



- (51) International Patent Classification:
A61F 13/02 (2006.01)
- (21) International Application Number:
PCT/US2012/028719
- (22) International Filing Date:
12 March 2012 (12.03.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/453,165 16 March 2011 (16.03.2011) US
- (71) Applicant (for all designated States except US): **EVERY DENNISON CORPORATION** [US/US]; 150 N. Orange Grove Blvd., Pasadena, CA 91103 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BARON, Richard** [US/US]; c/o Avery Dennison Corporation, 150 N. Orange Grove Blvd., Pasadena, CA 91103 (US). **WIBAUX, Anne Marie** [FR/BE]; c/o Avery Dennison Corporation, 150 N. Orange Grove Blvd., Pasadena, CA 91103 (US).
- (74) Agents: **BEMBENICK, Brian G.** et al.; Avery Dennison Corporation, 8080 Norton Parkway, 22-D, Mentor, OH 44060 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- of inventorship (Rule 4.17(iv))

[Continued on next page]

(54) Title: WINDOW DRESSINGS VIA HYBRID CASTING SHEETS

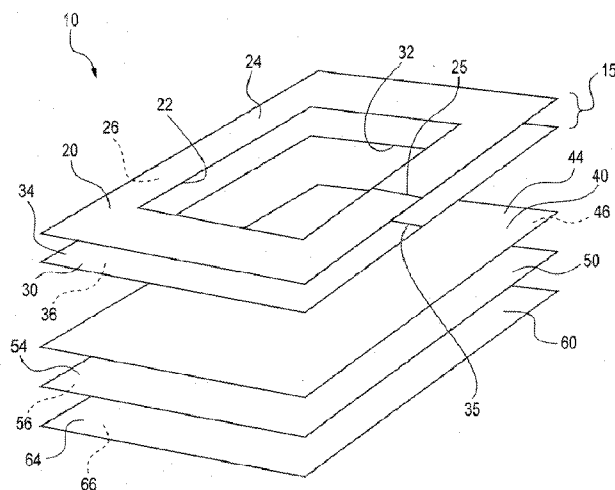


FIG. 1

(57) Abstract: A window dressing having a multilayer support or substrate is described. The dressing includes a polyurethane barrier layer that is adhesively secured over a wound or other location on a user's skin. Prior to use, the barrier layer is retained on the multilayer support. The multilayer support eliminates waste and promotes efficiency in manufacturing the window dressings.

WO 2012/125530 A1



Published:

— *with international search report (Art. 21(3))*

WINDOW DRESSINGS VIA HYBRID CASTING SHEETS

CROSS REFERENCES TO RELATED APPLICATIONS

[0001] This application claims priority from US provisional application serial No. 61/453,165 filed March 16, 2011.

FIELD OF THE INVENTION

[0002] The present invention relates to improved wound dressings made from films which are oxygen permeable, have high moisture vapor permeability but which are impermeable to liquid water and bacteria. The invention relates to methods of producing such dressings and similar products.

BACKGROUND OF THE INVENTION

[0003] Wound dressings made with composite layers of film and adhesive which have high moisture vapor transmission rates are well known in the art. These dressings are made from films which may be transparent and which have moisture vapor transmission rates of greater than 15 grams per 100 square inches per 24 hours. These dressings are used in many applications and have an advantage in that they are impervious to bacteria and liquid water but yet allow oxygen to penetrate the dressing from the ambient atmosphere and allow moisture from the skin of the patient to escape from beneath the dressing.

[0004] The operative body contact area of these dressings is made of continuous film, that is, film which is not perforated or is not microporous. The adhesive coating which is applied to these dressings also must have a moisture vapor transmission rate which is sufficient to allow the complete dressing to have a moisture vapor transmission rate of at least 15 grams per 100 square inches per 24 hours.

[0005] In order to obtain the desired moisture vapor transmission rate, the dressings are made from extremely thin films of polyurethane or of other polymeric materials which have the desired moisture vapor transmission properties. These films are extremely thin, typically less than 10 mils, and are very flexible, limp and flimsy because of their thinness. These characteristics allow the

dressings to be applied to the varying contours of the human body but also create problems in the application of the dressing to a patient. The dressings are manufactured with a release sheet covering the adhesive surface of the dressing. The release sheet is removed from the dressing when the dressing is applied to the patient. The thinness of the film and its flexibility allows the film to turn over onto itself during attempts to apply the film dressing to a patient. The film is similar in this property to polyvinylidene chloride film household wrap. When a portion of the adhesive surface of the film touches other portions of the adhesive surface, the film dressing sticks to itself and makes it extremely difficult to separate the adhered portions and then apply to the patient.

[0006] In order to overcome this problem, film dressings of this type are made with adhesive-free tabs at opposite ends of the film. In some products there is a reinforcing member at the tab ends to provide a grasping or holding surface to be used to apply the dressings to a patient. After the dressing is applied, the adhesive-free tab end is cut off of the adhesive portion of the dressing with scissors or by tearing the film. The use of scissors or tearing tends to leave a ragged or uneven edge on the film dressing. This uneven edge tends to roll off the skin of the patient and, eventually, the entire dressing may be inadvertently removed from the patient.

