent method steps the top side and optionally also the bottom side is provided with a three-dimensional structuring of the film and the outer edges are connected to one another, preferably are welded to one another. Structuring of the film can be realized thermally and/or by mechanical stretching. In one possible configuration, the blank of the absorbent insert comprised already of three layers is passed through a further layer wherein at least one of the rollers is embodied as an embossing roller so that depressions are pressed downwardly into the film material. The openings can be applied by conventional cutting tools in a way known in the art, as a modification on the embossed pattern, or by means of cold needling or hot needling or point-wise overstretching of the film. In a preferred embodiment, the embossing rollers that are preferably utilized for structuring have cutting edges on their structure that produce simultaneously openings of the desired size and shape in the films when structuring.

As already described above, the individual absorption inserts can be present in the form of product webs. Connecting the individual absorbent inserts to product webs can be realized by means of thermal or mechanical sealing processes or by means of pressure-sensitive adhesives.

In a final step, the product webs can be wound to rolls or coils. Another product variant is a layered web material stack.

30484-10

Some embodiments of the invention relate to an absorbent insert comprising an upper cover layer and a further, lower cover layer as well as a liquid absorption layer situated between the upper and lower cover layers, in which at least one of the two cover layers is formed by a film which has a three-dimensional structure and has openings are permeable to liquids, and the absorbent insert is closed at its outer edges at least partially, wherein the three-dimensional structure is designed in such a way that the film has depressed portions towards the absorption layer and the openings are situated exclusively on the base of the depressed portions.

The absorbent insert according to an embodiment of the invention, as already described, can be utilized for foodstuff packaging, in particular for fresh meat, seafood, poultry and fruits. They are used primarily for insertion into trays of liquid-impermeable plastic material wherein the absorbent insert according to the invention can either be placed loosely, sealed or glued into the trays. Moreover, it is suitable as an absorbent insert in large sizes for large transport packaging, for example, air transport containers for seafood, meat, poultry and fruits.

Embodiments of the present invention will be explained in the following with the aid of the drawings. It is shown in:

Figure 1 a side view of the first embodiment of the invention;

Figure 2 a side view of another embodiment;

Figure 3 a cross-section of a depression;

Figure 4 a plan view onto a depression;

Figure 5 a side view of a third embodiment of the present invention;

Figure 6 a side view of a fourth embodiment of the present invention.

In Figure 1 and Figures 3 and 4 an absorbent insert 1 is illustrated that comprises an upper film layer 2 and a lower film layer 3. The upper film layer 2 has a three-dimensional structure according to which the film comprises a plurality of uniformly distributed depressions 4 in the inward direction. In the illustrated embodiment, the walls 4a of the depressions 4 extend conically in the inward direction. On the flat bottom 5 of the depressions 4 there are openings 6 through which the liquid to be absorbed passes in the direction toward the absorption layer 7. The openings 6 are slots because such slots will close already upon minimal compression of the film 2. The slots are provided according to Figures 3 and 4 near the edge of the bottom 5.

The absorption layer 7 comprises nondirectional fibers 8 illustrated as squiggles as well as granules 9 made of super absorbent material.

In the embodiment according to Figure 1 and Figure 3 the lower film layer 3 is smooth, i.e., not structured, that is, flat; in other words: two-dimensional. The

upper and the lower film layers 2 and 3 are connected to one another in the embodiment illustrated in Figure 2 without the absorption layer 7 being included also. The film layers 2 and 3 form an envelope for the absorption layer 7 in which envelope the absorption layer can slide depending on the size of the envelope. In this way, a relatively soft product is produced.

In Figure 2 a further embodiment of the absorption layer 1 according to the invention is illustrated. The absorbent insert has again an upper film layer 2 and a lower film layer 3. In the illustrated embodiment, the two film layers 2, 3 are structured three-dimensionally. They both have inwardly extending depressions 4 having at their bottom 5 preferably slot-shaped openings 6 for liquids to be absorbed.

