



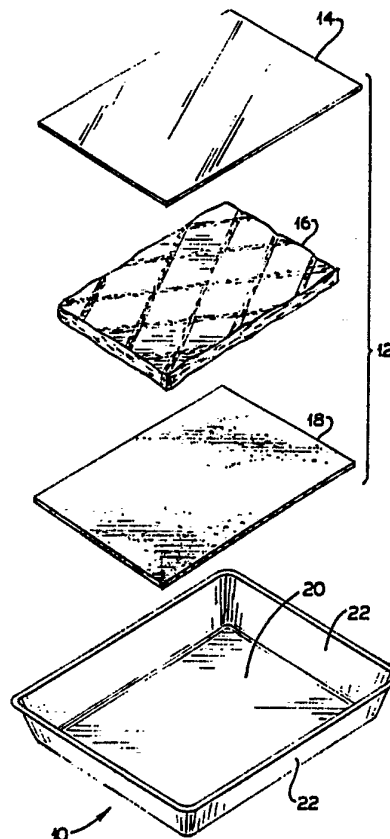
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US91/06530 (22) International Filing Date: 10 September 1991 (10.09.91) (30) Priority data: 580,811 11 September 1990 (11.09.90) US (71) Applicant: SEALED AIR CORPORATION [US/US]; Park 80, Plaza East, Saddle Brook, NJ 07662-5291 (US). (72) Inventors: KINARD, David, Lynn ; Route 1, Box 39-F, Holcomb, MS 38940 (US). WOODS, Robert, Michael ; 1839 Gloucester Street, Clinton, MS 39056 (US). (74) Agents: GIBSON, Floyd, A. et al.; Bell, Seltzer, Park &amp; Gibson, P.O. Drawer 34009, Charlotte, NC 28234 (US).</p>		<p>(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, PL, RO, SD, SE, SE (European patent), SN (OAPI patent), SU<sup>+</sup>, TD (OAPI patent), TG (OAPI patent).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: ABSORBENT PAD WITH WET STRENGTH PAPER

(57) Abstract

A receptacle is provided for containing and displaying food products which tend to exude juices or liquids, and which comprises a supporting member, such as a tray (10) or bag, and an absorbent pad associated therewith. The absorbent pad (12) comprises a mat (16) of liquid absorbent material, an upper liquid impermeable sheet (14) overlying the absorbent mat, and a lower wet strength paper sheet (18) underlying the absorbent mat. When a food product is positioned upon the upper sheet of the absorbent pad, any exuded liquids will flow around the pad and enter the mat by capillary action through the wicking action of the lower sheet, and the liquids will be held out of contact with the food product to thereby minimize contamination of the product and maintain its appearance and improve its shelf-life. The pad efficiently absorbs the liquids regardless of the position of the receptacle during transit or storage, i.e. whether or not the receptacle is kept in a horizontal position.



**+ DESIGNATIONS OF "SU"**

**Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.**

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## ABSORBENT PAD WITH WET STRENGTH PAPER

### Field and Background of the Invention

The present invention relates to an improved absorbent pad and receptacle of the type used to contain and display various food products, and which act to substantially improve the appearance and shelf-life of the product.

It is conventional practice to display meat, poultry, and other food products in individual packages which comprise a supporting tray with an absorbent pad of tissue-like paper wadding in the bottom of the tray to absorb any juices or liquids exuded from the food product. A transparent outer plastic wrapping is also usually employed to cover and surround the package. A major problem associated with such packages is the fact that the exuded liquids support the rapid growth of bacteria, which migrate back to the food product and result in spoilage and discoloration thereof. As will be apparent, such spoilage and discoloration quickly renders the food product unsuitable for sale.

In an effort to alleviate the above problem, and to extend the shelf-life of such food products, it has been proposed to employ an absorbent pad in the package which includes an imperforate plastic film positioned above a layer of absorptive wadding, and such that the plastic film acts to retard the reverse migration of the liquids back to the food product.