[0007] Most known manufacturing methods of producing these types of dressings involve forming the thin polyurethane layer on a carrier or other surface. After formation of the polyurethane layer, the carrier is removed and then the polyurethane layer is mated with one or more other layers to form the dressing. Although satisfactory, the use of such a carrier increases the complexity and cost in manufacturing the dressings. And, in many instances, the carrier is discarded as waste. As will be appreciated, this is undesirable.

[0008] In view of these and other disadvantages, a need exists for improved dressings and methods of producing such dressings.

SUMMARY OF THE INVENTION

[0009] The difficulties and drawbacks associated with previously known products are addressed in the present methods and resulting window dressings.

[0010] In one aspect, the present invention provides a method of producing a window dressing. The method comprises providing a substrate and a support. The method also comprises laminating the substrate and the support to form a casting assembly defining a support receiving face. The method further comprises providing a polyurethane material. The method also comprises applying the polyurethane material to the support receiving face to thereby form a polyurethane layer.

Additionally, the method comprises providing adhesive and applying adhesive to the polyurethane layer to thereby form an adhesive layer. The method also comprises providing a release material and applying the release material on the adhesive layer. The method also comprises forming a window in the casting assembly to thereby form the window dressing.

[0011] In another aspect, the invention provides a method of producing a window dressing. The method comprises providing a support and providing a polyurethane material. The method also comprises applying the polyurethane material to the support to thereby form a polyurethane layer. The method additionally comprises providing adhesive and applying adhesive to the polyurethane layer to thereby form an adhesive layer. The method also comprises providing a release material and applying the release material on the adhesive layer. The method also comprises providing a substrate and laminating the substrate to the support to form a casting assembly. And, the method comprises forming a window in the casting assembly to form the window dressing.

[0012] In another aspect, the invention provides a method of producing a dressing. The method comprises providing a substrate, a support, a polyurethane material, an adhesive, and a release material. The method also comprises applying the polyurethane material to the support to form a polyurethane layer. The method also comprises applying adhesive to the polyurethane layer to form an adhesive layer. The method additionally comprises applying a release material on the adhesive layer. And, the method comprises laminating the substrate to the support to thereby form the dressing.

[0013] In still another aspect, the present invention provides a window dressing comprising a multilayer hybrid casting sheet defining a first face and an oppositely directed receiving face, the casting sheet defining a window aperture. The window dressing also comprises a polyurethane layer disposed on and in contact with the receiving face of the casting sheet. The window dressing also comprises an adhesive layer disposed on and in contact with the polyurethane layer. The window dressing also comprises a release layer disposed on and in contact with the adhesive layer. And, the window dressing additionally comprises at least one welding bead extending between the polyurethane layer and the casting sheet.

[0014] As will be realized, the invention is capable of other and different embodiments and its several details are capable of modifications in various respects, all without departing from the invention. Accordingly, the drawings and description are to be regarded as illustrative and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Figure 1 is an exploded schematic view of a preferred embodiment window dressing in accordance with the present invention.

[0016] Figure 2 is a schematic flow chart of a preferred embodiment method for producing a window dressing in accordance with the invention.

[0017] Figure 3 is a schematic flow chart of another preferred embodiment method for producing a window dressing in accordance with the invention.

[0018] Figure 4 is a schematic flow chart illustrating a preferred method of using a preferred embodiment window dressing.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0019] The present invention relates to a "hybrid" or multilayer casting sheet and the use of such hybrid sheet assemblies in wound dressings. A preferred multilayer casting sheet includes a paper substrate and a polyethylene (PE) casting layer disposed on the paper substrate. The paper provides rigidity and support for the assembly. And the polyethylene layer provides a suitable receiving surface upon which a layer of polyurethane (PU) can be cast. Thus, a preferred embodiment window dressing is formed by casting a thin polyurethane layer upon the polyethylene layer of the multilayer casting sheet.

[0020] The present invention also relates to attaching the casting sheet, which is preferably a multilayer hybrid casting sheet, to the polyurethane layer. Preferably, one or more regions of the casting sheet are ultrasonically welded to the polyurethane layer. Preferably, the regions are perimeter regions that extend around, or at least partially around, the window area of the casting sheet. In addition to or instead of ultrasonic welding, radio frequency (RF) welding may be used. Upon welding, one or more welding beads are formed between the casting sheet and the polyurethane layer.

[0021] In addition, the present invention also relates to methods of forming the multilayer casting sheets, methods of forming window dressings using the multilayer casting sheets, and methods of use involving the window dressings. These and other aspects are all described in greater detail herein.