In the embodiment illustrated in Figure 1, the film layers 2 and 3 are connected to one another at their outer edges 10 in such a way that the outer edge 11 of the absorption layer 7 is also engaged. In this configuration, the absorption layer 7 is enclosed in the two film layers 2, 3 so as to be almost completely protected from sliding. The embodiment illustrated in Figure 2 in which the upper film layer 2 as well as the lower film layer 3 are three-dimensionally structured has the advantage that a thicker absorbent insert is obtained that thus provides a larger storage volume in comparison to an absorbent insert with only one structured side. A larger storage volume has the result that only minimal amounts of super absorbent material are required because these materials can absorb more liquid when a larger volume is present.

An absorbent insert according to the invention has usually between 3 and 25 depressions per square centimeter, in particular between 4 and 16 depressions. The openings can be slotted at an angle of 45 degrees to 180 degrees wherein preferably a size of 0.01 to 0.5 mm is obtained; preferably, the size is between 0.05 and 0.2 mm. The super absorbent materials, inasmuch as they are indeed provided, are generally used in the form of fibers or granules. The size of the

openings and the size of the granules of the super absorbent material should be matched to one another such that the granular material in the dry state cannot fall through the openings. In any case, contact of the granular material with the foodstuff is to be prevented.

In Figure 5 a third embodiment of the present invention is illustrated. The absorbent insert 1 according to the invention has two film layers 2, 3 with three-dimensional structure. The absorption layer 7 in the illustrated embodiment is coated at the top side as well as its bottom side with a nonwoven 12. This nonwoven does not impair the permeability for the liquid to be absorbed, but improves the closing effect of the openings 6 as soon as pressure is exerted on the absorbent insert 1. When pressure is exerted on the absorbent insert 1, for example, in the direction of the absorption layer 7, the bottom 5 of the depression will contact with its opening 6 the nonwoven 12 so that the opening 6 will immediately close.

In Figure 3 a cross-section of the depression 4 with opening 6 is illustrated. The depression 4 extends conically in the inward direction. The opening 6 in the illustrated embodiment is provided at the bottom of the depression.

A further effect can be observed when the volume of the absorption layer 7 as a result of absorption of liquid increases such that from the interior pressure is exerted onto the openings 6 so that this will also cause closure of these openings. In this case, the effect is further enhanced by a nonwoven 12.

In Figure 6 an embodiment of the absorbent insert 1 according to the invention is illustrated partially with two three-dimensionally surface-structured layers 2, 3 in a side view. In contrast to the preceding embodiment, the absorption layer 7 in this embodiment has substantially plane top and bottom sides, i.e., the space between the depressions 4 does not contribute to the absorption action. The absorption layer 7 is comprised of fibers 8 that are positioned like a cellulose

layer or like a nonwoven between the depressions 4.

List of Reference Numerals

1	absorbent insert
2	upper film layer
3	lower film layer
4	depression
4a	wall of the depression 4
5	bottom of the depression
6	opening, slot
7	absorption layer
8	fiber
9	super absorbent material
10	outer edge of film layer 2, 3
11	outer edge of absorbent layer 7
12	nonwoven

30484-10

CLAIMS:

1. An absorbent insert comprising an upper cover layer and a further, lower cover layer as well as a liquid absorption layer situated between the upper and lower cover layers, in which at least one of the two cover layers is formed by a film which has a three-dimensional structure and has openings are permeable to liquids, and the absorbent insert is closed at its outer edges at least partially, wherein the three-dimensional structure is designed in such a way that the film has depressed portions towards the absorption layer and the openings are situated exclusively on the base of the depressed portions.

2. An absorbent insert according to Claim 1, wherein the depressed portions converge inwards in a conical or pyramidal manner.

