

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 64970581PC03	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US15/57177	International filing date (day/month/year) 23 October 2015 (23.10.2015)	Priority date (day/month/year) 30 April 2015 (30.04.2015)	
International Patent Classification (IPC) or national classification and IPC IPC: B65D 83/08(2006.01),A47K 7/00,A47K 10/42 CPC: B65D 83/08, A47K 7/00, A47K 10/42			
Applicant KIMBERLY-CLARK WORLDWIDE, INC.			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of <u>0</u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No.I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application			
Date of submission of the demand 28 February 2017 (28.02.2017)		Date of completion of this report 31 May 2017 (31.05.2017)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450		Authorized officer TIMOTHY WAGGONER	
Facsimile No. (571) 273-8300		Telephone No. (571) 272-3600	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US15/57177

Box No. I Basis of the report1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b)).
- ☐ publication of the international application (Rule 12.4(a)).
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a) and (b)).

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☒ the description:
 pages 1-15 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☒ the claims:
 Nos. 1-22 as originally filed/furnished
 Nos. * NONE as amended (together with any statement) under Article 19
 Nos. * NONE received by this Authority on _____
- ☒ the drawings:
 pages 1/14-14/14 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____

☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

5. ☐ This report has been established:

- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
- ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.4bis) and 70.2(e)).

6. ☒ With regard to top-up searches (Rules 66.1ter and 70.2(f)):

- ☒ A top-up search was carried out by this Authority on 30 May 2017 (30.05.2017)
- ☒ Additional relevant documents have been discovered during the top-up search.
- ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.

7. ☐ Supplementary international search report(s) from Authority(ies) _____ has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US15/57177**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)

Claims 1-22 YESClaims NONE NO

Inventive Step (IS)

Claims NONE YESClaims 1-22 NO

Industrial Applicability (IA)

Claims 1-22 YESClaims NONE NO**2. Citations and Explanations (Rule 70.7)**
Please See Continuation Sheet

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US15/57177

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

V. 2. Citations and Explanations:

Claims 1-22 lack an inventive step under PCT Article 33(3) as being obvious over Sosalla in view of Wheeler.

(Re claim 1,8,15) Sosalla discloses a plurality of stacked sheets which are connected together by perforations or bonded together (col 3 lines 30-46, figure 3A,6,7,9). Sosalla does not disclose that the wipes are connected on only one of the right side and the left side. Wheeler teaches wipes being connected on only one of the right side and the left side (figure 1-3, 6). It would have been obvious to one skilled in the art to modify the wipe connections of Sosalla to only include connections on only the right side or the left side because it makes the wipes easier to separate.

(Re claim 2,8) "connections in a stacked direction are on alternating right and left sides" (Wheeler figure 1-3).

(Re claim 3,15) "connections in a stacked direction are on the same side of the stack" (Wheeler figure 6).

(Re claim 4,9,16) "majority of the connections are integrally formed" (Sosalla col 3 lines 30-46 'perforations').

(Re claim 5,10,17) "no connection in the stack is integrally formed with a wipe" (Sosalla col 3 lines 30-46 'ultrasonic welding, heat welding').

(Re claim 6,11,18) "each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding" (Sosalla col 3 lines 30-46 'ultrasonic welding, heat welding').

(Re claim 7,13,20) "entirety of each right-side connections in the stack is closer to the stack right end than to the longitudinal centerline ... left-side connection is the stack is closer to the stack left end" (Wheeler figure 1).

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US15/57177

Supplemental Box

(Re claim 8) Claim 8 is the same as claim 1 and 2 taken together and would obvious for at least the reasons listed above.

(Re claim 12,19) "right-side connection effective width and the left-side connection effective width are each at most 10 percent of a stack transverse width" (Wheeler figure 1-3,6)

(Re claim 14,21) Sosalla teaches perforations of various configurations but does not disclose the connections comprise 3 to 8 bridging strips. However through experimentation one skilled in the art could arrive at the use of 3 to 8 bridging strips to achieve the correct balance of strength to feed following wipes and separating the wipes.

(Re claim 15) Claim 15 is the same as claim 1 and 3 taken together and would obvious for at least the reasons listed above.

(Re claim 22) "the dispenser and plurality of wipes together adapted to provide pop-up dispensing of wipes" (Sosalla figure 6,7). Sosalla as modified by Wheeler discloses a stack of wipes where all the connections are on the right hand side, as such it would have been obvious to bias the dispensing opening to align with the connections so the wipes feed smoothly.

Claims 1-22 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

US 6,991,840 B2 (SOSALLA) 10 December 2003, see figures 3, 3A, 6, 7, 9; column col 3 lines 30-46.

US 459,516 A (WHEELER) 15 September 1891, see figures 1-3 and 6.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: KUBICKI, H. MICHAEL KIMBERLY-CLARK WORLDWIDE, INC. 2300 WINCHESTER ROAD NEENAH WI 54956 USA
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Date of mailing (day/month/year)	18 January 2016 (18.01.2016)
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Applicant's or agent's file reference 64970581PC03	FOR FURTHER ACTION See paragraph 2 below
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International application No. PCT/US2015/057177	International filing date (day/month/year) 23 October 2015 (23.10.2015)	Priority date(day/month/year) 30 April 2015 (30.04.2015)
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International Patent Classification (IPC) or both national classification and IPC B65D 83/08(2006.01)i, A47K 7/00(2006.01)i, A47K 10/42(2006.01)i

Applicant KIMBERLY-CLARK WORLDWIDE, INC.
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1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| ☒ | Box No. I | Basis of the opinion |
| ☐ | Box No. II | Priority |
| ☐ | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| ☐ | Box No. IV | Lack of unity of invention |
| ☒ | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement |
| ☐ | Box No. VI | Certain documents cited |
| ☐ | Box No. VII | Certain defects in the international application |
| ☐ | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/KR International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-472-7140	Date of completion of this opinion 18 January 2016 (18.01.2016)	Authorized officer HWANG, Chan Yoon Telephone No. +82-42-481-3347
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/057177

Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of :

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.I(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

- a. ☐ forming part of the international application as filed:
☐ in the form of an Annex C/ST.25 text file.
☐ on paper or in the form of an image file.
- b. ☐ furnished together with the international application under PCT Rule 13*ter*.I(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
- c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.I(a)).
☐ on paper or in the form of an image file (Rule 13*ter*.I(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/057177

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-22	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1-22	NO
Industrial applicability (IA)	Claims	1-22	YES
	Claims	NONE	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 5918735 A (BANDO et al.) 06 July 1999

D2: US 2002-0074375 A1 (IRWIN, ARAM J.) 20 June 2002

1. Novelty and Inventive Step

1.1 Independent Claim 1

D1, which is considered to be the closest prior art to the subject matter of claim 1, discloses stacked sheets having two end portions(iii), a longitudinal direction(X), a transverse direction(Y), and a Z direction, the sheets defining flat sheet faces(SE) (see column 5, lines 58-66; column 6, lines 5, 23; and figures 1, 3A). Claim 1 differs from D1 in that each wipe is connected to at least one other wipe on only one of a right side and a left side of a stack via a connection. However, this feature is merely a design variation of the disclosure of D2 considering that a web(12) is regularly transverse by a predetermined line of frangibility or perforations(16) at right angles to a major axis of the web(12) and at predetermined intervals (see paragraphs [0091]-[0092]; and figures 1A-1C, 5A). Accordingly, claim 1 would have been obvious over D1 in view of D2. Therefore, claim 1 does not involve an inventive step under PCT Article 33(3).

1.2 Dependent Claims 2-7

1.2.1 Concerning Claim 2

The additional feature of claim 2, characterized in that immediately successive connections in

Continued on Supplemental Box

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of : Box No. V

a stacked direction are on alternating right and left sides of the stack, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092] and figure 1A). Accordingly, claim 2 would have been obvious over D1 in view of D2. Therefore, claim 2 does not involve an inventive step under PCT Article 33(3).

1.2.2 Concerning Claim 3

The additional feature of claim 3, characterized in that immediately successive connections in a stacked direction are on the same side of the stack, would be easily conceived from the predetermined line of frangibility or perforations(16) of D2 (see figure 1A). Accordingly, claim 3 would have been obvious over D1 in view of D2. Therefore, claim 3 does not involve an inventive step under PCT Article 33(3).

1.2.3 Concerning Claim 4

The additional feature of claim 4, characterized in that a majority of connections in the stack are integrally formed with a wipe, would be easily conceived from the predetermined line of frangibility or perforations(16) of D2 (see figure 1A). Accordingly, claim 4 would have been obvious over D1 in view of D2. Therefore, claim 4 does not involve an inventive step under PCT Article 33(3).

1.2.4 Concerning Claim 5

The additional feature of claim 5, characterized in that no connection in the stack is integrally formed with a wipe, is merely a design variation of the predetermined line of frangibility or perforations(16) and the web(12) in D2 (see paragraph [0092]). Accordingly, claim 5 would have been obvious over D1 in view of D2. Therefore, claim 5 does not involve an inventive step under PCT Article 33(3).

1.2.5 Concerning Claim 6

The additional feature of claim 6, characterized in that each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding, comes within the scope of the customary practice followed by a person skilled in the art. Accordingly, claim 6 would have been obvious

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Supplemental Box

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over D1 in view of D2. Therefore, claim 6 does not involve an inventive step under PCT Article 33(3).

1.2.6 Concerning Claim 7

The additional feature of claim 7, characterized in that an entirety of each right-side connection in the stack is closer to a right end than to a longitudinal centerline of the stack, and an entirety of each left-side connection in the stack is closer to a left end than to the longitudinal centerline of the stack, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092]). Accordingly, claim 7 would have been obvious over D1 in view of D2. Therefore, claim 7 does not involve an inventive step under PCT Article 33(3).

1.3 Independent Claim 8

D1, which is considered to be the closest prior art to the subject matter of claim 8, discloses stacked sheets having two end portions(iii), a longitudinal direction(X), a transverse direction(Y), and a Z direction, the sheets defining flat sheet faces(SE), the stacked sheets comprising sheets(S1,S2,S3) (see column 5, lines 58-66; column 6, lines 5, 23; and figures 1, 3A). Claim 8 differs from D1 in that a right-side connection connects a first wipe to a second wipe in a right side of a stack, the right-side connection having an effective width extending in a transverse direction, the first wipe connected to the second wipe only on the right side, and a left-side connection connects the second wipe to a third wipe in a left side of the stack, the left-side connection having an effective width extending in the transverse direction, the second wipe connected to the third wipe only on the left side. However, this feature is merely a design variation of the disclosure of D2 considering that a web(12) is regularly transverse by a predetermined line of frangibility or perforations(16) at right angles to a major axis of the web(12) and at predetermined intervals (see paragraphs [0091]-[0092]; and figures 1A-1C, 5A). Accordingly, claim 8 would have been obvious over D1 in view of D2. Therefore, claim 8 does not involve an inventive step under PCT Article 33(3).

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1.4 Dependent Claims 9-14

1.4.1 Concerning Claim 9

The additional feature of claim 9, characterized in that a majority of connections in the stack are integrally formed with a wipe, would be easily conceived from the predetermined line of frangibility or perforations(16) of D2 (see figure 1A). Accordingly, claim 9 would have been obvious over D1 in view of D2. Therefore, claim 9 does not involve an inventive step under PCT Article 33(3).

1.4.2 Concerning Claim 10

The additional feature of claim 10, characterized in that no connection in the stack is integrally formed with a wipe, is merely a design variation of the predetermined line of frangibility or perforations(16) and the web(12) in D2 (see paragraph [0092]). Accordingly, claim 10 would have been obvious over D1 in view of D2. Therefore, claim 10 does not involve an inventive step under PCT Article 33(3).

1.4.3 Concerning Claim 11

The additional feature of claim 11, characterized in that each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding, comes within the scope of the customary practice followed by a person skilled in the art. Accordingly, claim 11 would have been obvious over D1 in view of D2. Therefore, claim 11 does not involve an inventive step under PCT Article 33(3).

1.4.4 Concerning Claim 12

The additional feature of claim 12, characterized in that the right-side connection effective width and the left-side connection effective width are each at most 10 percent of a stack transverse width, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092]). Accordingly, claim 12 would have been obvious over D1 in view of D2. Therefore, claim 12 does not involve an inventive step under PCT Article 33(3).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

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1.4.5 Concerning Claim 13

The additional feature of claim 13, characterized in that an entirety of each right-side connection in the stack is closer to a right end than to a longitudinal centerline of the stack, and an entirety of each left-side connection in the stack is closer to a left end than to the longitudinal centerline of the stack, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092]). Accordingly, claim 13 would have been obvious over D1 in view of D2. Therefore, claim 13 does not involve an inventive step under PCT Article 33(3).

1.4.6 Concerning Claim 14

The additional feature of claim 14, characterized in that the majority of right-side connections and the majority of left side connections each include from 3 to 8 bridging strips, is merely a matter of design option when the general knowledge in the relevant field of the art is used. Accordingly, claim 14 would have been obvious over D1 in view of D2. Therefore, claim 14 does not involve an inventive step under PCT Article 33(3).

1.5 Independent Claim 15

D1, which is considered to be the closest prior art to the subject matter of claim 15, discloses stacked sheets having two end portions(iii), a longitudinal direction(X), a transverse direction(Y), and a Z direction, the sheets defining flat sheet faces(SE), the stacked sheets comprising sheets(S1,S2,S3) (see column 5, lines 58-66; column 6, lines 5, 23; and figures 1, 3A). Claim 15 differs from D1 in that a first right-side connection connects a first wipe to a second wipe in a right side of a stack, the first right-side connection having an effective width extending in a transverse direction, the first wipe connected to the second wipe only on the right side, and a second right-side connection connects the second wipe to a third wipe in the right side of the stack, the second right-side connection having an effective width extending in the transverse direction, the second wipe connected to the third wipe only on the right side. However, this feature is merely a design variation of the disclosure of D2 considering that a web(12) is regularly transverse by a predetermined line of frangibility or perforations(16) at right angles to a major axis of the web(12) and at predetermined intervals (see paragraphs

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Supplemental Box

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[0091]-[0092] and figures 1A-1C, 5A). Accordingly, claim 15 would have been obvious over D1 in view of D2. Therefore, claim 15 does not involve an inventive step under PCT Article 33(3).

1.6 Dependent Claims 16-21

1.6.1 Concerning Claim 16

The additional feature of claim 16, characterized in that a majority of connections in the stack are integrally formed with a wipe, would be easily conceived from the predetermined line of frangibility or perforations(16) of D2 (see figure 1A). Accordingly, claim 16 would have been obvious over D1 in view of D2. Therefore, claim 16 does not involve an inventive step under PCT Article 33(3).