[0022] Referring to Figure 1, a preferred embodiment window dressing 10 in accordance with the present invention is illustrated. The preferred dressing 10 comprises a hybrid casting assembly 15 that includes a relatively stiff or rigid substrate 20 and a support layer 30 attached thereto. Specifically, the substrate 20 of the casting assembly 15 defines a first face 24 and an

oppositely directed second face 26. The support layer 30 of the casting assembly 15 defines a first face 34 and an oppositely directed second face 36. The first face 34 of the support layer 30 is attached or otherwise laminated to the second face 26 of the substrate 20 as described in greater detail herein.

[0023] One or more apertures are preferably formed in each of the substrate 20 and the support layer 30 as described in greater detail herein. Preferably a single relatively large aperture is formed in each of the layers 20 and 30. These apertures are illustrated in Figure 1 as apertures 22 and 32, formed in substrate 20 and support layer 30, respectively. Preferably, the apertures 22 and 32 formed in the layers 20 and 30, are aligned with one another to thereby provide a viewing window. These aspects are described in greater detail herein. Optionally, cuts or perforations 25 and 35 may be formed or otherwise included in each of the layers 20 and 30, respectively. Generally, the provision of such cuts or perforations promotes bending and flexibility of the casting assembly 15 when the dressing 10 is contacted with a user and/or over a wound or other location. It will be appreciated that the dressing 10 can include cuts 25 and/or 35 in different arrangements and/or locations.

[0024] The substrate 20 may be formed from a wide range of materials. Generally, any material that when used in the thicknesses described herein imparts sufficient rigidity to the resulting structure can be used. Preferred materials for the substrate 20 include, but are not limited to paper and other cellulose-based materials, polyesters, polypropylenes, polyethylenes, and nonwoven materials. It is also contemplated that when forming the substrate 20 from one or more polymeric materials such as polyethylene, that foaming agent(s) could be utilized to provide a foamed structure. Most preferably, the substrate 20 is formed from paper.

[0025] The support layer 30 may also be formed from a wide array of materials. Generally, any polymeric material having suitable characteristics for receiving a polyurethane material cast or otherwise applied thereto as described in greater detail herein, can be used for the support layer 30. A preferred material for the support layer 30 is polyethylene. Polyethylene provides a flexible and inexpensive support film having a suitable receiving surface upon which a layer of polyurethane can be cast or otherwise disposed thereon.

[0026] The support layer 30 and the substrate 20 are attached or secured to one another. Preferably, the layers are attached using adhesive or laminated by application of heat or other energy. The thickness of the preferred embodiment casting assembly 15 ranges from about 1 mil to about 60 mils (about 0.025 mm to about 1.5 mm), and preferably from about 1 mil to about 4 mils (about 0.025 mm to about 0.102 mm). However, it will be appreciated that the invention includes casting assemblies having thicknesses greater than or less than these values.

[0027] Referring further to Figure 1, the preferred embodiment window dressing 10 also comprises a polyurethane layer 40 disposed along the support layer 30. As described in greater detail herein, preferably the polyurethane layer 40 is formed immediately alongside and in contact with the second face 36 of the support 30. Thus, a first face 44 of the polyurethane layer 40 is in contact with and directed toward the second face 36 of the support 30. The polyurethane layer 40 is preferably laminated to the second face 36 of the support layer 30. The lamination may be performed by various techniques. However, welding and preferably ultrasonic welding is utilized. These techniques are described in greater detail herein. After welding, a welding bead or other region of material interfacing the adjacent layers is formed and exists in the resulting assembly. These welding beads exist only along the regions of welding. The polyurethane layer 40 also defines a second face 46 which is oppositely directed relative to the first face 44. The particular type of polyurethane that is used for layer 40 is selected based upon the thickness of that layer and the characteristics and properties desired for that layer. As previously noted, it is generally preferred that the polyurethane layer exhibit a moisture vapor transmission rate of at least 15 grams per 100 square inches per 24 hours. The polyurethane layer is also preferably transparent or substantially so. Typical thicknesses of this layer are from about 0.5 mil to about 2 mil (0.013 mm to 0.051 mm) and preferably about 1 mil (0.025 mm).

[0028] The window dressing 10 additionally comprises an adhesive layer 50. The adhesive layer 50 is disposed along the second face 46 of the polyurethane layer 40. The adhesive layer 50 defines a first face 54 and an oppositely directed second face 56. Preferably, the first face 54 of the adhesive layer is in contact with the second face 46 of the polyurethane layer 40. The adhesive utilized for the adhesive layer 50 can be any adhesive which has properties compatible with the window dressing.

[0029] The window dressing 10 also comprises a release layer or liner 60. The release layer 60 defines a first face 64 and an oppositely directed second face 66. The release layer 60 is disposed along the adhesive layer 50 and preferably such that the first face 64 of the release layer 60 contacts the exposed, second face 56 of the adhesive layer 50. Generally, any conventional release material having properties compatible with the window dressing 10 can be used for the release layer 60.