3. An absorbent insert according to one of Claims 1 or 2, wherein the openings are short slots.

4. An absorbent insert according to any one of Claims 1 to 3, wherein the production of the openings takes place by means of cold or hot needling or point-wise distension of the film.

5. An absorbent insert according to any one of Claims 1 to 4, wherein the cover layer selected consists of a thermoplastic plastics material which is preferably also extensible, in particular of polyethylene with a high, medium or low density, polypropylene with a high, medium or low density, copolymers of different polyolefins, in particular of polyethylene and polypropylene, polyethylene terephthalate, coextrudates comprising the plastics materials specified above.

6. An absorbent insert according to any one of Claims 1 to 5, wherein the film is biologically degradable.

7. An absorbent insert according to any one of Claims 1 to 6, wherein the lower cover layer consists of the same material as the upper cover layer or of a fleece-like material based upon plastics material or cellulose.

30484-10

8. An absorbent insert according to any one of Claims 1 to 7, wherein the cover layers are joined to each other along the outer edges.

9. An absorbent insert according to Claim 8, wherein the join of the cover layers also includes the absorption layer.

10. An absorbent insert according to any one of Claims 1 to 9, wherein the absorption layer is selected from fleece-like or fabric-like material based upon plastics material or cellulose.

11. An absorbent insert according to Claim 10, wherein the absorption layer is an air-laid fleece or a tissue paper.

12. An absorbent insert according to any one of Claims 1 to 11, wherein the absorption layer contains super-absorbent materials.

13. An absorbent insert according to Claim 12, wherein the super-absorbent materials are based upon cross-linked polyacrylic acid, carboxymethyl cellulose, pectins or gelatines.

14. An absorbent insert according to one of Claims 12 or 13, wherein the absorption layer contains supplements which under the action of water produce carbon dioxide, in particular a mixture of carbonates and acids, such as carbonate or bicarbonate and citric acid.

15. An absorbent insert according to any one of Claims 12 to 14, wherein the absorption layer contains supplements which at least one of absorb odorous substances and prevent the growth of at least one of bacteria and mould.

16. An absorbent insert according to any one of Claims 1 to 15, wherein the absorption layer is coated on one or both sides with fleece or tissue.

17. An absorbent insert according to any one of Claims 1 to 16, wherein the absorbent insert is present in the form of a product strand in one or more rows,

wherein the individual absorbent inserts are joined to one another by perforations or other weakened portions.

18. An absorbent insert according to Claim 17, wherein the product chain is laid in the form of a zigzag in a package and the ends are joined to each other.

19. Use of an absorbent insert according to any one of Claims 1 to 18 as an insert for foodstuff packaging, in particular for packaging for meat, seafood and poultry products and fruit.