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Also, it has been proposed to position a non-absorptive barrier above the absorbent material for this purpose, note the U.S. Patent to Niblack et al., U.S. Pat. No. 3,026,209. While the above package constructions  
5 provide a spacial relationship between the exuded liquids in the pad and the food product, they nevertheless permit the substantial migration of bacteria back to the food product and thus are not totally satisfactory.

10 U.S. Patent Nos. 4,275,811 and 4,321,997 to Miller disclose an absorbent pad adapted for use in food product receptacles of the described type, and which comprises a mat of liquid absorbent material, an upper liquid impermeable plastic sheet overlying the  
15 absorbent mat, and a perforated bottom plastic sheet underlying the absorbent mat. When a food product is positioned upon the upper sheet of the absorbent pad, any exuded liquids will flow around the pad and enter the mat by capillary action through the perforated  
20 openings of the bottom sheet, and the liquids will be held out of contact with the food product to thereby minimize contamination of the product and maintain its appearance and improve its shelf-life.

#### Summary of the Invention

25 It is accordingly an object of the present invention to provide an absorbent pad for use in the receptacle for displaying food products which represents a further advance in the art by providing for wicking moisture from the edges of the absorbent  
30 pad into contact with an absorbent mat and thereby substantially alleviating the problem of food spoilage and discoloration resulting from bacterial growth within the exuded liquids.

It is a more particular object of the present  
35 invention to provide a display receptacle of the described type and which has provision for isolating

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the exuded liquids from the food product to thereby substantially preclude the reverse migration of the bacteria back to the food product.

It is a further object of the present invention to provide an absorbent pad for use in the receptacle for displaying food products which substantially eliminates any limitations of absorption caused by transmittal, storage or other handling of the receptacle in a position out of horizontal.

10           These and other objects and advantages of the present invention are achieved in the embodiments illustrated herein by the provision of an absorbent pad which comprises an intermediate layer of absorbent material, a liquid impervious upper layer overlying and  
15 covering the intermediate layer of absorbent material, and a lower layer of wet strength paper underlying the intermediate layer. The peripheral edges of the upper and lower layers which extend beyond the periphery of the intermediate layer are adhesively secured together  
20 to enclose the intermediate layer of absorbent material. Thus, liquids exuding from the food product flow around the periphery of the absorbent pad and are wicked into the interior of the pad by the wet strength paper lower layer resulting in the liquids being  
25 absorbed by the absorbent intermediate layer.

Some of the objects having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings.

#### Brief Description of the Drawings

30           Figure 1 is an exploded perspective view of an absorbent pad embodying the features of the present invention;

          Figure 2 is a perspective view of the pad shown in Figure 1; and

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Figure 3 is an enlarged, fragmentary sectional perspective view of the pad shown in Figures 1 and 2.

Figure 4 is a perspective view of a support tray containing an absorbent pad, together with the packaged food product and surrounding plastic wrap.

Figure 5 is a perspective view of another embodiment of the container and pad, which comprises an absorbent pad disposed within a flexible transparent plastic bag, together with the packaged food product.

Figure 6 is an exploded perspective view of an absorbent pad providing an alternative embodiment of the present invention.

#### Description of the Preferred Embodiment

Referring more specifically to the drawings, Figures 1 and 3 disclose a food product package for containing and displaying food products which embodies the present invention, and which comprises a support container 10 and an absorbent pad 12. The support container 10 may be fabricated from a variety of materials including a relatively rigid molded foam plastic material to form a tray. The tray includes a rectangular bottom wall 20 and upstanding side walls 22. The absorbent pad 12 is also rectangular, and is sized to overlie substantially the full area of the bottom wall 20 of the tray. In use, absorbent pad 12 is placed adjacent to bottom wall 20 of tray 10 and the food product to reside therein is then placed on top of pad 12. An outer wrapping of a thermal plastic film material may then be placed over the food product B and sealed beneath the tray in a conventional manner to form a food product package for containing and displaying food products in an attractive manner, an example of which is illustrated in Figure 4.