1.6.2 Concerning Claim 17

The additional feature of claim 17, characterized in that no connection in the stack is integrally formed with a wipe, is merely a design variation of the predetermined line of frangibility or perforations(16) and the web(12) in D2 (see paragraph [0092]). Accordingly, claim 17 would have been obvious over D1 in view of D2. Therefore, claim 17 does not involve an inventive step under PCT Article 33(3).

1.6.3 Concerning Claim 18

The additional feature of claim 18, characterized in that each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding, comes within the scope of the customary practice followed by a person skilled in the art. Accordingly, claim 18 would have been obvious over D1 in view of D2. Therefore, claim 18 does not involve an inventive step under PCT Article 33(3).

1.6.4 Concerning Claim 19

The additional feature of claim 19, characterized in that the first right-side connection effective width and the second right-side connection effective width are each at most 10

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

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percent of a stack transverse width, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092]). Accordingly, claim 19 would have been obvious over D1 in view of D2. Therefore, claim 19 does not involve an inventive step under PCT Article 33(3).

1.6.5 Concerning Claim 20

The additional feature of claim 20, characterized in that an entirety of each connection in the stack is closer to a right end than to a longitudinal centerline of the stack, is merely a design variation of the predetermined line of frangibility or perforations(16) in D2 (see paragraph [0092]). Accordingly, claim 20 would have been obvious over D1 in view of D2. Therefore, claim 20 does not involve an inventive step under PCT Article 33(3).

1.6.6 Concerning Claim 21

The additional feature of claim 21, characterized in that the majority of connections each include from 3 to 8 bridging strips, is merely a matter of design option when the general knowledge in the relevant field of the art is used. Accordingly, claim 21 would have been obvious over D1 in view of D2. Therefore, claim 21 does not involve an inventive step under PCT Article 33(3).

1.7 Independent Claim 22

Claim 22 relates to a dispenser containing the plurality of interconnected wipes of claim 15 (feature 1), the dispenser and the plurality of wipes together adapted to provide pop-up dispensing of wipes (feature 2), and the dispenser defining a dispensing orifice (feature 3), wherein the dispensing orifice is transversely offset from the longitudinal centerline toward the right end by at least 25 percent of a stack transverse width (feature 4). D1 discloses an outlet(1a), which corresponds to feature 3 (see column 6, line 28 and figure 1). In addition, feature 1 shares the same technical features with claim 15. Furthermore, feature 2 would be easily conceived from an envelope(1) of D1 (see figure 1), and feature 4 is merely a matter of design option when the general knowledge in the relevant field of the art is used. Accordingly, claim 22 would have been obvious over D1 in view of D2. Therefore, claim 22 does not involve an inventive step under PCT Article 33(3).

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/057177

Supplemental Box

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2. Industrial Applicability

Claims 1-22 are industrially applicable under PCT Article 33(4).



- (51) International Patent Classification:
B65D 83/08 (2006.01) *A47K 10/42* (2006.01)
A47K 7/00 (2006.01)
- (21) International Application Number:
PCT/US2015/057177
- (22) International Filing Date:
23 October 2015 (23.10.2015)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
62/154,961 30 April 2015 (30.04.2015) US
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(54) Title: PLURALITY OF INTERCONNECTED WIPES FOR USE IN DISPENSER

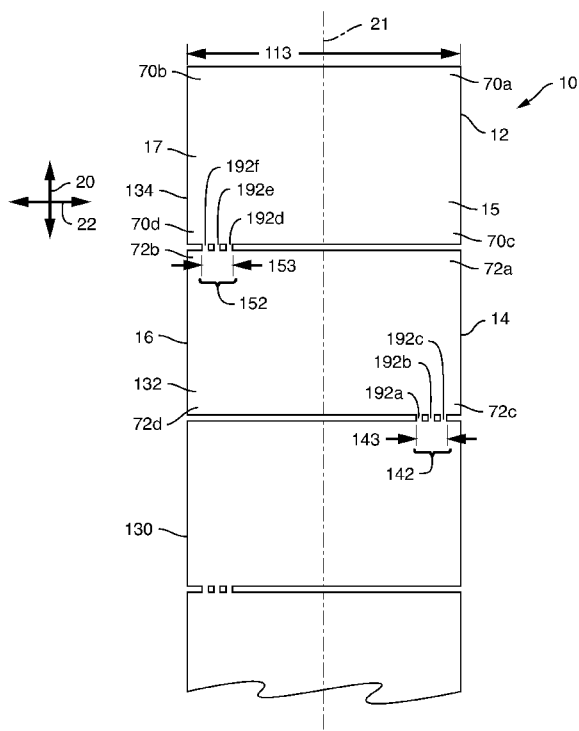


FIG. 7

(57) Abstract: A plurality of stacked, interconnected wipes
that collectively define a stack. Each wipe is connected to at
least one other wipe on only one of the right side and the left
side of the stack via a connection. In particular embodiments,
immediately successive connections in a stacked direction are
on alternating right and left sides of the stack. In other em-
bodiments, immediately successive connections in a stacked
direction are on the same side of the stack.



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PLURALITY OF INTERCONNECTED WIPES FOR USE IN DISPENSER

BACKGROUND OF THE INVENTION

There is a variety of storing and dispensing containers in the market for wipes. Wipes have been made from a variety of materials which can be dry or wet when used. Wet wipes can be moistened with a variety of suitable wiping solutions. Typically, wet wipes have been stacked in a container in either a folded or unfolded configuration. For example, containers of wet wipes have been available wherein each of the wet wipes stacked in the container has been arranged in a folded configuration such as a c-folded, z-folded or quarter-folded configuration as are well known to those skilled in the art. Sometimes each folded wet wipe is interfolded with the wet wipes immediately above and below it in the stack of wipes. In an alternative configuration, the wet wipes have been placed in a container in the form of a continuous web of material that includes perforations adapted to allow for separation of individual wet wipes from the web upon the application of a pulling force. Such wet wipes have been used for baby wipes, hand wipes, personal care wipes, household cleaning wipes, industrial wipes and the like.

Conventional packages of wipes have typically been designed to be positioned on a flat surface such as a countertop, table or the like. Such conventional packages have often included a plastic container, tub or package which provides a sealed environment for the wet wipes to ensure that they do not become dirty or overly dry. Some of the conventional packages have also been configured to provide "one-at-a-time" dispensing of each wet wipe which can be accomplished using a single hand after the package has been opened. Such single-handed, one-at-a-time dispensing is particularly desirable because the other hand of the user or care giver is typically required to be simultaneously used for other functions. For example, when changing a diaper product on an infant, the care giver typically uses one hand to hold and maintain the infant in a desired position while the other hand is used to dispense a baby wipe to clean the infant.

"Pop-up" configurations of wet wipe dispensers can advantageously help provide the aforementioned single-handed, "one-at-a-time" dispensing. In "pop-up" configurations, when a wipe is removed from the dispenser, the wipe pulls along the leading end of the succeeding wipe in the package, by virtue of the succeeding wipe being in operative contact with the leading wipe such as via interfolding, via adhesive bonding, or via an integral connection along a line of weakness. Preferably, as the leading wipe is pulled out of and away from the package, the trailing end of the leading wipe breaks free from the leading end of the succeeding wipe, and the leading end of the succeeding wipe is left protruding from the package. In this way, the leading end of the succeeding wipe is immediately and automatically

positioned for grasping and subsequent withdrawal from the package, and what was previously the succeeding wipe now becomes the leading wipe.

Historically, two malfunctions can occur during the operation just described. In one scenario, as the leading wipe is withdrawn, the leading wipe may not properly release from the succeeding wipe, with the result that the succeeding wipe is pulled too far or even entirely out of the package. A situation in which one or more succeeding wipes are in a single pull operation withdrawn from the package by virtue of being in operative contact with the leading wipe is referred to herein as “multiples.” Multiples can result from excessively strong or geometrically ineffective connections between successive wipes (e.g., too much adhesive or insufficient web perforations), or can result from a dispensing orifice that does not sufficiently hold in place the succeeding wipe to allow the leading wipe to break free (e.g., too large of a dispensing orifice).

In another scenario, as the leading wipe is withdrawn, the succeeding wipe, after breaking free from the leading wipe, may not be readily accessible for subsequent dispensing. For example, although the leading end of the succeeding wipe may momentarily protrude from the package as it follows the leading wipe during withdrawal of the leading wipe, the leading end of the succeeding wipe often subsequently falls back through the dispensing orifice into the dispensing container – herein referred to as a “fallback.” Fallbacks can result from insufficiently strong or geometrically ineffective connections between successive wipes (e.g., not enough adhesive or an excessively weak line of weakness), or can result from a dispensing orifice that does not sufficiently hold the leading edge of the succeeding wipe in an outwardly protruding manner (e.g., too large of a dispensing orifice). Occasionally, the succeeding wipe may entirely fail to exit the package as the leading wipe is withdrawn, such as when the connection between the leading wipe and the succeeding breaks prematurely (i.e.; before the leading wipe is fully withdrawn).

As a result, what is lacking in the art is a stack of wipes connected to one another in a manner that provides improved “pop-up” dispensing.

SUMMARY OF THE INVENTION

In a first embodiment, the invention provides a plurality of stacked, interconnected wipes that collectively define a stack. The stack has a right end, a left end, a transverse direction extending between the right end and the left end, a longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending in the longitudinal direction and positioned midway between the right and left ends. The stack defines a right side transversely between the longitudinal centerline and the right end and defines a left side transversely between the longitudinal centerline and the left end. Each

wipe is connected to at least one other wipe on only one of the right side and the left side of the stack via a connection.

In a second embodiment, the invention provides the plurality of wipes of the first embodiment wherein immediately successive connections in a stacked direction are on alternating right and left sides
5 of the stack.

In a third embodiment, the invention provides the plurality of wipes of the first embodiment wherein immediately successive connections in a stacked direction are on the same side of the stack.

In a fourth embodiment, the invention provides a plurality of stacked, interconnected wipes that collectively define a stack. The stack has a right end, a left end, a transverse direction extending between
10 the right end and the left end, a longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending in the longitudinal direction and positioned midway between the right and left ends. The stack defines a right side transversely between the longitudinal centerline and the right end and defines a left side transversely between the longitudinal centerline and the left end. The plurality of wipes includes a first wipe, a second wipe, and a third wipe. A right-side connection connects
15 the first wipe to the second wipe in the right side of the stack, and the right-side connection has an effective width extending in the transverse direction. The first wipe is connected to the second wipe only on the right side. A left-side connection connects the second wipe to the third wipe in the left side of the stack, and the left-side connection has an effective width extending in the transverse direction. The second wipe is connected to the third wipe only on the left side.

20 In a fifth embodiment, the invention provides the plurality of wipes of the fourth embodiment wherein the right-side connection effective width and the left-side connection effective width are each at most 10 percent of a stack transverse width.

In a sixth embodiment, the invention provides the plurality of wipes of either of the fourth and fifth embodiments wherein the majority of right-side connections and the majority of left side connections
25 each include from 3 to 8 bridging strips.

In a seventh embodiment, the invention provides a plurality of stacked, interconnected wipes that collectively define a stack. The stack has a right end, a left end, a transverse direction extending between the right end and the left end, a longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending in the longitudinal direction and positioned midway between the
30 right and left ends. The stack defines a right side transversely between the longitudinal centerline and the right end and defines a left side transversely between the longitudinal centerline and the left end. The plurality of wipes includes a first wipe, a second wipe, and a third wipe. A first right-side connection

connects the first wipe to the second wipe in the right side of the stack, and the first right-side connection has an effective width extending in the transverse direction. The first wipe is connected to the second wipe only on the right side. A second right-side connection connects the second wipe to the third wipe in the right side of the stack, and the second right-side connection has an effective width extending in
5 the transverse direction. The second wipe is connected to the third wipe only on the right side.

In an eighth embodiment, the invention provides the plurality of wipes of the seventh embodiment wherein the first right-side connection effective width and the second right-side connection effective width are each at most 10 percent of a stack transverse width.

In a ninth embodiment, the invention provides the plurality of wipes of the seventh or eighth
10 embodiments wherein an entirety of each connection in the stack is closer to the stack right end than to the longitudinal centerline of the stack.

In a tenth embodiment, the invention provides the plurality of wipes of any of the seventh through ninth embodiments wherein the majority of connections each include from 3 to 8 bridging strips.

In an eleventh embodiment, the invention provides the plurality of wipes of any of the first
15 through sixth embodiments wherein an entirety of each right-side connection in the stack is closer to the stack right end than to the longitudinal centerline of the stack, and wherein an entirety of each left-side connection in the stack is closer to the stack left end than to the longitudinal centerline of the stack.

In a twelfth embodiment, the invention provides the plurality of wipes of any of the first through eleventh embodiments wherein a majority of connections in the stack are integrally formed with a wipe.

20 In a thirteenth embodiment, the invention provides the plurality of wipes of any of the first through eleventh embodiments wherein no connection in the stack is integrally formed with a wipe.

In a fourteenth embodiment, the invention provides the plurality of wipes of the thirteenth embodiment wherein each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding.

25 In a fifteenth embodiment, the invention provides a dispenser containing the plurality of wipes of any of the first through fourteenth embodiments, the dispenser and plurality of wipes together adapted to provide pop-up dispensing of wipes, the dispenser defining a dispensing orifice, wherein the dispensing orifice is transversely offset from the longitudinal centerline toward the right end by at least 25 percent of a stack transverse width.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be more fully understood and further features will become apparent when reference is made to the following detailed description of the invention and the accompanying drawings. The drawings are merely representative and are not intended to limit the scope of the claims.

5 Like parts of the items depicted in the drawings are referred to by the same reference numerals.

Fig. 1 representatively shows a portion of a plurality of integrally interconnected wipes according to one embodiment of the invention.

Fig. 2A representatively shows a close-up view of a portion of the embodiment of Fig. 1.

Fig. 2B representatively shows an alternative embodiment of the portion shown in Fig. 2A.

10 Fig. 3 representatively shows a perspective view of a stack of folded, integrally interconnected wipes, similar to those shown in Fig. 1.

Fig. 4 representatively shows a cross-sectional view of the stack of wipes illustrated in Fig. 3, taken along the line 4-4.

15 Fig. 5 representatively shows the plurality of integrally interconnected wipes shown in Fig. 2B, elongated and with the minor ties torn.

Fig. 6 representatively shows a perspective view of an example of a dispenser for wipes suitable for use in conjunction with particular embodiments of the present invention

Fig. 7 representatively shows a plurality of integrally interconnected wipes according to an alternative embodiment of the invention.