[0030] Generally, the preferred embodiment dressings are produced by one or more operations in which the various materials used in the dressing are provided. Preferably, a substrate, a support, a polyurethane material, an adhesive, and a release material are provided. The polyurethane material is applied to the support to form a polyurethane layer. The adhesive is applied to the polyurethane layer to form an adhesive layer. And, the release material is applied to the adhesive layer

to form a release layer. At any phase in the method, the substrate is laminated preferably by ultrasonic welding, to the support. A window or other aperture is cut or otherwise formed in the support and substrate at any point in the process.

[0031] Figure 2 is a flowchart illustrating a preferred method 200 for producing the preferred embodiment window dressing. The preferred method 200 comprises an operation 205 of providing a suitable substrate such as paper. The method 200 also comprises an operation 210 of providing a support such as a layer or film of polyethylene. In operation 215, the substrate and supports are laminated to one another. The substrate can be attached to the support by lamination and/or by application of heat and/or pressure. Welding can also be used to attach the substrate to the support. Adhesive can also be utilized to attach the substrate and the support together. The method 200 also comprises an operation 220 in which a suitable polyurethane is provided. In operation 225, the polyurethane is cast on an exposed face of the support. Preferably, the polyurethane is in a liquid or flowable form and applied to an exposed face of the support. The polyurethane is applied to a desired thickness and then dried or cured to a solid layer. The method 200 additionally comprises an operation 230 in which one or more suitable adhesives are provided. In operation 235, the adhesive is applied to an exposed face of the polyurethane to thereby form an adhesive layer. The preferred method 200 also comprises an operation 240 in which one or more suitable release materials are provided. The release material or release layer is applied onto the adhesive layer. In this operation shown as 245, a release layer is formed. The method 200 also comprises an operation in which a window is formed in the assembly. This operation, designated as operation 250 in Figure 2, can be performed in a variety of different manners. Generally, an aperture or viewing window is formed by cutting such as die cutting, apertures in the substrate and support layer. A preferred embodiment window dressing is thus produced.

[0032] Figure 3 illustrates another preferred embodiment method 300 for producing a window dressing in accordance with the present invention. This preferred method 300 is similar to previously described preferred method 200 except that the substrate is attached to the support after casting of the polyurethane (PU) on the support. Thus, in the preferred method 200 of Figure 2, the polyurethane is cast on the support after formation of the hybrid casting assembly. And in the preferred method 300 of Figure 3, the polyurethane is cast on the support prior to formation of the hybrid casting assembly. Thus, referring to Figure 3, operations 310, 315, 320, 325, 330, and 335, generally correspond to previously described operations 220, 225, 230, 235, 240, and 245 of the method 200, respectively. And, operation 305 generally corresponds to operation 210. Operation 340 generally corresponds to

operation 205. Operation 345 generally corresponds to operation 215. And, operation 350 corresponds to operation 250. A preferred embodiment window dressing is thus produced.

[0033] Figure 4 is a flowchart illustrating a preferred method 400 of using of the preferred embodiment window dressings. The method 400 includes an operation 405 of identifying the wound area to be addressed, i.e. covered, by the window dressing. It will be appreciated that this operation may include identifying or otherwise locating a region on a user's body at which the dressing is to be located. The method 400 also comprises an operation 410 of providing the window dressing. In operation 415, the release liner, for example the release liner 60 of the preferred embodiment dressing 10 depicted in Figure 1, is removed. This operation exposes an adhesive face. The method 400 also comprises an operation 420 in which the dressing is positioned over the wound or location of interest. The exposed adhesive face (resulting from removal of the release layer) is directed toward the wound or user's skin. The method 400 includes an operation 425 in which the adhesive layer of the dressing is then contacted with the user's skin. In doing so, it is preferred to view the wound through the window defined in the dressing. Once the dressing is appropriately positioned on the user's skin and/or location of interest, and the dressing has been secured to the user's skin, the substrate and support layers are then removed. This operation is depicted in Figure 4 as operation 430. After removal of the substrate and support, the remaining layers include a polyurethane layer positioned over the wound and adhesively attached to the user's skin generally surrounding or adjacent to the wound or region of interest.

[0034] Many other benefits will no doubt become apparent from future application and development of this technology.

[0035] All patents, published applications, and articles noted herein are hereby incorporated by reference in their entirety.

[0036] It will be understood that any one or more feature or component of one embodiment described herein can be combined with one or more other features or components of another embodiment. Thus, the present invention includes any and all combinations of components or features of the embodiments described herein.

[0037] As described hereinabove, the present invention solves many problems associated with previous type devices. However, it will be appreciated that various changes in the details, materials and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art without departing from the principle and scope of the invention, as expressed in the appended claims.