Referring to Figure 5, another embodiment of the present invention is illustrated wherein the

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container 10 is a flexible transparent plastic bag 10a. Absorbent pad 12 resides within a plastic bag 10a which has a closeable end opening. Absorbent pad 12 is placed adjacent to the wall of the bag and the food product B to reside therein is placed on top of pad 12. The container in the form of a bag 10a is then sealed in a conventional manner to form a food product package for containing and displaying food products in an attractive manner.

Referring again to Figures 1 and 3, absorbent pad 12 comprises an intermediate layer, mat 16 of liquid absorbent material, an upper sheet or layer 14 of liquid impervious plastic film material overlying absorbent mat 16, and a lower sheet or layer 18 of wet strength paper underlying mat 16. Alternatively, absorbent pad 12 may be inverted for uses outside that of food containment and display such that the lower sheet is a liquid impervious plastic film material and the upper sheet is a wet strength paper. The thickness of the mat 16 may be varied to provide the desired amount of absorbency, and typically is between about 1/8 to 1/4 inches so as to permit absorption and retention of a substantial quantity of liquid. The mat may be composed of a number of absorbent materials, such as conventional defiberized wood pulp (known in the art as wood fluff), synthetic pulp such as rayon, cotton, or combinations of the above.

In the preferred embodiment as illustrated herein, mat 16 is composed of hydrophilic cellulose based fibers, and more particularly, the mat is principally composed of a relatively thick layer of wood fluff. Wood fluff is well-known in the art and consists of defiberized cellulose fibers which have been formed in a compressed batt in the manner of a non-woven fabric, and is further described below. The fluff layer has little or no consistency or integrity,

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and thus must be supported during manufacturing operations.

Various additives may be added to the mat to increase its liquid absorbency. A particular example  
5 of a suitable additive of this type is a synthesized starch, such as the starch-acrylonitrile graft co-polymer as described in U.S. Patent No. 3,771,815. This product is marketed commercially as a free-flowing powder, which may be either sifted onto the fluff layer  
10 or sifted into the fluff chamber when the layer is being formed. In addition, a bactericidal agent, such as potassium sorbate, may be added to the mat to retard bacterial growth.

The upper and lower sheets, i.e. layers, are  
15 composed of different materials, both of which are non-reactive to food products. Upper sheet 14, a layer of liquid impervious plastic film material, is a polyolefin. This polyolefin may be a polyethylene having a thickness between about 0.00035 to 0.005  
20 inches. Lower sheet 18 is a layer of wet strength paper material, preferably wet strength tissue paper. The wet strength tissue paper has a wet strength of at least about 10% of the dry cross direction tensile strength.

25 The peripheral edges of the upper and lower sheets 14 and 18, respectively, extend beyond mat 16. Sheets 14 and 18 are preferably secured together as shown at 30 by any suitable means, such as a hot melt adhesive applied to the plastic film, to thereby  
30 enclose the mat of absorbent material therebetween.

The manufacturing process is performed using a roll of polyethylene to form the layer of liquid impervious plastic film material 14 and a roll of wet strength tissue paper to form the layer of wet strength  
35 paper material 18. The process uses a shredding apparatus to reduce a roll of suitable absorbent material into a defiberized mass, which is then



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deposited with the aid of a vacuum into the loose absorbent mat. A sheet of paper wadding may alternately be used as a carrier for the mat.

The mat is cut into strips and then cross cut  
5 into individual mats and separated for insertion  
between the sheet of impervious plastic film and the  
sheet of wet strength paper. The two sheets which  
extend beyond individual mats 16 are sealed by passing  
the composite under rollers to bond an adhesive that is  
10 previously applied to one or both of the sheets. The  
suitable adhesive is preferably applied to the sheet of  
impervious plastic film. Once the sealing operation is  
complete, rotating knives cut the pads into strips and  
a shear knife cuts the strips into individual absorbent  
15 pads, an example of which is illustrated in Figure 2.  
An apparatus for producing absorbent pads which  
provides a roll of polyethylene, a roll of wet strength  
tissue paper, and a sheet of absorbent material is  
described in U.S. Patent No. 4, 321,997 to Miller. The  
20 absorbent material in individual mat form is placed  
between the polyethylene and the wet strength paper to  
form a sheet of absorbent pads. Individual pads are  
formed by cutting the sheet of pads into strips using  
rotating knives and then cross cutting the strips to  
25 form individual absorbent pads using a shear knife.