20 Fig. 8 representatively shows a plurality of integrally interconnected wipes according to yet another embodiment of the invention.

Fig. 9 representatively shows a plurality of non-integrally interconnected wipes according to one embodiment of the invention.

25 Fig. 10A representatively shows a front view of a stack of folded, interconnected wipes, such as those shown any of Figs. 1-3 and 7-9.

Fig. 10B representatively shows a top view of a stack of folded, interconnected wipes, such as those shown in any of Figs. 1-3 and 7-9.

30 Fig. 10C representatively shows a cross-sectional view of one embodiment of a stack of wipes as seen along line X-X in Fig. 10B, in which wipe-to-wipe connections are on alternating sides of the stack.

Fig. 10D representatively shows a cross-sectional view of an alternative embodiment of a stack of wipes as seen along line X-X in Fig. 10B, in which wipe-to-wipe connections are all on the same side of the stack.

Fig. 11 representatively shows a top view of a dispenser suitable for use in conjunction with particular embodiments of the present invention, with a portion cut away to show the stack of wipes housed therein.

Figs. 12A-12C representatively show three stages in one embodiment of the method aspect of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will be more fully understood and further features will become apparent when reference is made to the following detailed description of the invention and the accompanying drawings. The drawings are merely representative and are not intended to limit the scope of the claims. Like parts of the packages depicted in the drawings are referred to by the same reference numerals.

Referring to Figs. 1-6, a plurality 10 of integrally interconnected wipes collectively define a web 12. The web has a right edge 14, a left edge 16, a longitudinal direction 20 extending parallel to the right edge 14 and the left edges 16, a transverse direction 22 perpendicular to the longitudinal direction 20, and a longitudinal centerline 21 extending in the longitudinal direction 20 and positioned midway between the right edge 14 and the left edge 16. The web defines a right side 15 transversely between the centerline 21 and the right edge 14, and the web defines a left side 17 transversely between the centerline 21 and the left edge 16. As shown in the Figures, the plurality 10 of wipes includes at least a first wipe 30, a second wipe 32, and a third wipe 34.

In particular embodiments, as representatively illustrated in Figs. 1-3, a first transverse intermittent cut line 40 extends across the web 12. The first transverse intermittent cut line 40 partitions the web 12 into two longitudinally adjacent wipes – namely, the first wipe 30 and the second wipe 32. The first transverse intermittent cut line 40 defines a right side major tie 42, and in particular embodiments a left side minor tie 44a. The right side major tie 42 and the left side minor tie 44a together connect the first wipe 30 to the second wipe 32. The right side major tie 42 has a width 43, and the left side minor tie 44a has a width 45. Both widths 43, 45 extend in the transverse direction 22. The width 43 of the right side major tie 42 is greater than the width 45 of the left side minor tie 44a.

In particular embodiments, a second transverse intermittent cut line 50 extends across the web 12. The second transverse intermittent cut line 50 partitions the web 12 into two longitudinally adjacent

wipes – namely, the second wipe 32 and the third wipe 34. The second transverse intermittent cut line 50 defines a left side major tie 52, and in particular embodiments a right side minor tie 54a. The left side major tie 52 and the right side minor tie 54a together connect the second wipe 32 to the third wipe 34. The left side major tie 52 has a width 53, and the right side minor tie 54a has width 55. Both widths 53, 55 extend in the transverse direction 22. The width 53 of the left side major tie 52 is greater than the width 55 of the right side minor tie 54a. Note that the cut lines 40, 50 may be straight, wavy, zig-zag, or otherwise non-straight. Also, the cut lines 40, 50 may travel a path that is parallel to the transverse direction 22, or that is not parallel to the transverse direction 22, such as tilted relative to the transverse direction 22.

In particular embodiments, such as that representatively illustrated in Figs. 1 and 2A, the right side major tie 42 is spaced from the right edge 14 by at least 1 millimeter, more particularly at least 3 millimeters, still more particularly at least 5 millimeters, and still more particularly at least 10 millimeters, and the left side major tie 52 is spaced from the left edge 16 by at least 1 millimeter, more particularly at least 3 millimeters, still more particularly at least 5 millimeters, and still more particularly at least 10 millimeters. In other embodiments, such as that representatively illustrated in Fig. 2B, the right side major tie 42 abuts the right edge 14, and the left side major tie 52 abuts the left edge 16.

In particular embodiments (Figs. 1, 2A, 2B), the first transverse intermittent cut line 40 defines at least two left side minor ties 44a, 44b, and the second transverse intermittent cut line 50 defines at least two right side minor ties 54a, 54b. In particular embodiments (Fig. 2B), the first transverse intermittent cut line 40 defines at least three left side minor ties 44a, 44b, 44c, and the second transverse intermittent cut line 50 defines at least three right side minor ties 54a, 54b, 54c. In particular embodiments, the first transverse intermittent cut line 40 defines at least one right side minor tie 44d, and the second transverse intermittent cut line 50 defines at least one left side minor tie 54d.

In particular embodiments, the width 43/53 of each major tie 42/52 is between about 2 and 15 millimeters wide, and more particularly between about 2 and 10 millimeters wide. In particular embodiments, the major tie is more than 3 millimeters wide, more particularly more than 4 millimeters wide, still more particularly more than 5 millimeters wide, and still more particularly more than 8 millimeters wide. Additionally or alternatively, in particular embodiments, the width 45/55 of each minor tie 44/54 is between about 0.5 and 3 millimeters wide. In particular embodiments, the minor tie is less than 3 millimeters wide, more particularly less than 2 millimeters wide, and still more particularly less than 1 millimeter wide. In particular embodiments, the width 45/55 of each major tie 42/52 is at least three times greater than the width 45/55 of each minor tie 43/53.

In another aspect of the invention, a dispenser 11 contains the plurality 10 of integrally interconnected wipes described above. The dispenser 11 and plurality 10 of wipes are together adapted to provide pop-up dispensing of wipes. Examples of dispensers suitable for use in conjunction with particular embodiments of the present invention include those described in U.S. 6,523,690 B1; U.S. Pat. App. Pub. 2014/0174974 A1; U.S. Pat. App. Pub. 2014/0001072 A1; and U.S. Pat. App. Pub. 2014/0374432 A1, each of which is hereby incorporated by reference to the extent not inconsistent herewith.

The dispenser 11 can include any suitable number of individual wipes depending upon the dispenser size and intended end use. For example, the dispenser can be configured to include a stack of wipes which can include at least about 5 wipes and desirably from about 8 to about 320 individually wipes, and more desirably from about 16 to about 64 wipes. The size and shape of the stack of wipes is dependent upon the size and shape of the dispenser and vice versa.

In particular embodiments, the plurality 10 of integrally interconnected wipes are arranged in a stack 13, as representatively illustrated in Figs. 3 and 4. The example shown in Figs. 3 and 4 employs an accordion-like stack 13. The individual wipes can be connected together at transverse intermittent cut lines 40, 50 as described above. The transverse intermittent cut lines can be provided by means known to those skilled in the art, such as perforations, indentations, or cuts in the web of material. For example, the cut lines can be provided in the web of material by passing the web of material between a die cutter roll and an anvil roll. In the illustrated embodiment, the transverse intermittent cut lines are position in the middle of the stack of fold wipes, which is advantageous when dispensing from dispensers with centrally located dispensing orifices. In alternative embodiments (not shown), the intermittent cut lines can be positioned "off center," or at the edge of the stack.

The purpose, in particular embodiments, of the major ties described above is to deliver enhanced pop-up dispensing. The purpose of the minor ties is to facilitate commercial manufacture of the wipes. Specifically, it is common for wipe products to be formed as very long, continuous webs or sheets. Examples of suitable materials are described below. After the continuous sheet is formed, the sheet typically travels through additional processing steps, including, for example, drying, calendaring, embossing, wrinkle removing, slitting, perforating, and winding. During such additional processing steps, the continuous sheet generally is under both longitudinal and lateral tension. If adjacent wipes were integrally interconnected only by the major ties described herein, consistent, reliable handling of the continuous sheet would be compromised, because the major ties alone would not provide sufficient strength and integrity to the continuous sheets for commercial, high-speed, tensioned processing. Introduction of the minor ties as described herein allows for more robust handling of the continuous

sheets during the manufacturing. In this way, the major and minor ties together allow for the practical commercial manufacture of an optimized pop-up dispensing experience.

Another way to articulate key features of particular embodiments of the invention is as follows. The web 12 includes a plurality of transverse intermittent cut lines (e.g., 40, 50). The cut lines are spaced
5 apart from each other in the longitudinal direction 20 to define individual wipes (e.g., 30/32/34). Each cut line (e.g., 40/50) defines a major tie (e.g., 42/52) and a minor tie (e.g., 44/54), and the major tie and the minor tie are on opposite sides of the longitudinal centerline 21. The width 43 of the major tie 42 is greater than the width 53 of the minor tie. The major ties (e.g., 42/52) in longitudinally successive pluralities of cut lines (e.g., 40, 50) are on alternating right and left sides (15, 17) of the longitudinal
10 centerline 21. In this way, a plurality of major ties are arranged on the web 12 in a “zig-zag” pattern in the longitudinal direction, as representatively illustrated in Fig. 1.

The plurality 10 of wipes integrally interconnected as heretofore described can in particular embodiments deliver an improved dispensing experience. As the leading corner 62 of a wipe at the top of a stack 13, such as, referring to Figs. 3-4, wipe 34, is pulled by the user, a chain of events begins.
15 First, the one or more minor ties 52 are torn as the wipe 34 is pulled upward from the stack. As the one or more minor ties 52 are torn, the wipe 34 begins to tilt to the side, or even assume a diamond shape, as representatively illustrated in Figs. 5 and 6. As the succeeding wipe 32 begins to lift from the stack, in particular embodiments the stack 13 and/or dispenser 11 are configured to promote a tearing of the major tie 42, thus fully releasing wipe 34 from the web 12.

Referring to Figs. 10A-10D, the present invention includes in particular embodiments a plurality of stacked, interconnected wipes 10 that collectively define a stack 13. The stack 13 has a right end 114, a left end 116, a transverse direction 122 extending between the right end 114 and the left end 116, a longitudinal direction 120 perpendicular to the transverse direction 122, and a longitudinal centerline 121
20 extending in the longitudinal direction 120 and positioned midway between the right end 114 and left end 116. The stack 13 defines a right side 115 transversely between the longitudinal centerline 121 and the right end 114 and defines a left side 117 transversely between the longitudinal centerline 121 and the left end 116. In the exemplary embodiments shown in Figs. 10A-10D, each of the wipes is folded in half in the longitudinal direction 120. Fig. 10B shows a top view of the stack of folded wipes of Fig. 10A. The leading edge 29 of the wipe on the top of the stack 13 can be seen in Fig. 10B.
25

As representatively illustrated in Figs. 7-9, 10C, and 10D, in particular embodiments, each wipe is connected to at least one other wipe on only one of the right side 115 and the left side 117 of the stack 13 via a connection. In particular embodiments, such as those depicted in Figs. 7, 9, and 10C, immediately successive connections in a stacked direction 119 are on alternating right and left sides
30

115, 117 of the stack 13. In other embodiments, such as those depicted in Figs. 8 and 10D, immediately successive connections in a stacked direction 119 are on the same side of the stack (e.g., the right side 115 as shown in Fig. 10D). Fig. 7 depicts several interconnected wipes from the stack shown in Fig. 10C, and Fig. 8 depicts several interconnected wipes from the stack shown in Fig. 10D, with the
5 interconnected plurality in each case unfolded and fully extended to show various features.

For example, referring to Figs. 7, 9, and 10C, in particular embodiments, a plurality of wipes 10 includes a first wipe 130, a second wipe 132, and a third wipe 134. A right-side connection 142 connects the first wipe 130 to the second wipe 132 in the right side 115 of the stack 13. The first wipe 130 is connected to the second wipe 132 only on the right side 115 of the stack 13. Also, a left-side connection
10 152 connects the second wipe 132 to the third wipe 134 in the left side 117 of the stack 13. The second wipe 132 being connected to the third wipe 134 only on the left side 117 of the stack 13.

In another example, referring to Figs. 8 and 10D, in particular embodiments, a plurality of wipes 10 includes a first wipe 130, a second wipe 132, and a third wipe 134. A first right-side connection 142a connects the first wipe 130 to the second wipe 132 in the right side 115 of the stack 13. The first wipe
15 130 is connected to the second wipe 132 only on the right side 115 of the stack 13. Also, a second right-side connection 142b connects the second wipe 132 to the third wipe 134 in the right side 115 of the stack 13. The second wipe 132 is connected to the third wipe 134 only on the right side 115 of the stack 13. Fig. 8 depicts several interconnected wipes from a stack somewhat similar to the one shown in Fig. 10D, with the interconnected plurality unfolded and fully extended to show various features.

20 In particular embodiments, such as those representatively illustrated in Figs. 7, 8, 10C, and 10D, a majority of wipe-to-wipe connections in the stack 13 of wipes are integrally formed with a wipe. For example, the connections 142 and 152 can each include three bridging strips 192. The bridging strips 192a, 192b, and 192c collectively define the right-side connection 142, and the bridging strips 192d, 192e, and 192f collectively define the left-side connection 152. The number of bridging strips can be
25 varied depending on the dispensing mechanics necessitated by the specific configuration and construction of the wipes - and in particular embodiments, the dispenser - involved. In particular embodiments, each connection 142, 152 includes from 2 to 10 and more particularly from 3 to 8 bridging strips. Preferably, in particular embodiments, each bridging strip is from 1 to 5 millimeters in transverse width, and more preferably each bridging strip is from 1.5 to 3 millimeters in transverse width. In other
30 embodiments, no wipe-to-wipe connection in the stack is integrally formed with a wipe. For example, referring to Fig. 9, the connections 142 and 152 are accomplished via energy bonding. Example of suitable energy bonding included ultrasonic bonding, heat bonding, or pressure bonding. The bonding could also be accomplished via a bonding material, such as adhesive.

The stack has a width 113 measured in the transverse direction 122. The right-side connection 142 has an effective width 143 extending in the transverse direction 122, and the left-side connection 152 has an effective width 153 extending in the transverse direction 122. The “effective width” is the distance in the transverse direction between the two furthest-apart points of connectivity that connect immediately successive wipes in a stack within a single side 115, 117 of the stack 13. Thus, in no case can the effective width of a connection be greater than half of the stack transverse width 113. Preferably, the effective width of a connection is considerably less than half of the stack transverse width. For example, in particular embodiments, referring to Figs. 7 and 9, the right-side connection effective width 143 and the left-side connection effective width 153 are each at most 10 percent of a stack transverse width 113. In another example, referring to Fig. 8, the first right-side connection effective width 143a and the second right-side connection effective width 143b are each at most 10 percent of a stack transverse width 113.