WHAT IS CLAIMED IS:

1. A method of producing a window dressing, the method comprising:
providing a substrate and a support;
laminating the substrate and the support to form a casting assembly defining a support receiving face;
providing a polyurethane material;
applying the polyurethane material to the support receiving face to thereby form a polyurethane layer;
providing adhesive;
applying adhesive to the polyurethane layer to thereby form an adhesive layer;
providing a release material;
applying the release material on the adhesive layer; and
forming a window in the casting assembly to thereby form the window dressing.
2. The method of claim 1 wherein laminating the substrate and the support is performed by ultrasonic welding.
3. The method of claims 1-2 wherein the polyurethane layer exhibits a moisture vapor transmission rate of at least 15 grams per 100 square inches per 24 hours.
4. The method of claims 1-3 wherein the polyurethane has a thickness of from about 0.5 mil to about 2 mil.
5. The method of claim 4 wherein the polyurethane has a thickness of about 1 mil.
6. The method of claims 1-5 wherein the casting assembly has a thickness of from about 1 mil to about 60 mils.
7. The method of claim 6 wherein the casting assembly has a thickness of from about 1 mil to about 4 mils.

8. The method of claims 1-7 wherein the substrate is paper.
9. The method of claims 1-8 wherein the support is polyethylene.
10. The window dressing produced by the method of claims 1-9.
11. A method of producing a window dressing, the method comprising:
providing a support;
providing a polyurethane material;
applying the polyurethane material to the support to thereby form a polyurethane layer;
providing adhesive;
applying adhesive to the polyurethane layer to thereby form an adhesive layer;
providing a release material;
applying the release material on the adhesive layer;
providing a substrate;
laminating the substrate to the support to form a casting assembly; and
forming a window in the casting assembly to form the window dressing.
12. The method of claim 11 wherein laminating the substrate and the support is performed by ultrasonic welding.
13. The method of claims 11-12 wherein the polyurethane layer exhibits a moisture vapor transmission rate of at least 15 grams per 100 square inches per 24 hours.
14. The method of claims 11-13 wherein the polyurethane has a thickness of from about 0.5 mil to about 2 mil.
15. The method of claim 14 wherein the polyurethane has a thickness of about 1 mil.
16. The method of claims 11-15 wherein the casting assembly has a thickness of from about 1 mil to about 60 mils.

17. The method of claim 16 wherein the casting assembly has a thickness of from about 1 mil to about 4 mils.
18. The method of claims 11-17 wherein the substrate is paper.
19. The method of claims 11-18 wherein the support is polyethylene.
20. The window dressing produced by the method of claims 11-19.
21. A method of producing a dressing, the method comprising:
providing a substrate, a support, a polyurethane material, an adhesive, and a release material;
applying the polyurethane material to the support to form a polyurethane layer;
applying adhesive to the polyurethane layer to form an adhesive layer;
applying a release material on the adhesive layer; and
laminating the substrate to the support to thereby form the dressing.
22. The method of claim 21 wherein laminating the substrate and the support is performed by ultrasonic welding.
23. The method of claims 21-22 further comprising:
forming a window in the substrate and the support.
24. The dressing produced by the method of claims 21-23.
25. A window dressing comprising:
a multilayer hybrid casting sheet defining a first face and an oppositely directed receiving face,
the coating sheet defining a window aperture;
a polyurethane layer disposed on and in contact with the receiving face of the casting sheet;
an adhesive layer disposed on and in contact with the polyurethane layer;
a release layer disposed on and in contact with the adhesive layer; and
at least one welding bead extending between the polyurethane layer and the casting sheet.

26. The window dressing of claim 25 wherein the casting sheet includes a substrate and a polymeric support.

27. The window dressing of claim 26 wherein the welding bead extends between the polyurethane layer and the polymeric support.