Referring to Figure 6, in an alternative  
embodiment, a rigid spacer means 17 may be inserted  
between upper sheet 14 and lower sheet 18 to maintain  
the separation of the upper and lower sheets under a  
30 compressive load. As a result, the ability of the  
absorbent pad 12 to absorb liquids is unimpaired when  
the pad is subjected to a compressive load resulting  
from a heavy food product resting thereon. The spacer  
means could be a net-like thermoplastic foam material,  
35 of the type further described in U.S. Patent No.  
3,642,550 to Doll. Alternatively, spacer means 17 may  
comprise a plurality discrete elements of plastic

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material. The spacer means can be incorporated in and among, or adjacent to, the absorbent material. The spacer means is further described in U.S. Patent No. 4,321,997 to Miller.

5                   In use, the juices or liquids from the food product resting on pad 12 will tend to flow downwardly onto bottom wall 20 of tray 10 or wall of bag 10a and beneath the pad. The liquids are wicked into the interior of the absorbent pad by the wet strength paper  
10 resulting in absorption of the liquids by mat 16, i.e. the absorbent intermediate layer. The polyethylene layer forming the upper plastic film material layer serves as a barrier between the food product and the absorbed liquids preventing the absorbed liquids and  
15 any additives in the mat from directly contacting the food product. Thus, substantially all migration of the exuded liquids back to the food product is precluded, thereby significantly alleviating the problems of spoilage and discoloration. Furthermore, the top  
20 surface of the plastic film material 14 remains relatively clean and smooth in use thereby resulting in an aesthetically pleasing appearance providing an attractive manner for displaying and containing food products.

25                   The absorbent pad 12 not only functions to wick juices and other exudants into the pad for absorption while tray 10 or bag 10a is held in a horizontal position but also acts to wick juices and other exudants into the pad for absorption when tray 10  
30 or bag 10a is not in a horizontal position. Thus, when tray 10 or bag 10a is out of horizontal resulting in juices from the food products contained therein resting in one side or corner of tray 10 or bag 10a, the juices and other exudants coming into contact with a portion  
35 of the wet strength tissue paper 18 are wicked along the entire surface of the tissue paper and absorbed into mat 16. As a result, the appearance of the food

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product as well as the shelf life of the food products is enhanced regardless of the position in which container 10 is placed during storage or during transportation.

5                   In the drawings and specifications there have been disclosed typical preferred embodiments and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention  
10 being set forth in the following claims.

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## THAT WHICH IS CLAIMED:

1. A pad for absorbing juices and other exudants from foods products contained in packages, said pad comprising:
  - a layer of liquid impervious plastic film material forming one major outer surface of the pad;
  - a layer of wet strength paper material forming the other major outer surface of the pad;
  - said layer of plastic film and said layer of paper material being secured together around the periphery thereof to define collectively an enclosed space therebetween; and
  - an absorbent mat confined in the enclosed space between said plastic film layer and said paper material layer, whereby said plastic film layer is adapted to serve as a barrier between a food product and said absorbent body to isolate the food product from the absorbed juices or other exudants and said paper material layer serves to absorb and wick juices and other exudants into the pad for absorption by said absorbent body.
2. A pad according to Claim 1 wherein said absorbent mat is formed principally of wood fluff.
3. A pad according to Claim 1 wherein said plastic film material is a polyolefin and said paper material is a wet strength tissue paper.
4. A pad according to Claim 3 wherein said polyolefin is polyethylene and said wet strength tissue paper has a wet strength of at least about 10% of the dry cross direction tensile strength.

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5. A pad according to Claim 1 wherein said plastic film layer and said wet strength paper layer are secured together around the periphery of said absorbent mat by a hot melt adhesive.