In particular embodiments, an entirety of each right-side connection 142 in the stack 13 is closer to the stack right end 114 than to the longitudinal centerline 121 of the stack 13, and an entirety of each left-side connection 152 in the stack 13 is closer to the stack left end 116 than to the longitudinal centerline 121 of the stack 13, as representatively illustrates in Figs. 7, 9, and 10C. In other embodiments, an entirety of each connection in the stack 13 is closer to a single stack end – such as, for example, the stack right end 114 – than to the longitudinal centerline 121 of the stack, as representatively illustrated in Figs. 8 and 10D.

In particular embodiments, a dispenser 11 contains the plurality of interconnected wipes 10. The dispenser 11 and plurality of wipes 10 are together adapted to provide pop-up dispensing of the wipes. The dispenser 11 defines a dispensing orifice 111, through which wipes can be extracted from the dispenser 11. In particular embodiments, the dispensing orifice 111 is centered in the transverse direction, as in the examples of Figs. 6 and 12. In other examples, the dispensing orifice 111 is transversely offset from the longitudinal centerline 121 of the stack of wipes 13 contained therein by at least 25 percent of the stack transverse width 113, as representatively illustrated in the example of Fig. 11 in which the orifice 111 is offset toward the left end 116 of the stack 13. Of course, the orifice 111 could alternatively be offset toward the right end 114 of the stack 13 (which could in particular embodiments be advantageous for use in conjunction with a stack of wipes in which all wipe-to-wipe connections were on the right side 115 of the stack, such as the stack 13 representatively illustrated in Fig. 10D).

In another aspect, the invention relates to a method of dispensing wipes. The method includes providing a stack of wipes 13, as representatively illustrated in Figs. 10A-10D. The stack 13 has a first

end (such as a right end 114), a second end (such as a left end 116), a transverse direction extending between the first end 114 and the second end 116, a longitudinal direction 120 perpendicular to the transverse direction 122, and a longitudinal centerline 121 extending in the longitudinal direction 120 and positioned midway between the first end 114 and second end 116. The stack defines a first side
5 (such as right side 115) transversely between the longitudinal centerline 121 and the first end 114 and defines a second side (such as left side 117) transversely between the longitudinal centerline 121 and the second end 116.

Each wipe in the stack 13 is generally rectangular in shape, and each wipe defines four corners. For example, referring to Fig. 7, wipe 134 defines corners 70a/70b/70c/70d, and wipe 132 defines
10 corners 72a/72b/72c/72d. In another example, referring to Fig. 8, wipe 134 defines corners 80a/80b/80c/80d, and wipe 132 defines corners 82a/82b/82c/82d. The method in particular embodiments further includes providing a dispenser 11. The dispenser 11 has a dispensing orifice 101 through which wipes can be extracted from the dispenser 11.

Referring to the exemplary embodiment outlined in Figs. 12A-12C, the method can further
15 include grasping a presented corner 90 of a leading wipe 234, and pulling the presented corner 90 of the leading wipe 234 to withdraw the leading wipe 234 out of the dispenser 11. As the leading wipe 234 is withdrawn, the leading wipe 234 releases from a succeeding wipe 232 such that a presented corner 92 of the succeeding wipe 232 protrudes from the dispensing orifice 101. No wipe corner other than the presented corner protrudes from the dispensing orifice 101. "Presented corner" as used herein means
20 the corner of the wipe that protrudes away from the stack and through the dispensing orifice of the dispenser, so that user may readily grasp it.

In particular embodiments, the presented corner 90 of the leading wipe 234 and the presented corner 92 of the succeeding wipe 232 originate from opposite sides 115/117 of the stack 13. Preferably in such embodiments, each wipe in the stack 13 is connected to at least one other wipe on only one of
25 the right side 115 and the left side 117 of the stack via a connection. In other words, each wipe in the stack is connected to at least one other wipe on either the right side 115 of the stack 13 or the left side 117 of the stack 13, but not on both sides. Immediately successive connections 142, 152 in a stacked direction 119 alternate from the right side 115 to the left side 117, as suggested by the embodiments shown in Figs. 7, 9, and 10C. Preferably, each right-side connection 142 in the stack 13 is closer to the
30 stack right end 114 than to the longitudinal centerline 121 of the stack 13, and each left-side connection 152 in the stack 13 is closer to the stack left end 116 than to the longitudinal centerline 121 of the stack 13.

For example, referring to Figs. 12A-12C and Fig. 7, in particular embodiments of the method, the presented corner 90 of the leading wipe 234 corresponds to the corner 70a of the third wipe 134 in Fig. 7, and the presented corner 92 of the succeeding wipe 232 corresponds to the corner 72b of the second wipe 132 in Fig. 7. In such an embodiment, as the presented corner 90 (corner 70a) of the leading wipe 234 (wipe 134) is pulled and withdraw out of the dispenser 11, the leading wipe 234 (wipe 134) releases from the succeeding wipe 232 (wipe 132) such that a presented corner 92 (corner 72b) of the succeeding wipe 232 (wipe 132) protrudes from the dispensing orifice 101. The presented corner 90 (corner 70a) of the leading wipe 234 (wipe 134) and the presented corner 92 (corner 72b) of the succeeding wipe 232 (corner 132) originate from opposite sides 115/117 of the stack 13. Specifically, the corner 70a originates from the right side 115 of the stack, and the corner 72b originates from the left side 117 of the stack. Note that when corner 70a is the presented corner, the three remaining corners (70b, 70c, 70d) of wipe 134 remain inside the dispenser, such that corner 70a, and only corner 70a, is presented. Similarly, when corner 72b is the presented corner, the three remaining corners (72a, 72c, 72d) of wipe 132 remain inside the dispenser, such that corner 72b, and only corner 72b, is presented outside of the dispenser.

In other embodiments, the presented corner 90 of the leading wipe 232 and the presented corner 92 of the succeeding wipe 232 each originate from the same side of the stack (such as from the right side 115, or from the left side 117). Preferably in such embodiments, each wipe in the stack 13 is connected to at least one other wipe on only the first side 115 of the stack via a connection. Immediately successive connections 143a, 143b in a stacked direction 119 are all on the first side 115 of the stack, as suggested by the embodiments shown in Figs. 8 and 10D. Preferably, each connection 143 in the stack is closer to the stack first end 114 than to the longitudinal centerline 121 of the stack 13.

For example, referring to Figs. 12A-12C and Fig. 8, in particular embodiments of the method, the presented corner 90 of the leading wipe 234 corresponds to the corner 80a of the third wipe 134 in Fig. 8, and the presented corner 92 of the succeeding wipe 232 corresponds to the corner 82a of the second wipe 132 in Fig. 8. In such an embodiment, as the presented corner 90 (corner 80a) of the leading wipe 234 (wipe 134) is pulled and withdraw out of the dispenser 11, the leading wipe 234 (wipe 134) releases from the succeeding wipe 232 (wipe 132) such that a presented corner 92 (corner 82a) of the succeeding wipe 232 (wipe 132) protrudes from the dispensing orifice 101. The presented corner 90 (corner 80a) of the leading wipe 234 (wipe 134) and the presented corner 92 (corner 82a) of the succeeding wipe 232 (corner 132) originate from the same side of the stack 13. Specifically, the corner 80a originates from the right side 115 of the stack, and the corner 82a originates from the right side 115 of the stack. Note that when corner 80a is the presented corner, the three remaining corners (80b, 80c,

80d) of wipe 134 remain inside the dispenser, such that corner 80a, and only corner 80a, is presented. Similarly, when corner 82a is the presented corner, the three remaining corners (82b, 82c, 82d) of wipe 132 remain inside the dispenser, such that corner 82a, and only corner 82a, is presented outside of the dispenser.

5 The structures and methods described above can in particular embodiments deliver a number of useful features. First, the mechanism of dispensing just described can present a corner of the next wipe in the stack to the user, which offers certain accessibility benefits in certain applications. Second, due to the way the wipe tips to the side, or “deforms” into a general “diamond-like” shape, the variability in dispensing force can be better controlled, making dispensing more reliable and predictable (such as
10 by reducing the undesirable “fall backs” or “multiples” described earlier). Third, the force required to dispense a wipe is in particular embodiments of the present invention lower than in many conventional configurations, which desirably allows more wipes to be dispensed from a dispenser before the dispenser (often made of relatively light polymers) begins to lift off the surface on which it rests. Finally, the pop-up dispensing configuration described herein reduces tearing of the wipes, due to the fact, it is
15 believed, that vector forces are oriented “diagonally” from corner to corner, as opposed to purely in a machine direction or cross-machine direction (one or both of which may be weaker than the “diagonal” direction).

Without wishing to limit the scope of the invention as claim, it is theorized that, in particular embodiments of the invention, rotation of the succeeding wipe of about 45 degrees (sheet 32 in Figs. 5
20 and 6; sheet 232 in Fig. 12) causes the succeeding wipe 32/232 to bunch, and to have a non-uniform profile in the direction of dispensing as it passes through the dispensing orifice. For the 45-degree rotated wipe 32/232, its thickest section (bunched in the diagonal direction of a roughly square sheet) encounters the dispensing orifice when the sheet 32 is about half-dispensed, such that the resistance of the wipe to dispensing is greatest at this “half dispensed” point in time. This varying force of resistance to dispensing
25 helps retain the succeeding wipe 32 near mid-dispense, thus helping to reduce fallbacks or multiples.

Materials suitable for the wipes of the present invention are well known to those skilled in the art. Wipes, such as pre-moistened wipes, can be made from, for example, meltblown, coform, air-laid, bonded-carded, or hydroentangled materials, high wet-strength tissue, or combinations thereof, such as
30 layered combinations thereof. The wipes can comprise synthetic or natural fibers or combinations thereof. Wipes suitable for use in conjunction with the present invention can contain a liquid which can be any solution that can be absorbed into the wipes, thus making them “wet wipes.” The liquid contained within the wet wipes can include any suitable components which provide the desired wiping properties. For example, the components can include water, emollients, surfactants, preservatives, chelating

agents, pH buffers, fragrances, or combinations thereof. The liquid can also contain lotions, ointments, and/or medicaments. The amount of liquid contained within each wet wipe can vary depending upon the type of material being used to provide the wet wipe, the type of liquid being used, the type of container being used to store the stack of wet wipes, and the desired end use of the wet wipe. Generally, each
5 wet wipe can contain from about 150 to about 600 weight percent and desirably from about 200 to about 400 weight percent liquid based on the dry weight of the wipe for improved wiping. Examples of wipe substrates suitable for use in conjunction with the present invention include U.S. 5,508,102 A, U.S. 7,585,797 B2, and U.S. 8,257,553 B2.

While the invention has been described in detail with respect to the specific aspects thereof, it
10 will be appreciated that those skilled in the art, upon attaining an understanding of the foregoing, may readily conceive of alterations to, variations of, and equivalents to these aspects. Accordingly, the scope of the present invention should be assessed as that of the appended claims.

We claim:

1. A plurality of stacked, interconnected wipes that collectively define a stack, the stack having a right end, a left end, a transverse direction extending between the right end and the left end, a longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending
5 in the longitudinal direction and positioned midway between the right and left ends, the stack defining a right side transversely between the longitudinal centerline and the right end and defining a left side transversely between the longitudinal centerline and the left end,

wherein each wipe is connected to at least one other wipe on only one of the right side and the left side of the stack via a connection.

10 2. The plurality of stacked, interconnected wipes of claim 1, wherein immediately successive connections in a stacked direction are on alternating right and left sides of the stack.

3. The plurality of stacked, interconnected wipes of claim 1, wherein immediately successive connections in a stacked direction are on the same side of the stack.

15 4. The plurality of stacked, interconnected wipes of claim 1, wherein a majority of connections in the stack are integrally formed with a wipe.

5. The plurality of stacked, interconnected wipes of claim 1, wherein no connection in the stack is integrally formed with a wipe.

6. The plurality of stacked, interconnected wipes of claim 5, wherein each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding.

20 7. The plurality of stacked, interconnected wipes of claim 1, wherein an entirety of each right-side connection in the stack is closer to the stack right end than to the longitudinal centerline of the stack, and wherein an entirety of each left-side connection in the stack is closer to the stack left end than to the longitudinal centerline of the stack.

25 8. A plurality of stacked, interconnected wipes that collectively define a stack, the stack having a right end, a left end, a transverse direction extending between the right end and the left end, a longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending in the longitudinal direction and positioned midway between the right and left ends, the stack defining a right side transversely between the longitudinal centerline and the right end and defining a left side transversely between the longitudinal centerline and the left end,

the plurality of wipes comprising a first wipe, a second wipe, and a third wipe,

wherein a right-side connection connects the first wipe to the second wipe in the right side of the stack, wherein the right-side connection has an effective width extending in the transverse direction, the first wipe being connected to the second wipe only on the right side, and

5 wherein a left-side connection connects the second wipe to the third wipe in the left side of the stack, wherein the left-side connection has an effective width extending in the transverse direction, the second wipe being connected to the third wipe only on the left side.

9. The plurality of stacked, interconnected wipes of claims 8, wherein a majority of connections in the stack are integrally formed with a wipe.

10 10. The plurality of stacked, interconnected wipes of claim 8, wherein no connection in the stack is integrally formed with a wipe.

11. The plurality of stacked, interconnected wipes of claim 10, wherein each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding.

12. The plurality of stacked, interconnected wipes of claim 8, wherein the right-side
15 connection effective width and the left-side connection effective width are each at most 10 percent of a stack transverse width.

13. The plurality of stacked, interconnected wipes of claim 8, wherein an entirety of each right-side connection in the stack is closer to the stack right end than to the longitudinal centerline of the stack, and wherein an entirety of each left-side connection in the stack is closer to the stack left end than
20 to the longitudinal centerline of the stack.

14. The plurality of stacked, interconnected wipes of claim 8, wherein the majority of right-side connections and the majority of left side connections each include from 3 to 8 bridging strips.

15. A plurality of stacked, interconnected wipes that collectively define a stack, the stack having a right end, a left end, a transverse direction extending between the right end and the left end, a
25 longitudinal direction perpendicular to the transverse direction, and a longitudinal centerline extending in the longitudinal direction and positioned midway between the right and left ends, the stack defining a right side transversely between the longitudinal centerline and the right end and defining a left side transversely between the longitudinal centerline and the left end,

the plurality of wipes comprising a first wipe, a second wipe, and a third wipe,

wherein a first right-side connection connects the first wipe to the second wipe in the right side of the stack, wherein the first right-side connection has an effective width extending in the transverse direction, the first wipe being connected to the second wipe only on the right side, and

5 wherein a second right-side connection connects the second wipe to the third wipe in the right side of the stack, wherein the second right-side connection has an effective width extending in the transverse direction, the second wipe being connected to the third wipe only on the right side.