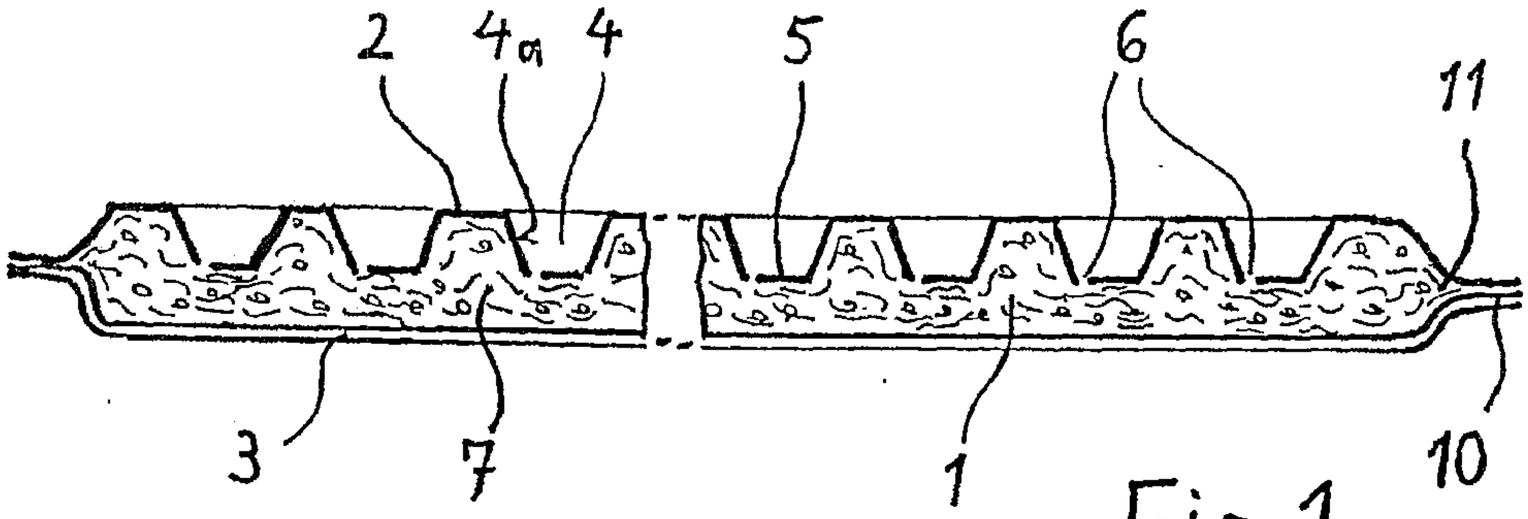


Fig. 1

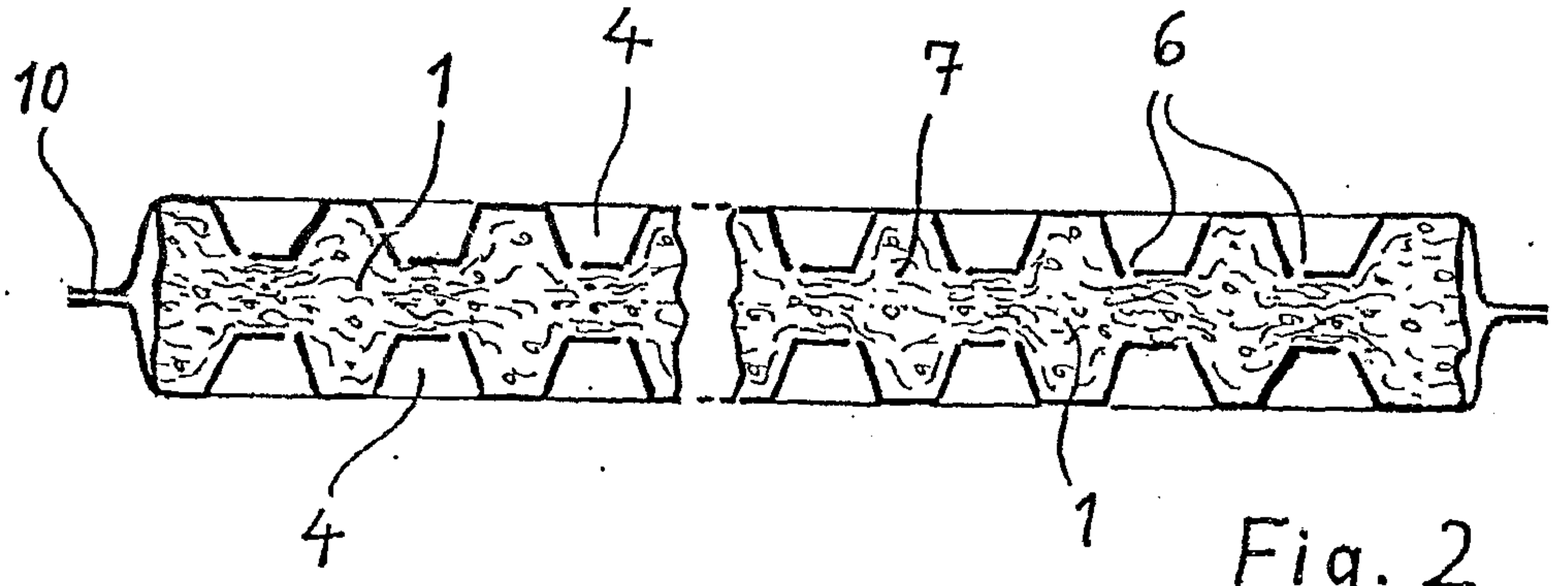


