

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FIRST QUALITY RETAIL SERVICES, LLC,
FIRST QUALITY CONSUMER PRODUCTS, LLC,
FIRST QUALITY PRODUCTS, LLC,
FIRST QUALITY ENTERPRISES, LLC,
Petitioners,

v.

ESSITY HYGIENE AND HEALTH AB,

Patent Owner.

Case No. IPR2024-01487

U.S. Patent No. 9,308,138

**PETITION FOR *INTER PARTES* REVIEW
OF CLAIMS 1-5, 7-8, 20-22 and 24-25 OF
U.S. PATENT NO. 9,308,138
UNDER 35 U.S.C. §312 AND 37 C.F.R. § 42.104**

TABLE OF CONTENTS

	Page
I. Introduction.....	1
II. Mandatory Notices.....	2
A. Real Parties In Interest	2
B. Related Matter	2
C. Counsel	2
D. Service Information	3
III. Certification of Grounds for Standing.....	3
IV. Overview of Challenge and Relief Requested.....	4
A. Prior Art.....	4
B. Discretionary Denial Is Not Warranted.....	5
1. Glaug-'753	6
2. Nakazawa-'190	6
C. Grounds for Challenge	7
V. Technology Background.....	8
A. Absorbent Articles.....	8
B. Components of Absorbent Articles	10
1. Topsheet	10
2. Backsheet	10
3. Absorbent Layers	11
4. Fluid Acquisition Layers.....	12
VI. The '138 Patent.....	13
A. Brief Description	13
B. Prosecution History	15
VII. Person of Ordinary Skill in the Art.....	17
VIII. Claim Construction.....	18
IX. Overview of the Asserted Prior Art.....	18
A. Bergstrom-'059	18

B.	Nakazawa-'190.....	20
C.	Glaug-'753.....	22
D.	Ponomarenko-'236	24
E.	Cohen-'420	26
X.	Specific Grounds for Unpatentability.....	27
A.	Ground I: Claims 1, 3, 21-22, and 24-25 Are Anticipated By Bergstrom	27
1.	Claim 1	27
a.	1[pre].....	27
b.	1[a]	29
c.	1[b].....	30
d.	1[c]	31
e.	1[d].....	32
f.	1[e]	34
g.	1[f]	36
h.	1[g].....	37
i.	1[h].....	38
j.	1[i].....	41
k.	1[j].....	43
2.	Claim 3	44
3.	Claim 21	44
4.	Claim 22	45
5.	Claim 24.....	46
6.	Claim 25	47
B.	Ground II: Claims 1, 3-5, 21-22 and 24-25 Are Obvious Over Nakazawa-'190 in view of Glaug-'753	48
1.	Claim 1	49
a.	1[pre].....	49
b.	1[a]	51
c.	1[b].....	51
d.	1[c]	52

e.	1[d].....	54
f.	1[e].....	56
g.	1[f]	57
h.	1[g].....	58
i.	1[h].....	59
j.	1[i].....	65
k.	1[j].....	67
2.	Claim 3	68
3.	Claim 4	69
4.	Claim 5	71
5.	Claim 20	72
6.	Claim 21	73
7.	Claim 22	74
8.	Claim 24	75
9.	Claim 25	76
C.	Ground III: Claim 7 Is Obvious Over Nakazawa-'190 in view of Glaug-'753 and Cohen-'429.....	78
D.	Ground IV: Claims 1-5, 7-8, 21-22, and 24 Are Obvious Over Nakazawa-'190 in view of Ponomarenko-'236	79
1.	Claim 1	80
a.	1[h].....	80
2.	Claim 2	84
3.	Claim 3	85
4.	Claim 4	87
5.	Claim 5	89
6.	Claim 7	90
7.	Claim 8	91
E.	Ground V: Claims 1, 3-5, 21-22, and 24-25 Are Anticipated By Nakazawa-'190.....	92
1.	Claim 1[h]	93
2.	Claim 3	94

3.	Claim 4	94
4.	Claim 5	95
XI.	Conclusion	97

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Advanced Bionics, LLC v. MED-EL Elektromedizinische Gerate GmbH</i> , IPR2019-01469, 2020 WL 740292 (Feb. 13, 2020)	6, 7
<i>Amazon.com, Inc., v. M2M Solutions LLC</i> , IPR2019-01205, 2020 WL 44835 (P.T.A.B. Jan. 27, 2020)	6
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 15 (P.T.A.B. May 13, 2020)	5
<i>Champion Labs., Inc. v. Hengst SE</i> , IPR2024-00603, Paper 9 (Sept. 18, 2024)	7
<i>Corephotonics, Ltd. v. Apple Inc.</i> , 84 F.4th 990 (Fed. Cir. 2023)	61, 80
<i>Essity Hygiene and Health AB et. al. v. First Quality Products, Inc. et. al.</i> , 24-cv-00374-UNA (D. Del. Mar. 23, 2024)	<i>passim</i>
<i>Mylan Pharm. Inc., v. Merck Sharp & Dohme Corp.</i> , No. IPR2020-00040, 2020 WL 2478503 (P.T.A.B. May 12, 2020)	7
<i>SAS Institute Inc. v. Iancu</i> , 138 S. Ct. 1348 (2018)	8
Statutes and Regulations	
35 U.S.C. § 102	7
35 U.S.C. § 103	7
35 U.S.C. § 314(a)	8
35 U.S.C. § 325(d)	5, 7
37 C.F.R. § 42.8(b)(2)	2
37 C.F.R. § 42.104(a)	4

37 C.F.R. § 42.8(b)(1).....	2
-----------------------------	---

I. INTRODUCTION

The claims of U.S. Patent No. 9,308,138 (the “’138 patent”), titled “Absorbent Article Having Intake Structure” are directed to an absorbent article comprising well-known components present in many prior art absorbent articles: a fluid permeable topsheet, a fluid impermeable backsheet, a first and second absorbent layer, and a fluid control structure (also known in the art as an acquisition layer or a diffusion sheet). EX1001-USP138, Abstract, claim 1.