16. The plurality of stacked, interconnected wipes of claims 15, wherein a majority of connections in the stack are integrally formed with a wipe.

10 17. The plurality of stacked, interconnected wipes of claim 15, wherein no connection in the stack is integrally formed with a wipe.

18. The plurality of stacked, interconnected wipes of claim 17, wherein each connection is accomplished via ultrasonic bonding, heat bonding or pressure bonding.

15 19. The plurality of stacked, interconnected wipes of claim 15, wherein the first right-side connection effective width and the second right-side connection effective width are each at most 10 percent of a stack transverse width.

20. The plurality of stacked, interconnected wipes of claim 15, wherein an entirety of each connection in the stack is closer to the stack right end than to the longitudinal centerline of the stack.

21. The plurality of stacked, interconnected wipes of claim 15, wherein the majority of connections each include from 3 to 8 bridging strips.

20 22. A dispenser containing the plurality of interconnected wipes of claim 15, the dispenser and plurality of wipes together adapted to provide pop-up dispensing of wipes, the dispenser defining a dispensing orifice, wherein the dispensing orifice is transversely offset from the longitudinal centerline toward the right end by at least 25 percent of a stack transverse width.

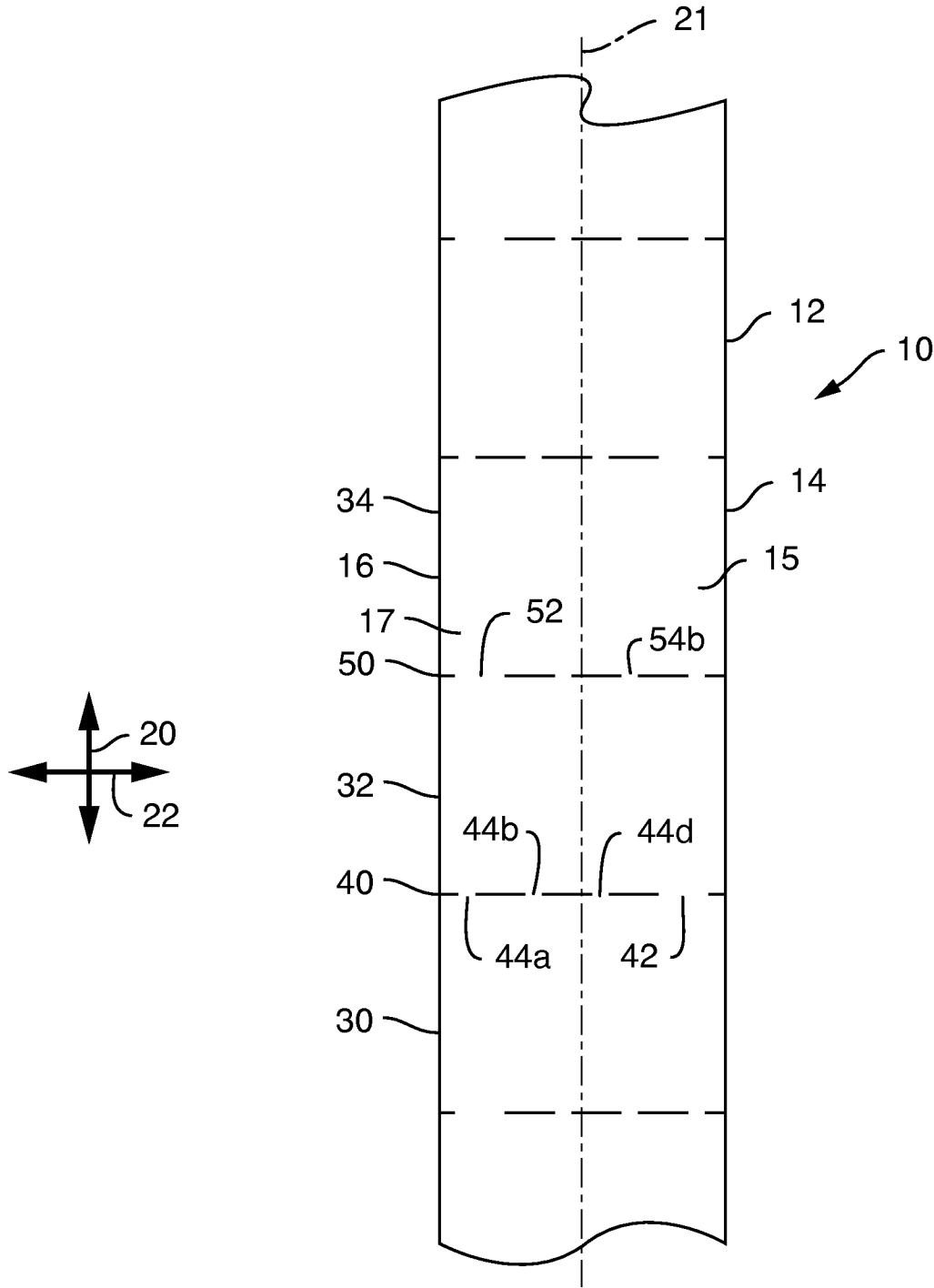


FIG. 1

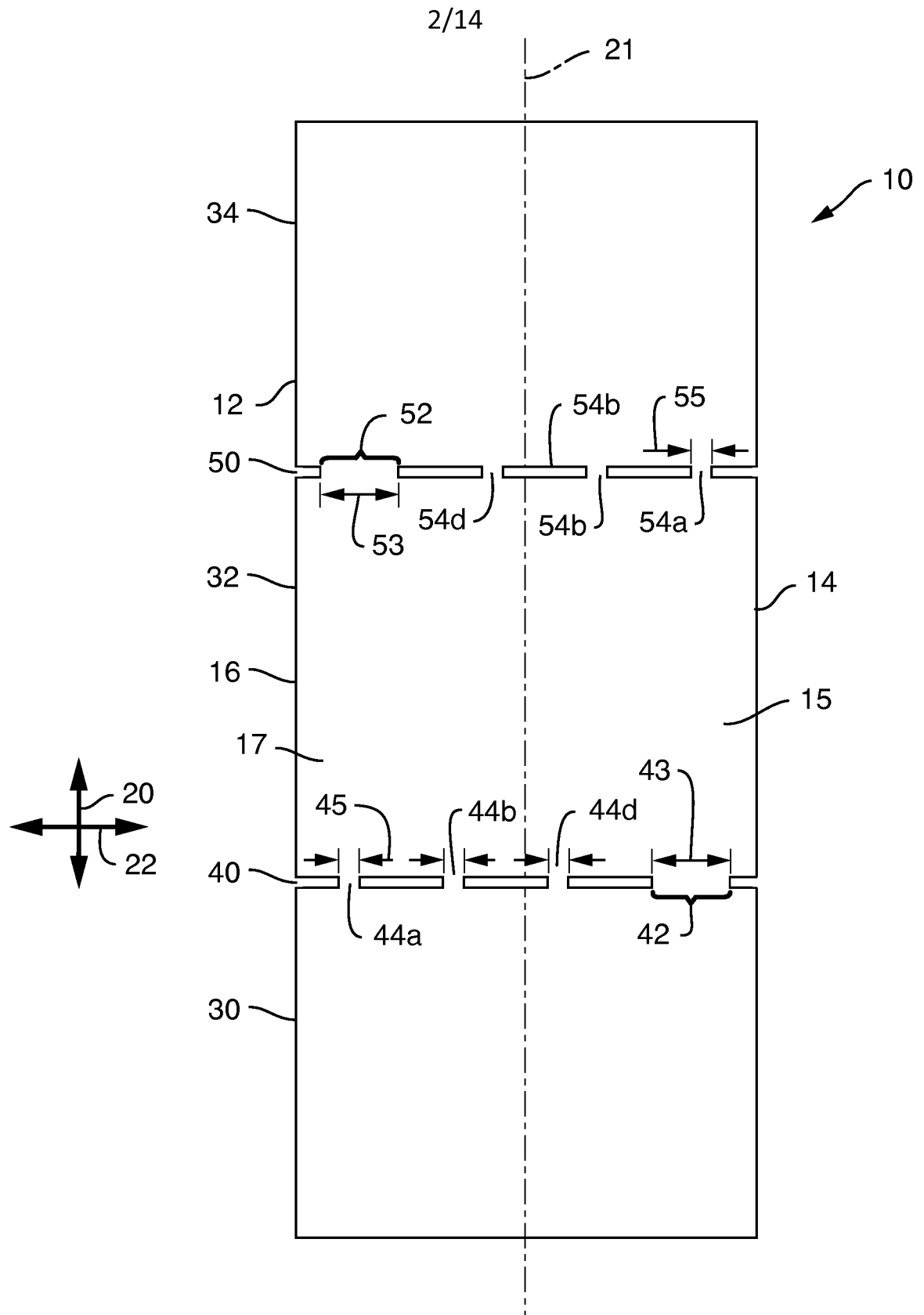


FIG. 2A

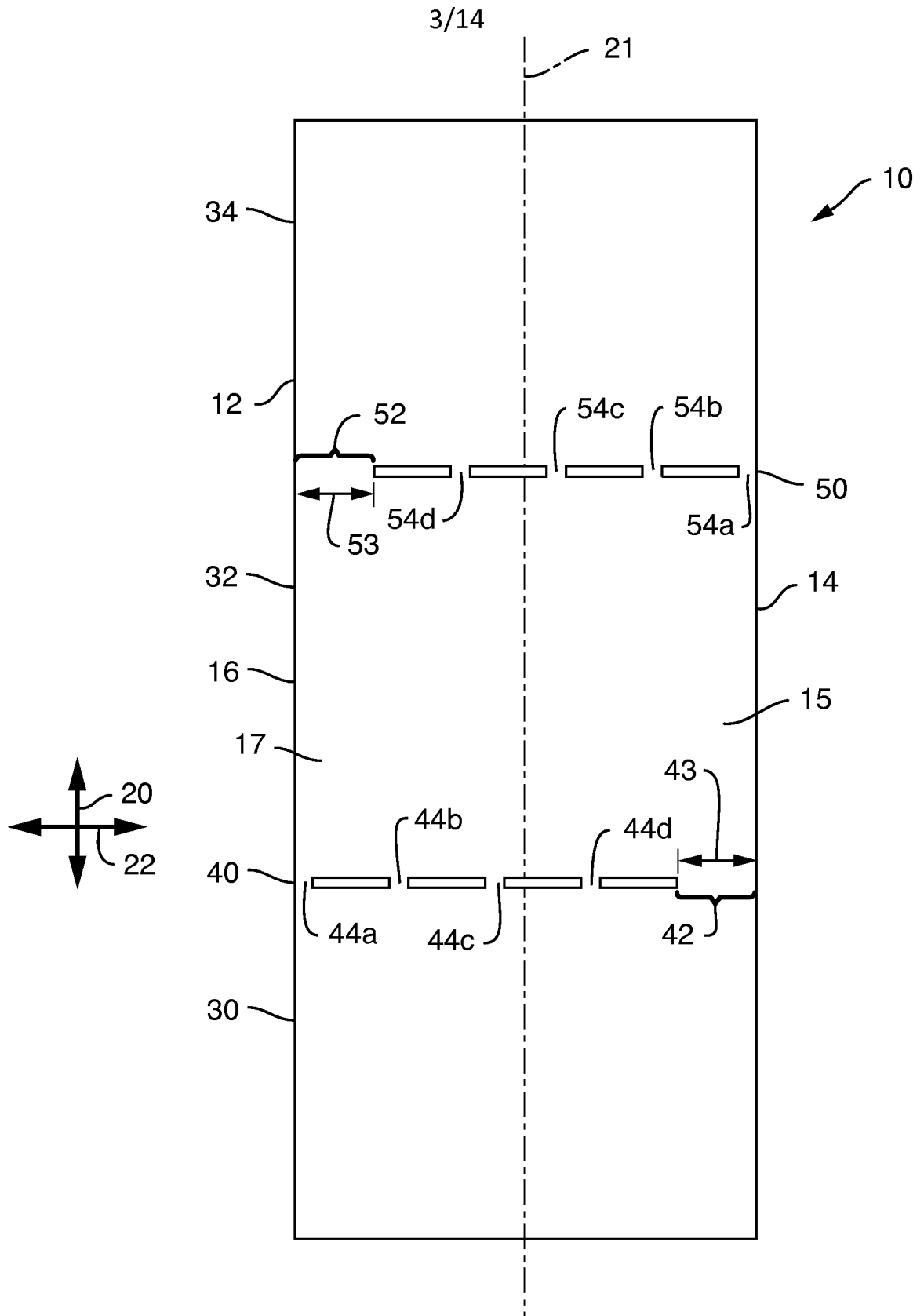
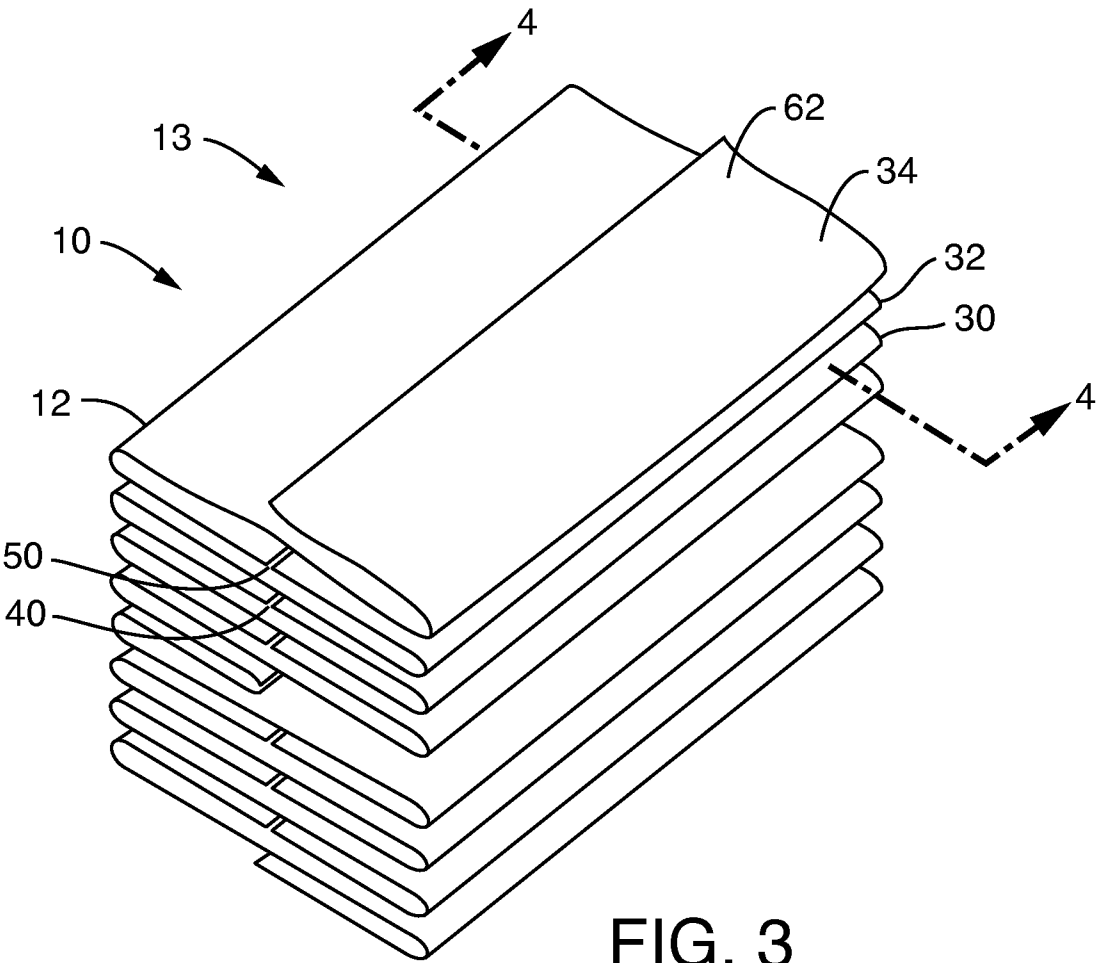