Fig. 2

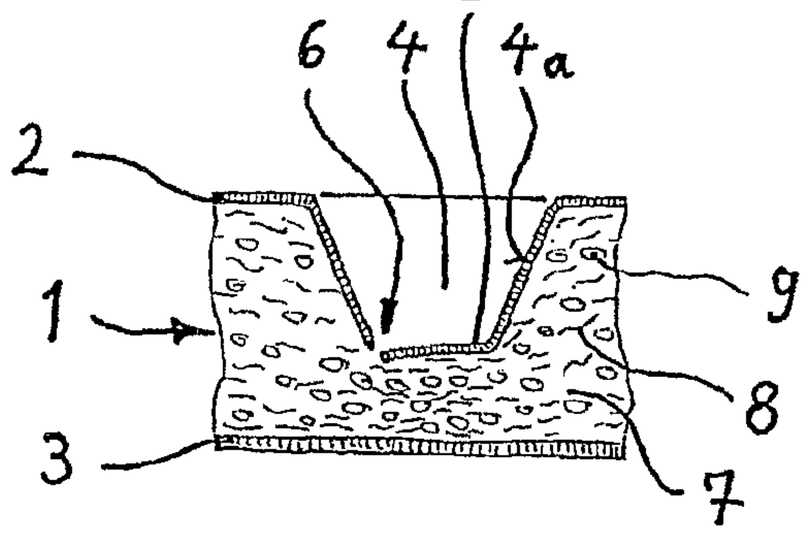


Fig. 3

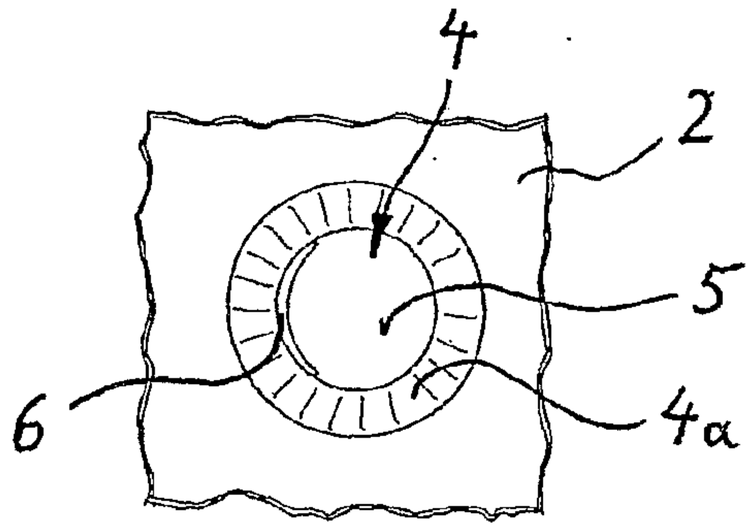