6. A pad for absorbing juices and other exudants from foods products contained in packages, said pad comprising:

a layer of liquid impervious plastic film  
5 material of polyolefin, forming one major outer surface of the pad;

a layer of wet strength tissue paper having a wet strength of at least about 10% of the dry cross direction tensile strength thereof, forming the other  
10 major outer surface of the pad;

said layer of plastic film and said layer of paper material being secured together around the periphery thereof by a hot melt adhesive to define collectively an enclosed space therebetween; and

15 an absorbent mat confined in the enclosed space between said plastic film layer and said paper material layer, whereby said plastic film layer is adapted to serve as a barrier between a food product and said absorbent body to isolate the food product  
20 from the absorbed juices or other exudants and said paper material layer serves to absorb and wick juices and other exudants into the pad for absorption by said absorbent body.

7. A food product package for containing and displaying in an attractive manner food products which exude liquids and characterized by the ability to quickly absorb such exudants to improve the appearance  
5 and shelf-life of the foods products, said package comprising

a container for confining and displaying a food product and including a bottom wall, and

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an absorbent pad disposed within said  
10 container and overlying and resting upon said bottom  
wall thereof; said pad comprising an upper layer of  
liquid impervious plastic film material, an  
intermediate layer of absorbent material, and a lower  
layer of wet strength paper material, said plastic and  
15 paper layers extending beyond the periphery of said  
intermediate layer and being secured together around  
their periphery to enclose said intermediate layer  
therebetween, whereby liquids exuding from the food  
product flow around the periphery of said absorbent pad  
20 and are wicked into the interior of said pad by said  
wet strength paper layer where such liquids are  
absorbed by said absorbent, intermediate layer, all  
while said plastic, upper layer serves as a barrier  
between the food product and the absorbed liquids.

8. A food product package according to  
Claim 7 further comprising a spacer means disposed  
between said upper and lower layers of said pad for  
maintaining the separation of said upper and lower  
5 layers under the compressive load exerted by a food  
product resting thereupon, and to thereby minimize the  
compression of the intermediate layer and the reduction  
in the ability of the intermediate layer of absorbent  
material to absorb liquids when subjected to such load.

9. A food product package according to Claim  
7 wherein said plastic film material is a polyolefin.

10. A food product package according to  
Claim 7 wherein said paper material is a wet strength  
tissue paper.

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11. A food product package according to Claim 7 wherein said plastic film layer and said wet strength paper layer are secured together around the periphery of said absorbent material layer by a hot  
5 melt adhesive.

12. A food product package according to Claim 7 wherein said container is in the form of a bag having a closeable end opening, and which encloses said pad therein.