FIG. 2B



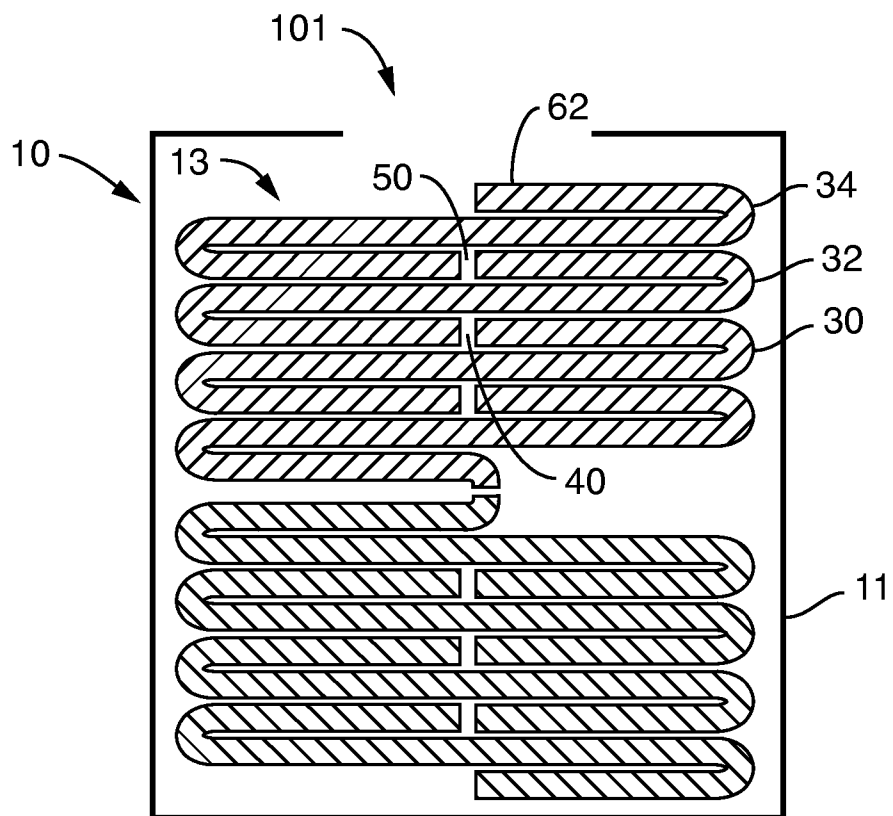


FIG. 4

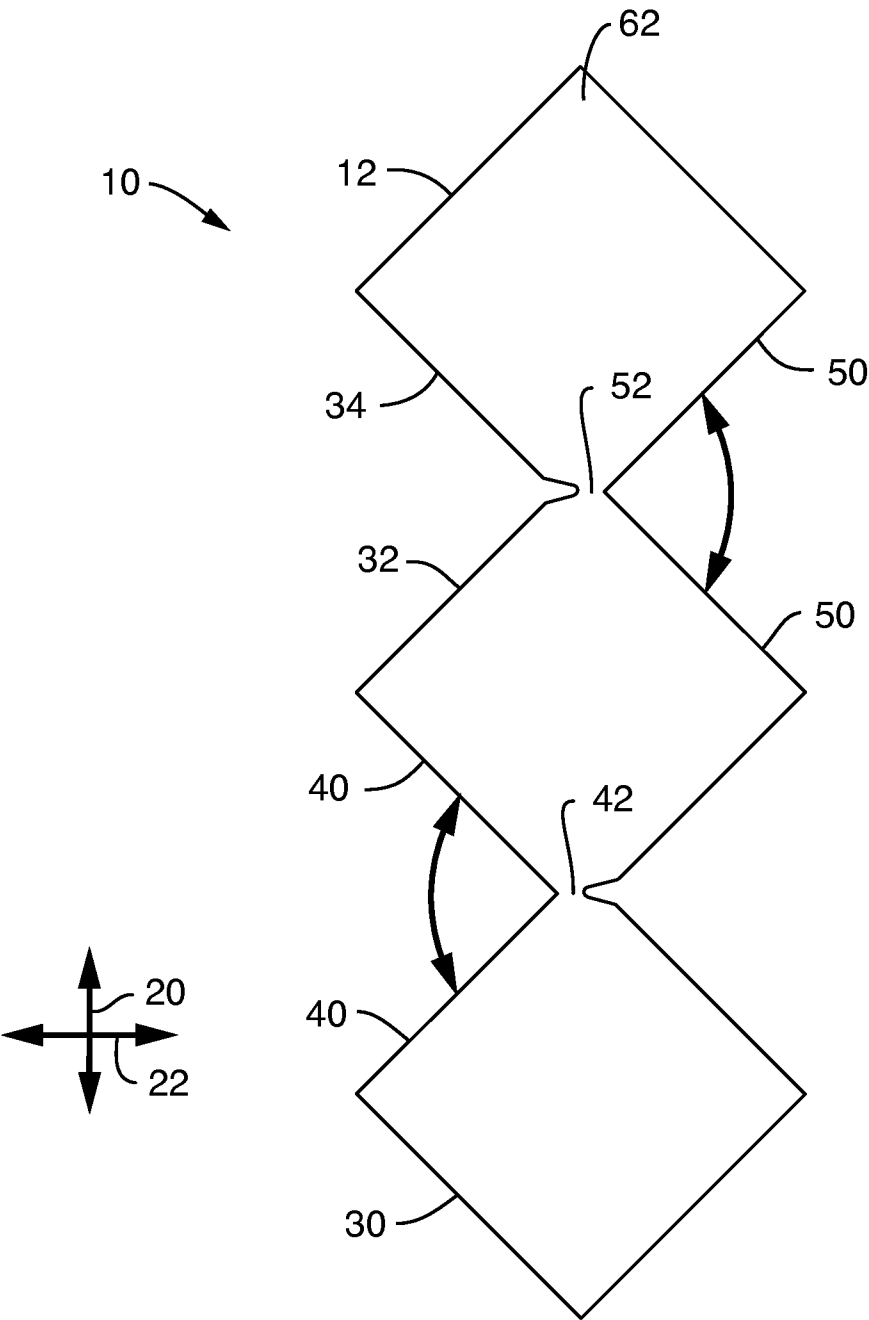


FIG. 5

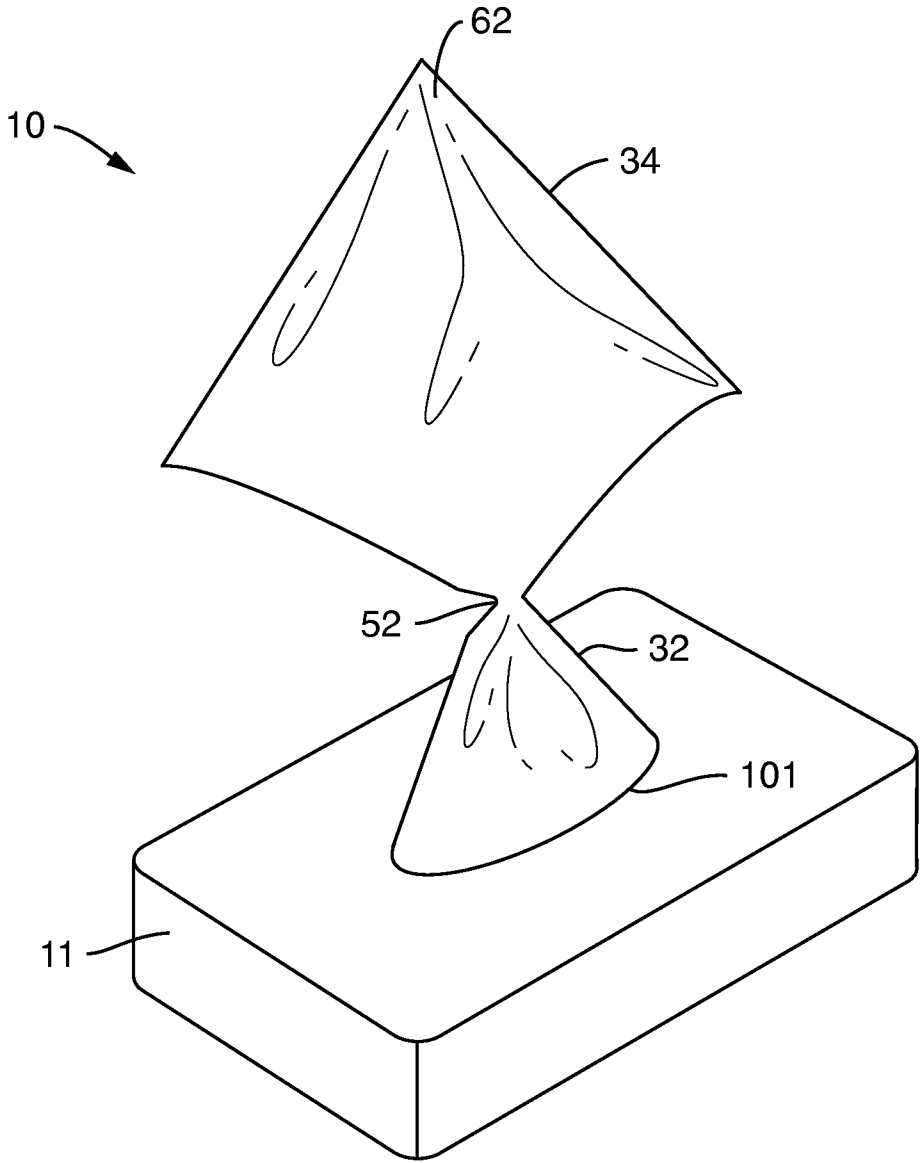


FIG. 6

8/14

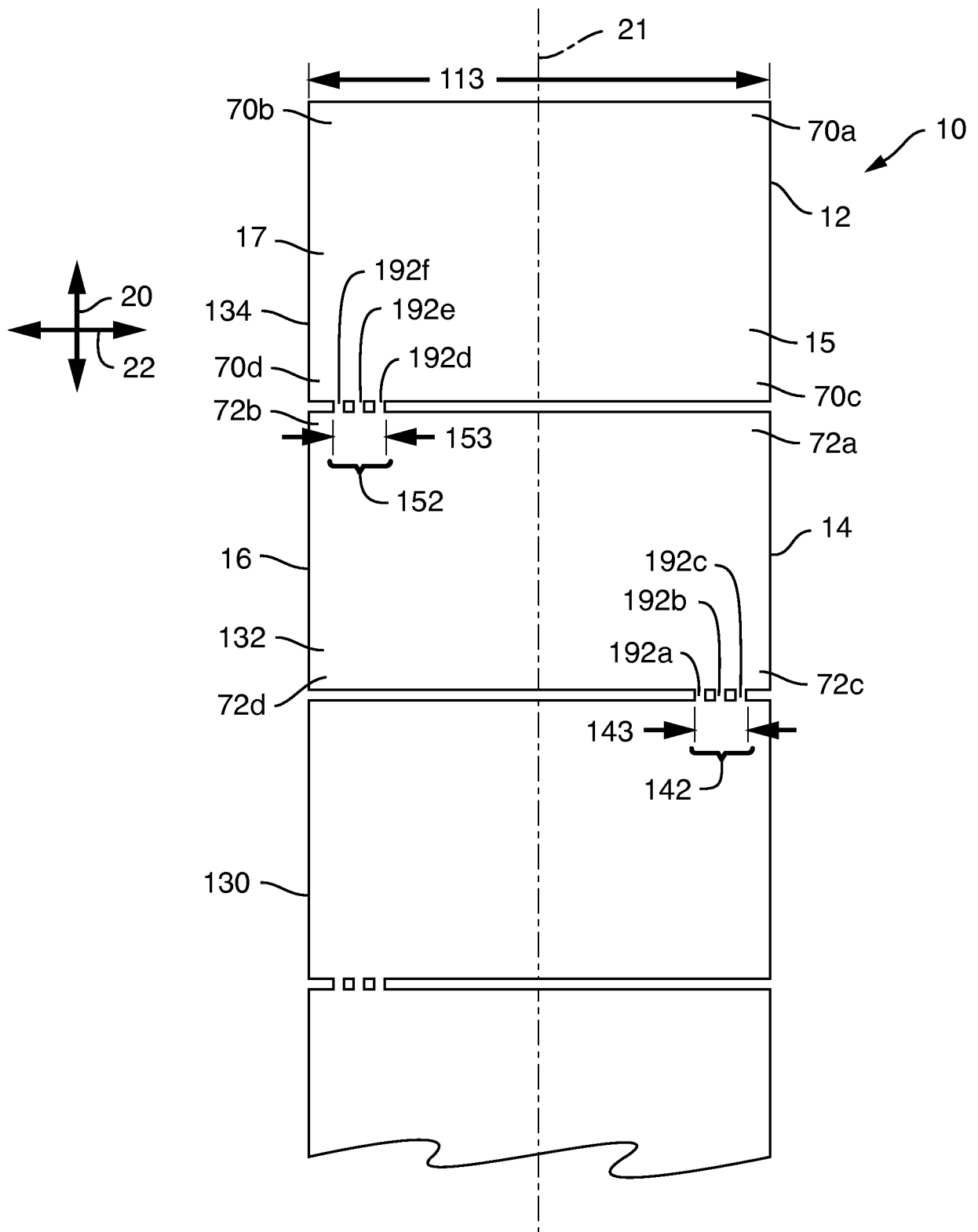


FIG. 7

9/14

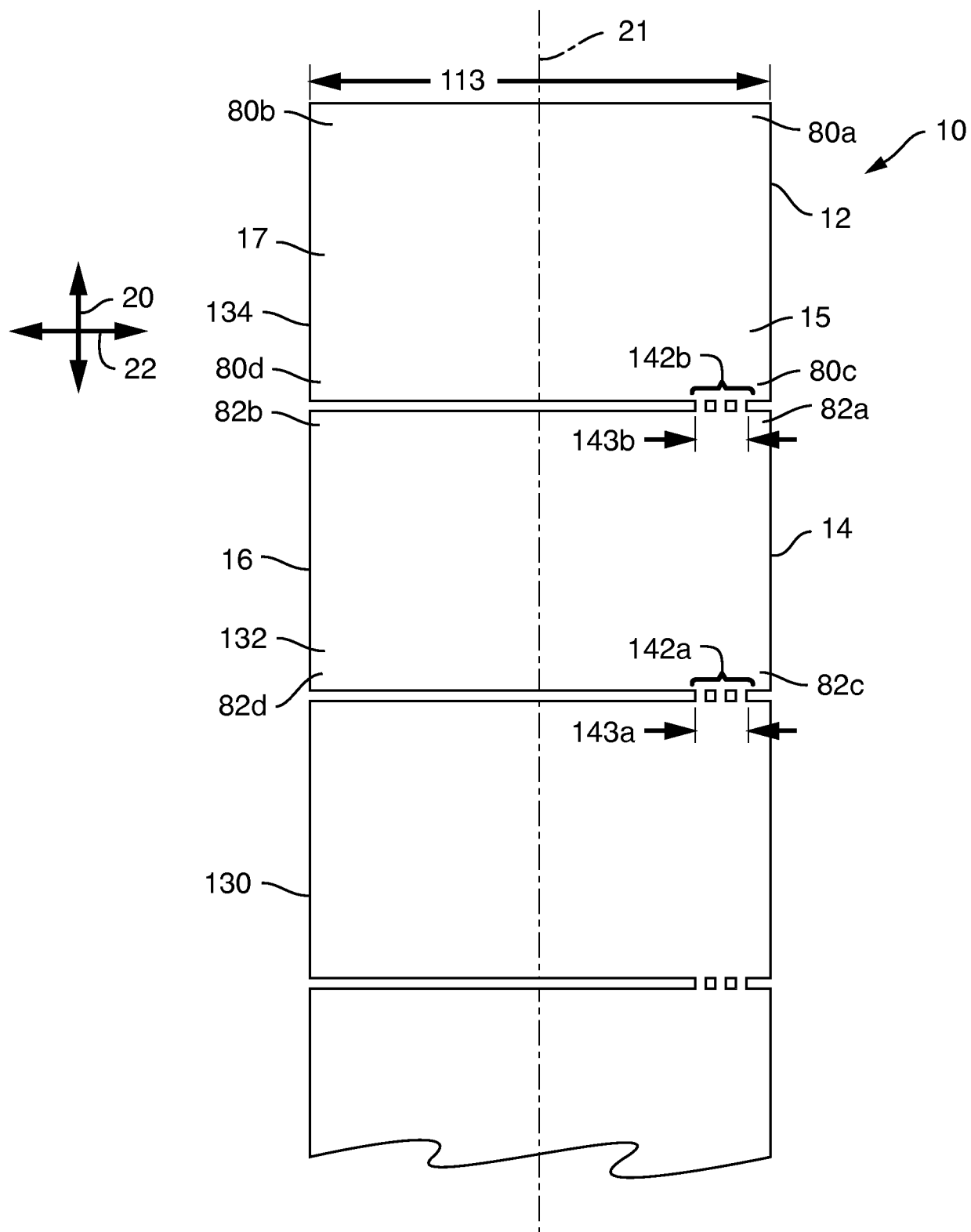


FIG. 8

10/14

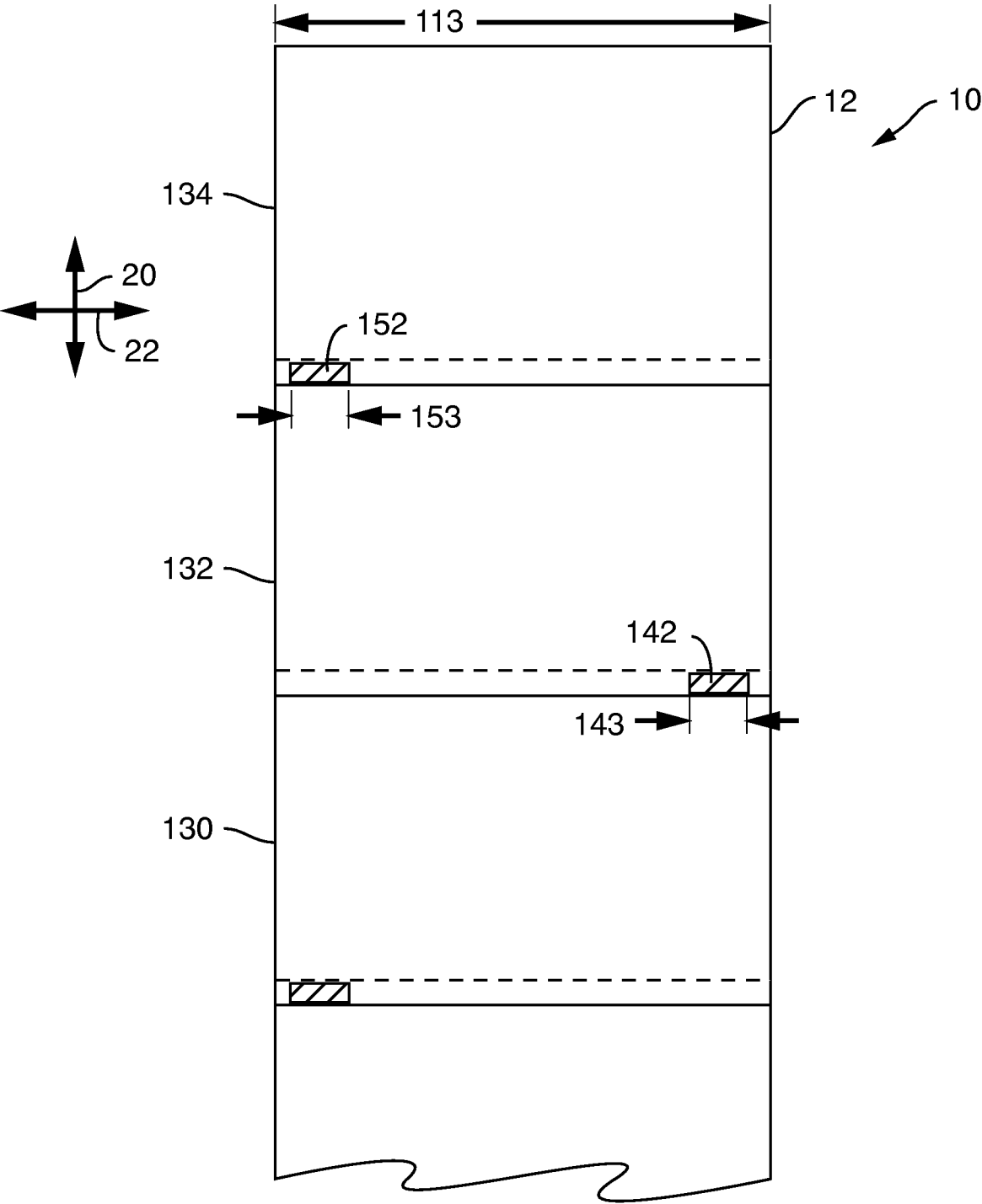


FIG. 9

11/14

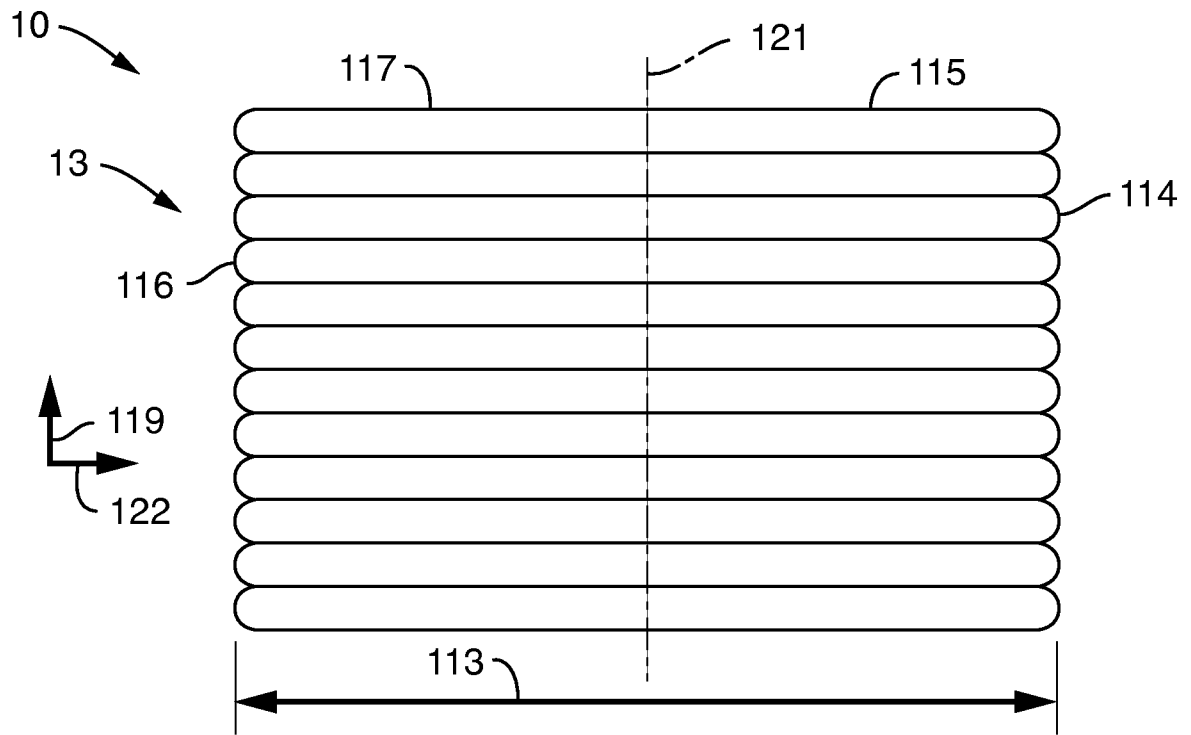


FIG. 10A

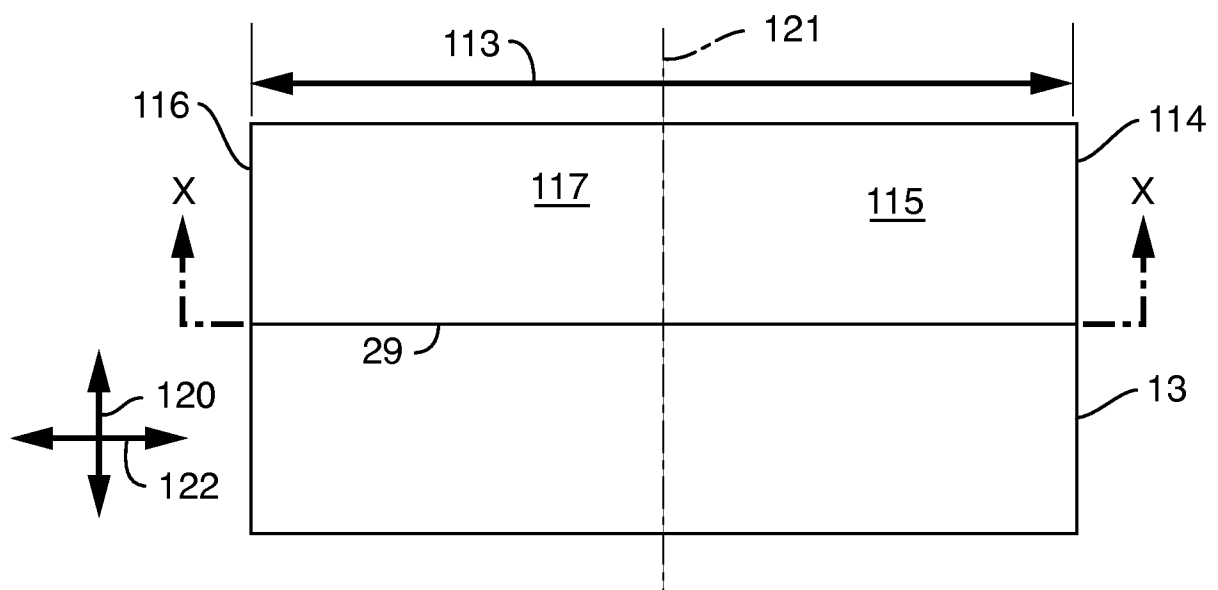
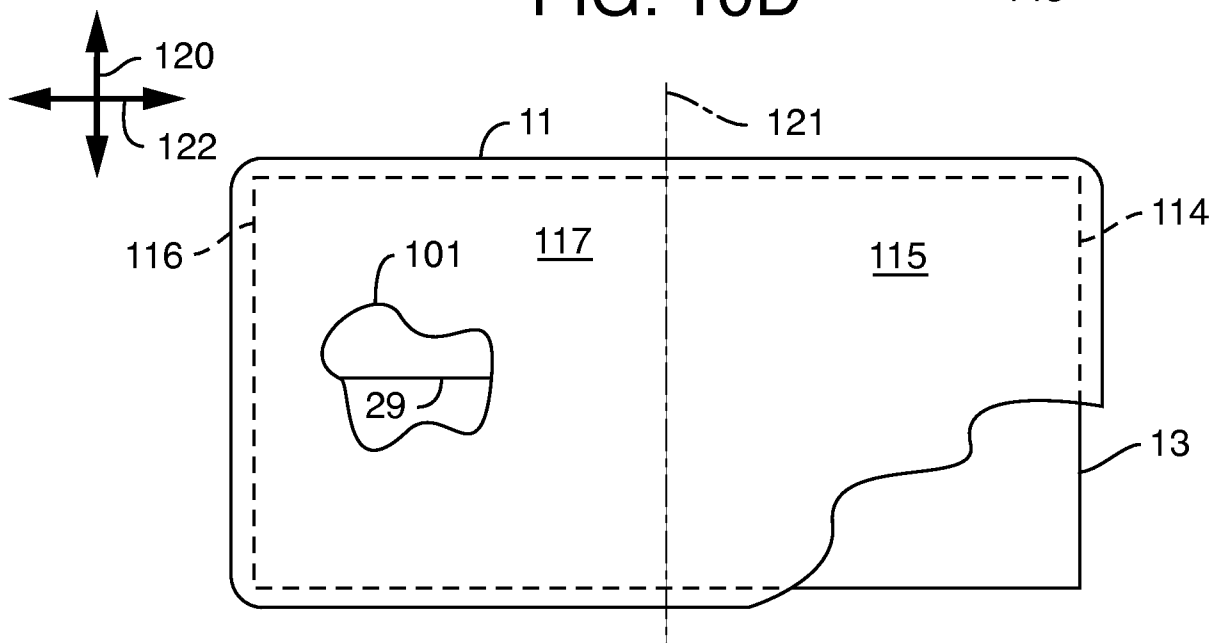
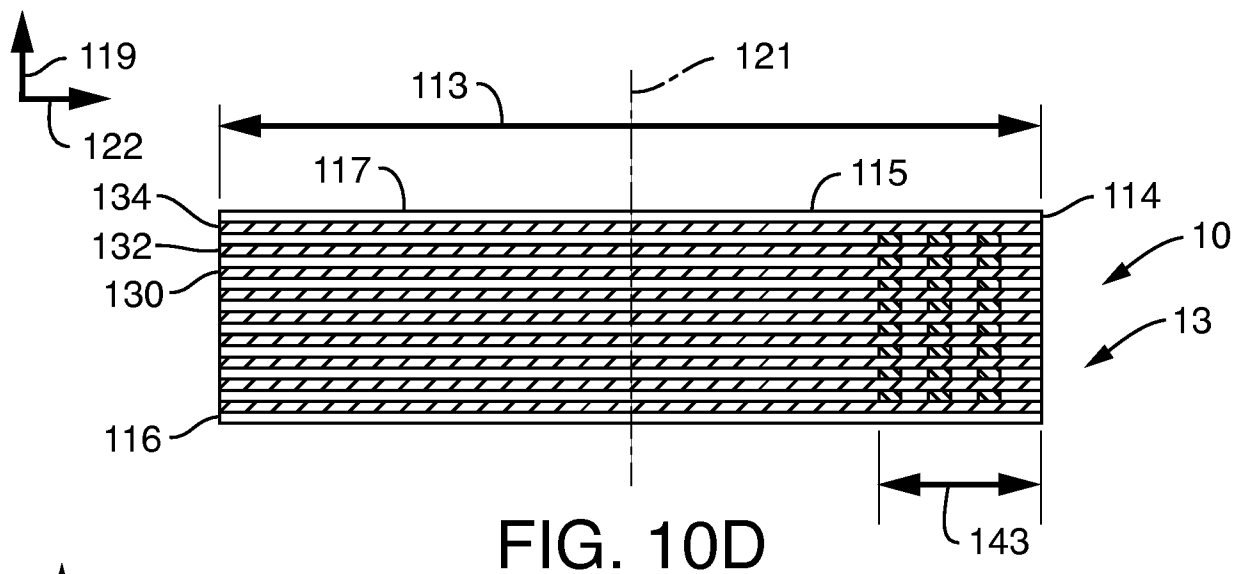
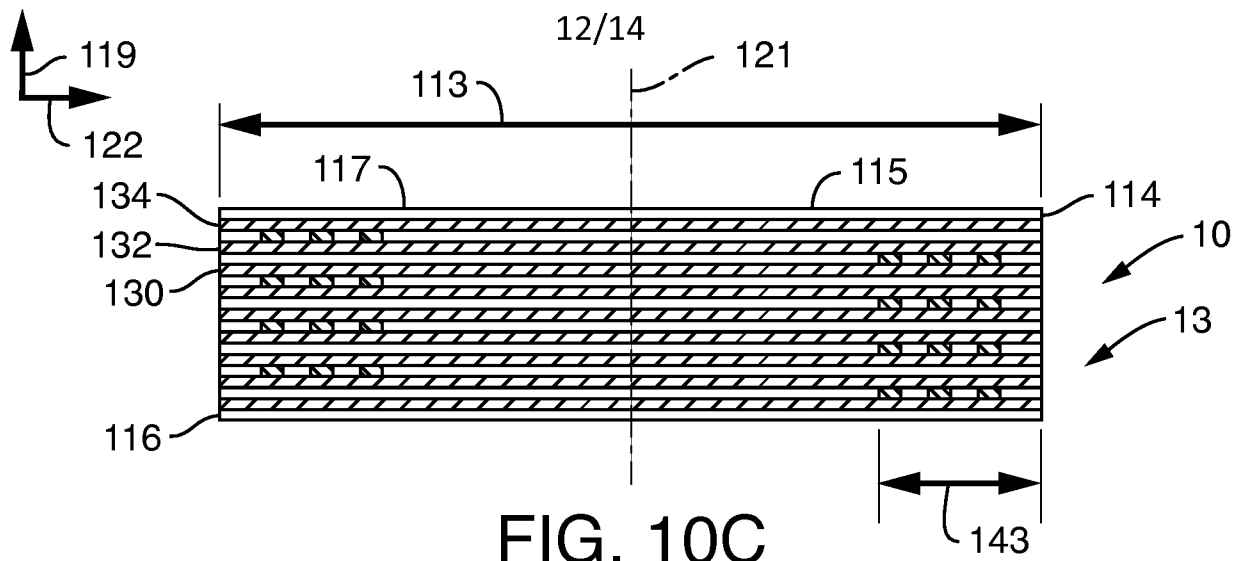


FIG. 10B



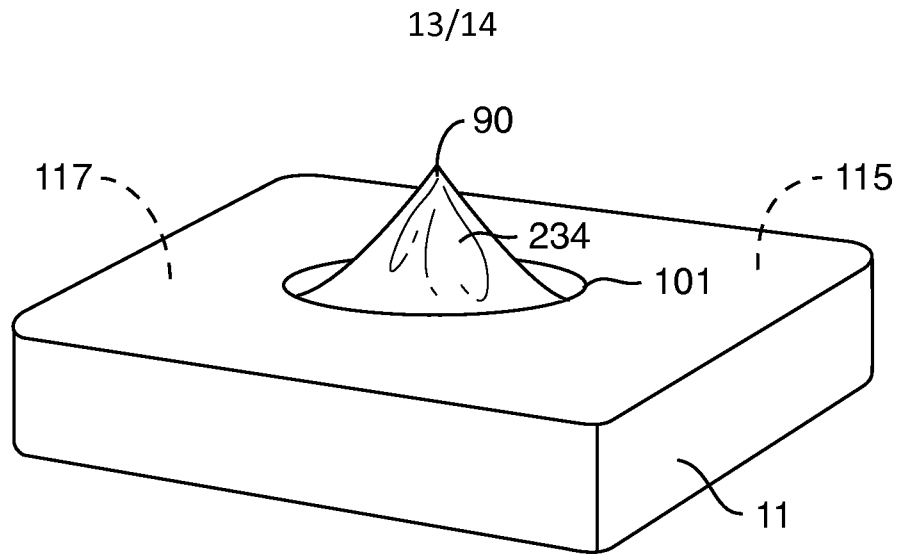


FIG. 12A

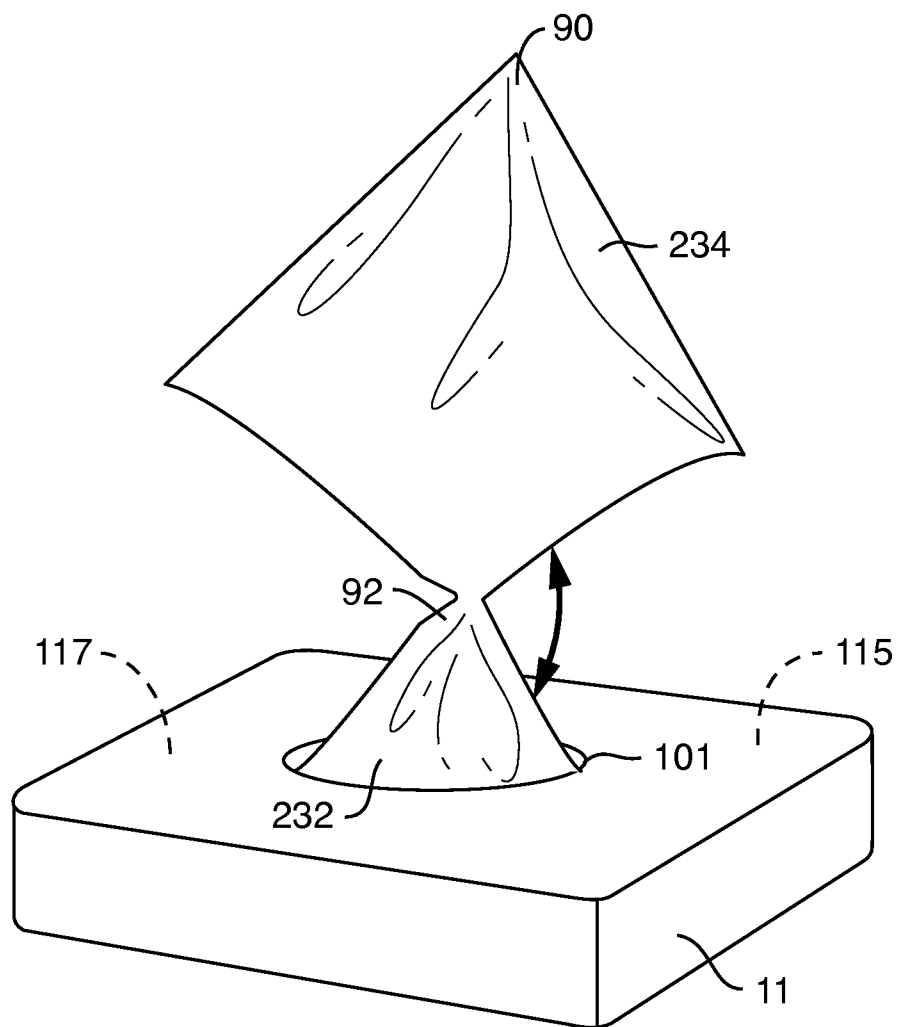


FIG. 12B

14/14