Fig. 4

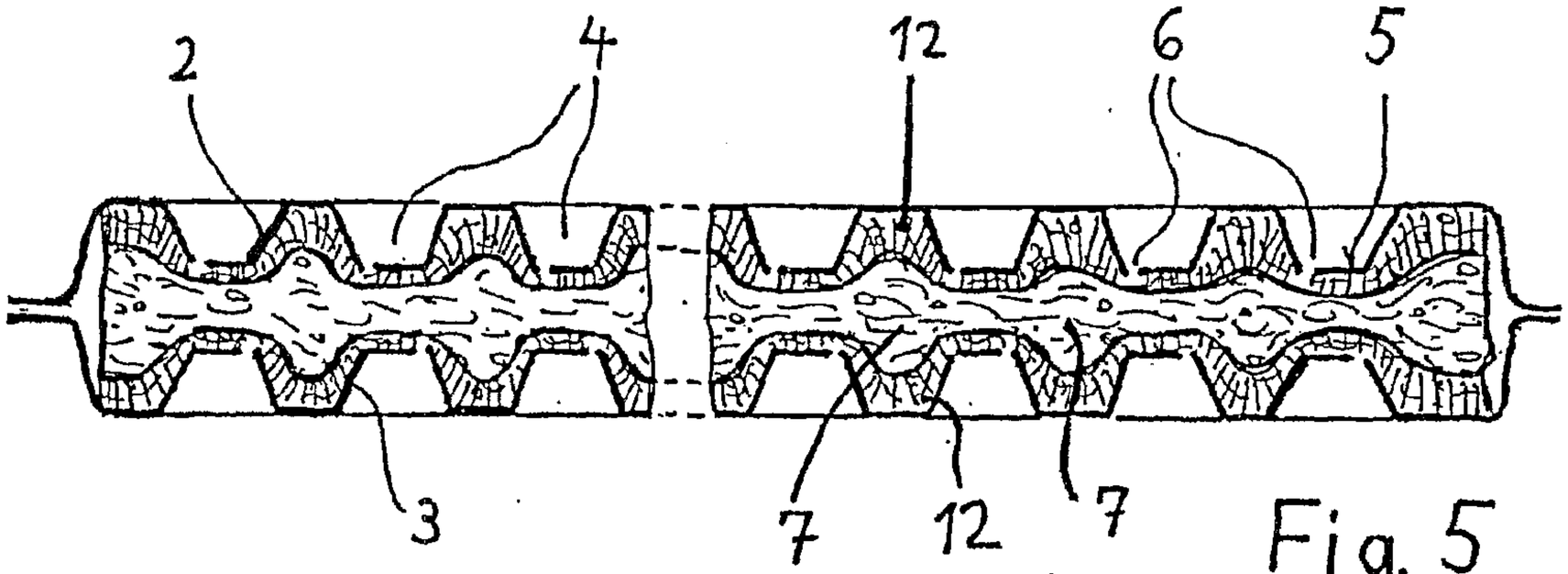


Fig. 5

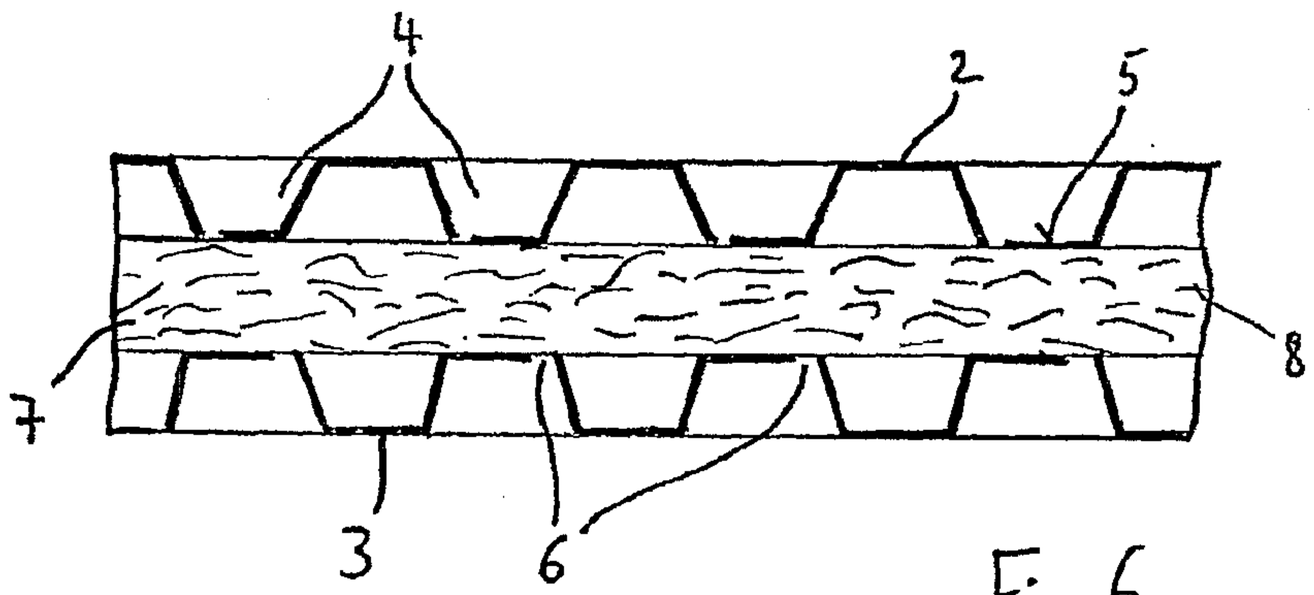