28. The window dressing of claims 26-27 wherein the polymeric support includes polyethylene.

1/4

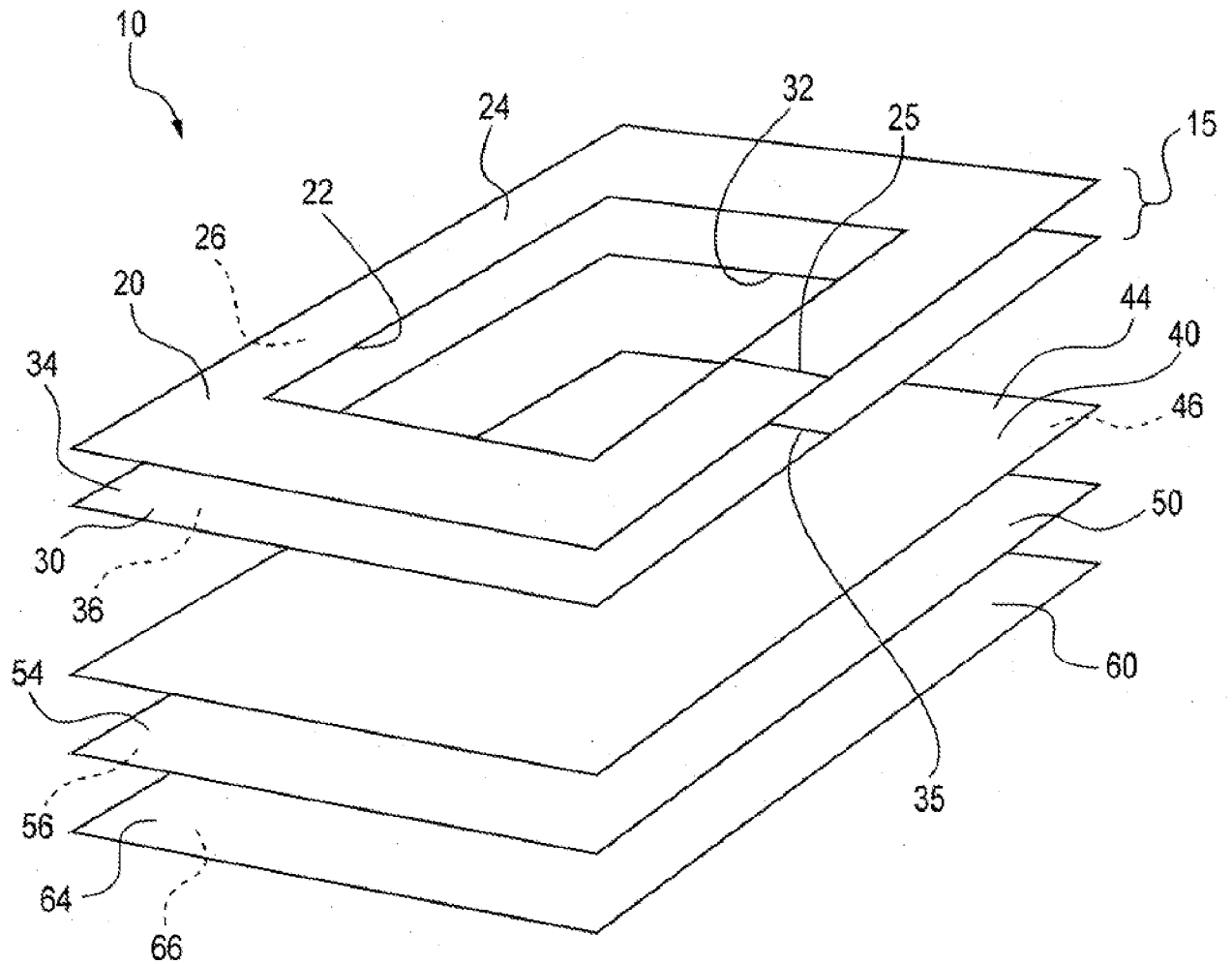


FIG. 1

2/4

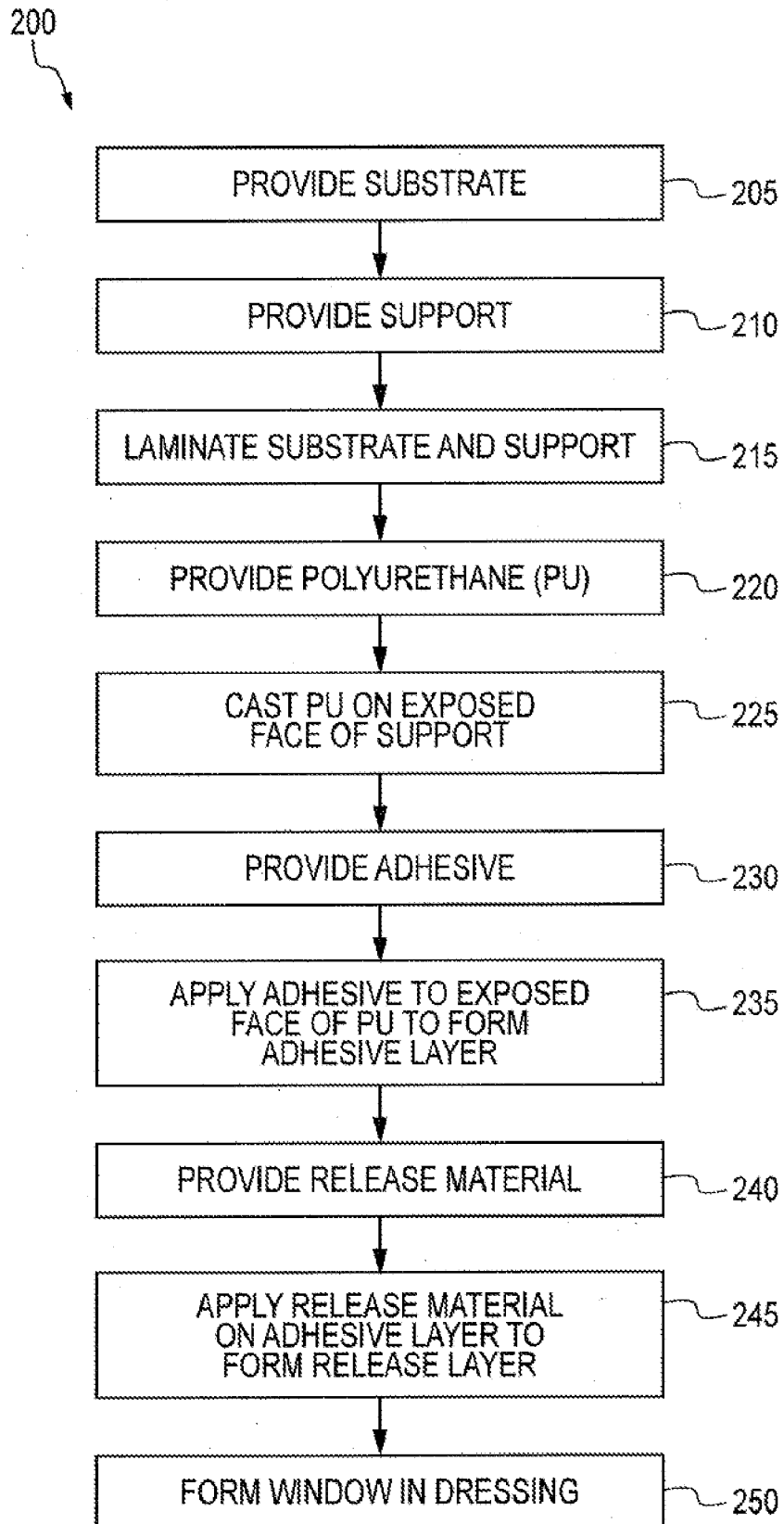


FIG. 2

3/4

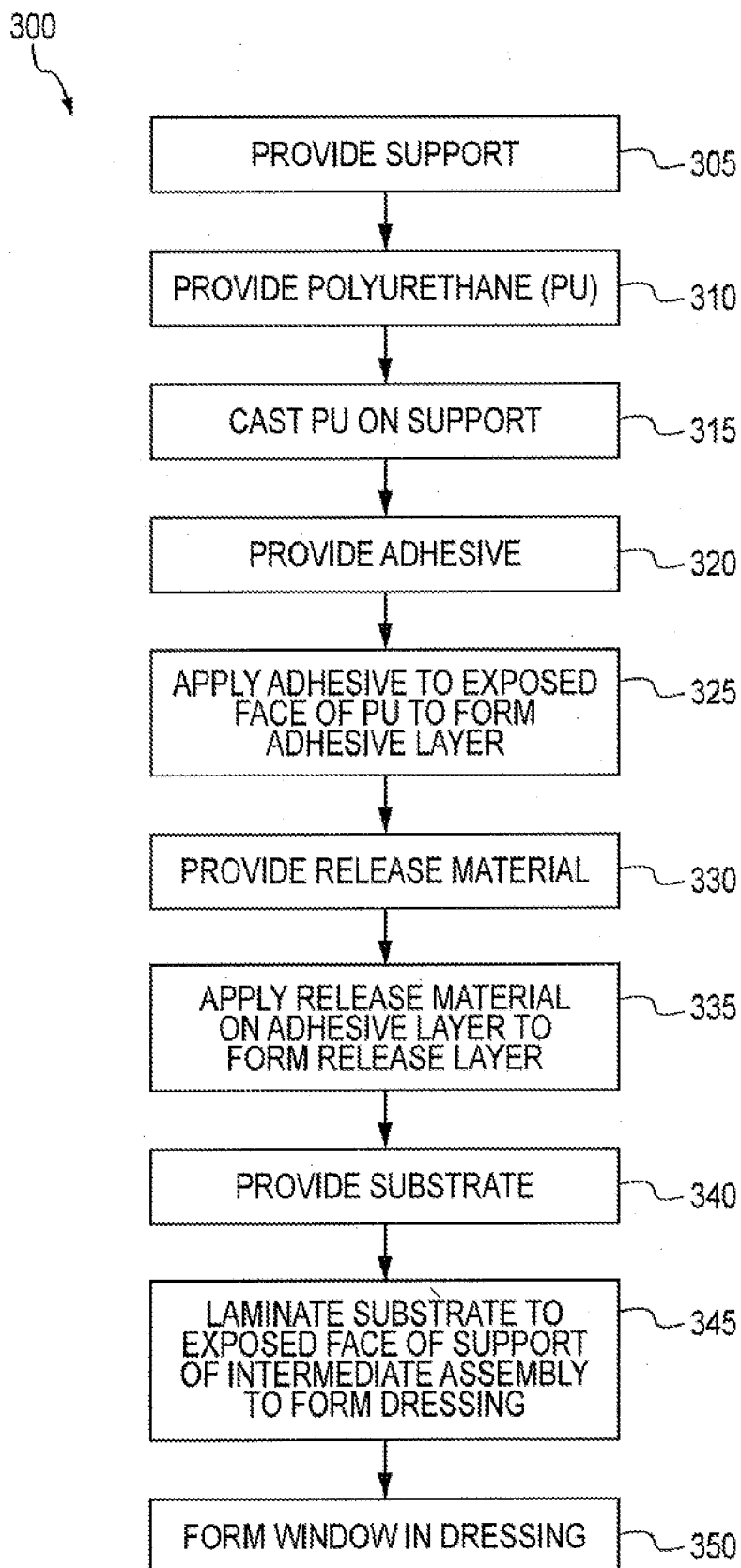


FIG. 3

4/4

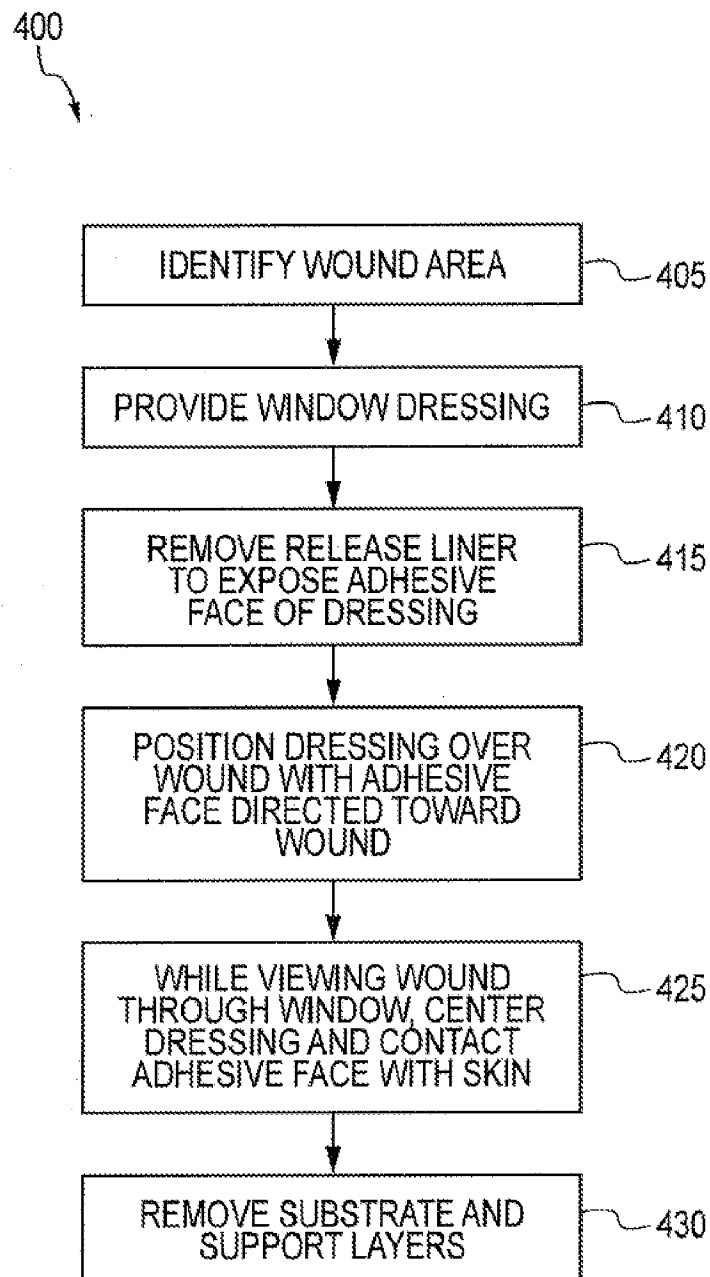


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/028719

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61F13/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 169 224 B1 (HEINECKE STEVEN B [US] ET AL) 2 January 2001 (2001-01-02)	1,3-5, 8-11, 13-15, 18-21, 23-26,28
Y	figures 4-10 column 7, line 2 - column 7, line 17 examples 1,4 claims 1,7,8,9	2,6,7, 12,16, 17,22,27