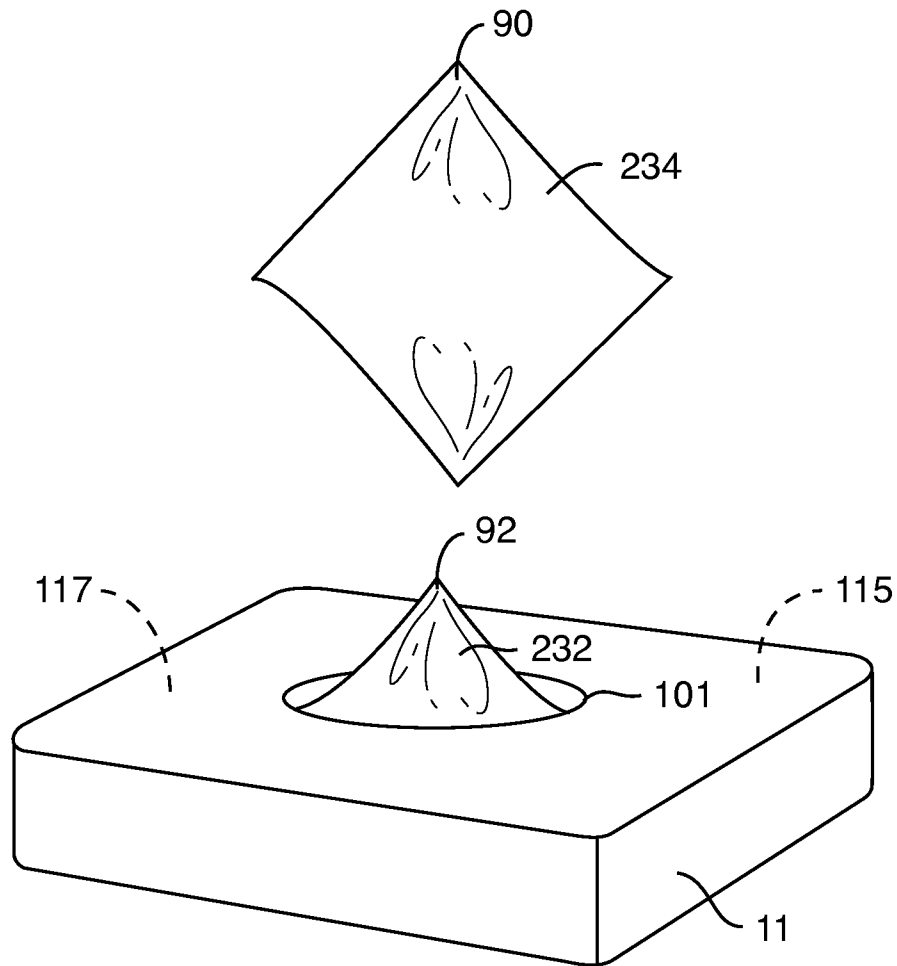


FIG. 12C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/057177**A. CLASSIFICATION OF SUBJECT MATTER****B65D 83/08(2006.01)i, A47K 7/00(2006.01)i, A47K 10/42(2006.01)i**

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)

B65D 83/08; A47K 10/42; B65D 5/00; B26F 3/02; B65H 45/24; A47K 10/16; A47K 7/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: stack, wipe, dispenser, connection, width, pop-up, bond, and interconnect

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5918735 A (BANDO et al.) 06 July 1999 See column 5, lines 58-66; column 6, lines 5, 22-28 and figures 1, 3A.	1-22
Y	US 2002-0074375 A1 (IRWIN, ARAM J.) 20 June 2002 See paragraphs [0091]-[0092] and figures 1A-1C, 5A.	1-22
A	WO 95-05111 A1 (THE PROCTER & GAMBLE COMPANY) 23 February 1995 See page 11, lines 13-37; page 12, lines 1-9 and figures 6-7.	1-22
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A	US 2013-0040089 A1 (GEORGIA-PACIFIC CONSUMER PRODUCTS LP) 14 February 2013 See paragraphs [0058]-[0062] and figure 2.	1-22



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

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"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

18 January 2016 (18.01.2016)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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