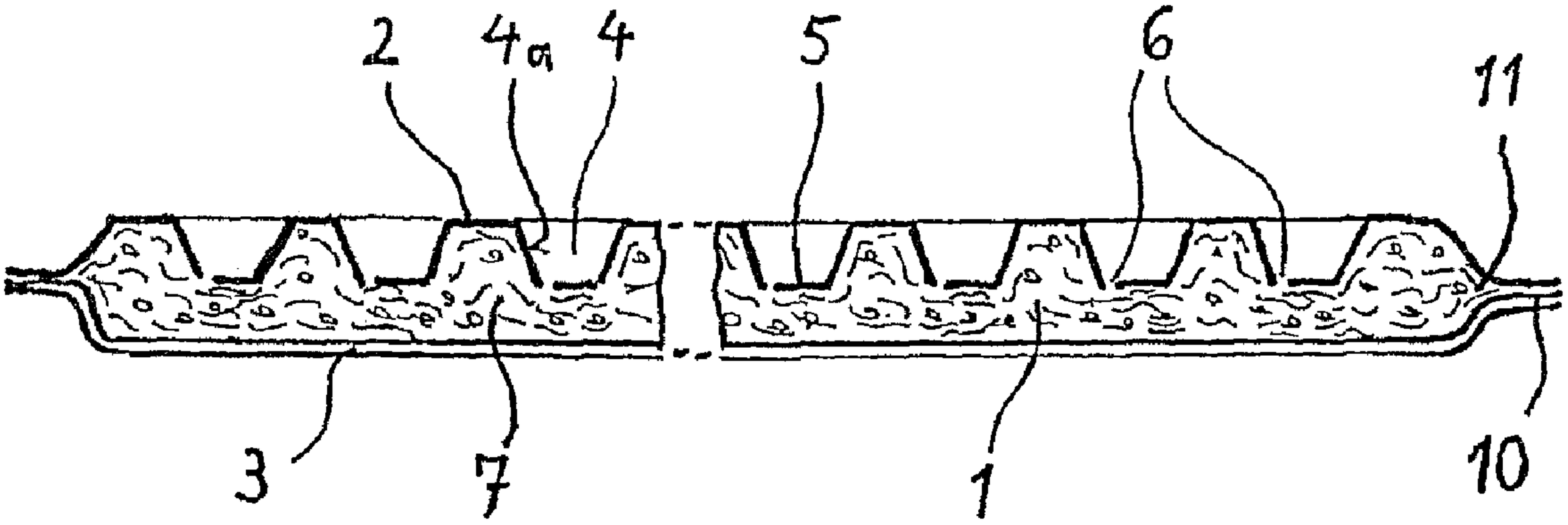


Fig. 6


2
4a
4
5
6
11
3
7
1
10