Y	----- WO 2008/034897 A1 (COLOPLAST AS [DK]; AVERY DENNISON CORP [US]; FREDERIKSEN JESPER MAD S B) 27 March 2008 (2008-03-27) page 11, line 20 - page 11, line 23 -----	1-28
Y	US 2010/247613 A1 (HOLMES RANDEL B [US]) 30 September 2010 (2010-09-30) paragraphs [0024], [0027] ----- -/-	1-28



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

14 May 2012

Date of mailing of the international search report

25/05/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Gennari, Silvia

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/028719

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 900 348 A1 (TYCO HEALTHCARE [US]) 19 March 2008 (2008-03-19) claims 1-24; figures 1-13 -----	1-28

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/028719

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6169224	B1	02-01-2001	NONE	

WO 2008034897	A1	27-03-2008	EP 2063833 A1	03-06-2009
			US 2009326430 A1	31-12-2009
			WO 2008034897 A1	27-03-2008

US 2010247613	A1	30-09-2010	NONE	

EP 1900348	A1	19-03-2008	AR 062772 A1	03-12-2008
			AU 2007216744 A1	03-04-2008
			BR PI0703644 A	29-04-2008
			CA 2600249 A1	12-03-2008
			CL 26332007 A1	18-07-2008
			CN 101279102 A	08-10-2008
			EP 1900348 A1	19-03-2008
			JP 2008068090 A	27-03-2008
			NZ 561291 A	24-12-2008
			US 2008063695 A1	13-03-2008