13. A food product package according to Claim 7 wherein said container comprises a relatively rigid tray.

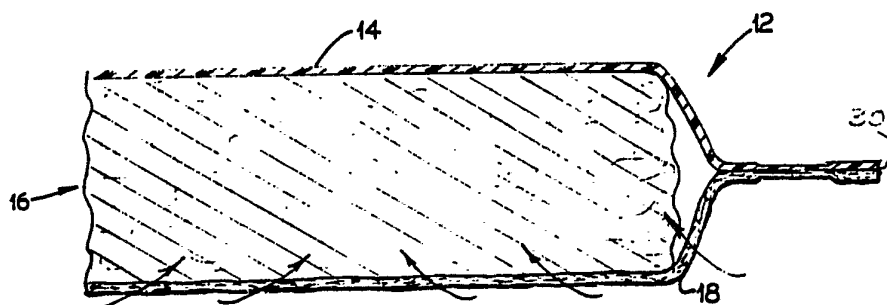
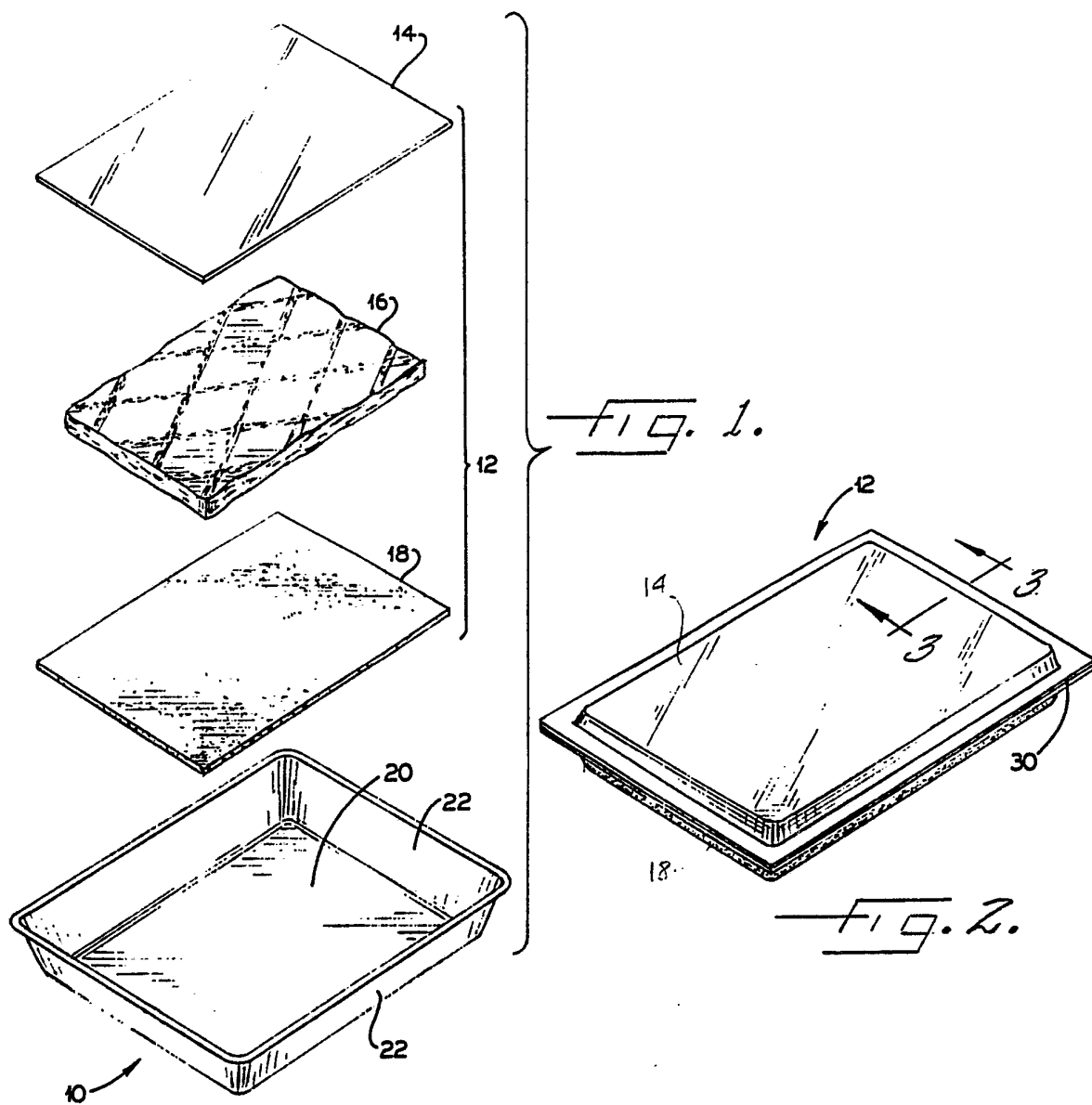


FIG. 3.



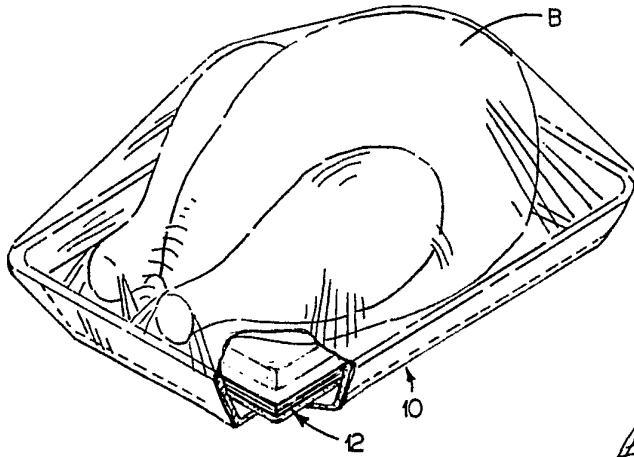


FIG. 4.

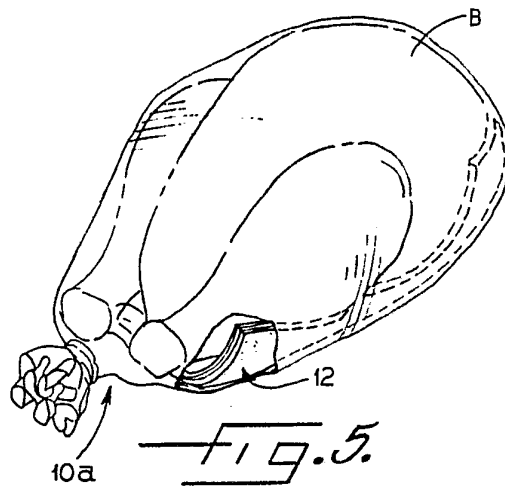


FIG. 5.

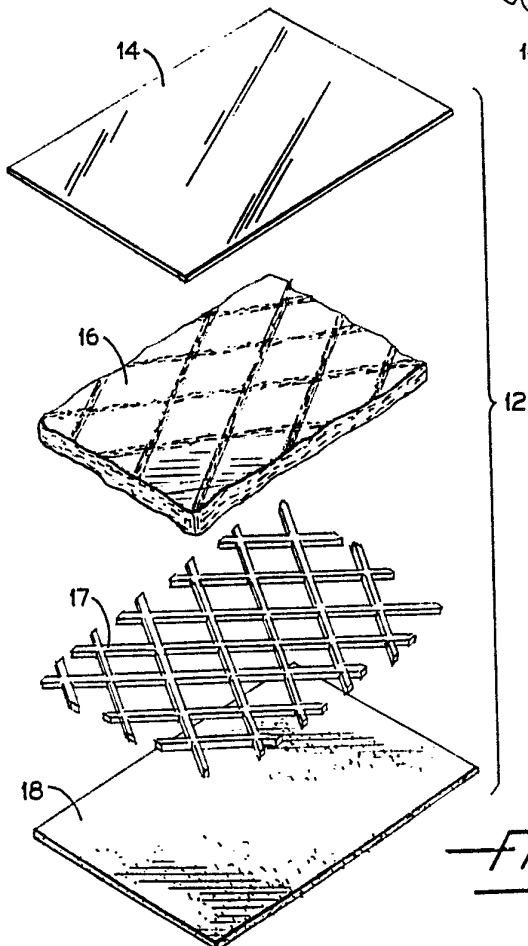
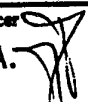


FIG. 6.

**INTERNATIONAL SEARCH REPORT**  
International Application No

PCT/US 91/06530

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 B65D81/26		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	B65D	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
A	EP,A,0 353 334 (MIDKIFF) 7 February 1990 see column 5, line 19 - column 7, line 52; figures 1-3	1-13
A	US,A,4 321 997 (MILLER) 30 March 1982 cited in the application see column 3, line 39 - column 5, line 50; figures 1-12	1-13
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<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
07 JANUARY 1992	22 JAN 1992	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	VANTOMME M.A. 	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO. US 9106530  
SA 51413**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0353334	07-02-90	None	
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US-A-4321997	30-03-82	US-A- 4275811	30-06-81
		US-A- 4410578	18-10-83
		CA-A- 1150681	26-07-83
		US-A- 4382507	10-05-83
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