Patent Owner (PO) contended during prosecution that the prior art cited by the Examiner failed to disclose a first absorbent layer with the claimed opening. EX1003-USP138PH, 1308-09 [Nov. 20, 2015 Response, 9-10]. However, PO did not provide the Patent Office with a full picture of the prior art that demonstrates these features were well-known and commonly used.

Ground I demonstrates that one of PO’s own prior applications—not disclosed to the Examiner—Bergstrom-’059, teaches each limitation of the only independent claim of the ’138 patent and several dependent claims.

Grounds II-IV demonstrate that, in addition to the claims challenged in Ground I, a Japanese patent application that PO failed to submit in English in its entirety—Nakazawa-’190—renders the claims obvious when viewed in combination with exemplary prior art references disclosing the claimed fluid flow control structure.

Ground V demonstrates how that same Nakazawa-'190 reference anticipates many of the challenged claims under PO's application of the fluid flow control structure claim limitations as demonstrated by the Complaint filed in parallel litigation.

Accordingly, Petitioners request that the Board grant this Petition and institute an *inter partes* review of the '138 patent and cancel these claims which do not meet the standards of patentability.

II. MANDATORY NOTICES

A. Real Parties In Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioners certify that First Quality Retail Services, LLC, First Quality Consumer Products, LLC, First Quality Products, LLC and First Quality Enterprises, LLC, First Quality Group, LLC are the real-parties-in-interest.

B. Related Matter

Pursuant to 37 C.F.R. § 42.8(b)(2), Petitioners submit that Patent Owner has asserted the '138 patent in *Essity Hygiene and Health AB et. al. v. First Quality Products, Inc. et. al.*, 24-cv-00374-UNA (D. Del. Mar. 23, 2024).

C. Counsel

Lead Counsel: Alexis Cohen (Reg. No. 76,998)

Back-Up Counsel: Amy Mahan (Reg. No. 75,997)

Gregory Lantier (*pro hac vice* to be filed)

Liv Herriot (*pro hac vice* to be filed)

Natalie Li (*pro hac vice* to be filed)

D. Service Information

Email: Gregory.Lantier@wilmerhale.com
Alexis.Cohen@wilmerhale.com
Liv.Herriot@wilmerhale.com
Amy.Mahan@wilmerhale.com
Natalie.Li@wilmerhale.com
WHFirstQuality-EssityLitigation@wilmerhale.com

Post & Hand Delivery: Wilmer Cutler Pickering Hale and Dorr LLP
2100 Pennsylvania Avenue NW
Washington, DC 20037
Tel: (202) 663-6000, Facsimile: (202) 663-6363

Petitioners agree to accept service by email.

III. CERTIFICATION OF GROUNDS FOR STANDING

Petitioners certify under 37 C.F.R. § 42.104(a) that the '138 patent is available for IPR and that Petitioners are not barred or estopped from requesting IPR on the grounds identified herein.

IV. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Petitioners request cancellation of claims 1-5, 7-8, 20-22, and 24-25 (“challenged claims”) of the ’138 patent.

A. Prior Art

The ’138 patent was filed on December 26, 2013, and claims priority through PCT Application No. PCT/SE2011/050859 to June 28, 2011.¹ EX1001-USP138, Cover.

1. **WO2009/067059** (“Bergstrom-’059”), EX1004-Bergstrom-’059, published May 28, 2009, and filed November 20, 2007, is prior art under §§ 102(a), (b) and (e).²
2. **JP2008-284190** (“Nakazawa-’190”), EX1008-Nakazawa-’190, published November 27, 2008, is prior art under §§ 102(a), (b) and (e).
3. **USP6,455,753** (“Glaug-’753”), EX1006-Glaug-’753, published September 24, 2002 and filed November 12, 1999, is prior art under §§ 102(a), (b) and (e).

¹ Petitioners assume for purposes of this Petition only that the ’138 patent is entitled to the claimed priority date.

² The ’138 patent was examined under pre-AIA provisions.

4. **USP7,956,236** (“Ponomarenko-’236”), EX1007-Ponomarenko-’236, published June 7, 2011 and filed September 23, 2004, is prior art under §§102(a), (b) and (e).
5. **USPA2005/0267429** (“Cohen-’429”), EX1016-Cohen-’429, published December 1, 2005, and filed May 25, 2004, is prior art under §§102(a), (b) and (e).

B. Discretionary Denial Is Not Warranted

Discretionary denial is inappropriate under 35 U.S.C. §§ 314(a) and 325(d). *First*, no Fintiv factor favors denial. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 (P.T.A.B. May 13, 2020). The Final Written Decision would be expected well before the approximately 3-year median time to trial in District of Delaware. EX1013. And this Petition presents compelling merits underlying six Grounds.

Second, as detailed below, Glaug-’753 was applied to the claims during prosecution of the ’138 patent. However, because this Petition contains arguments not previously considered by the Patent Office, discretionary denial is not warranted. No other references relied on in this Petition are of record—as explained further below, PO only provided a partial translation of the Nakazawa-’190 reference during prosecution.

1. Glaug-'753

Although Glaug-'753 was used as a basis of rejection during prosecution of the '138 patent, the teachings of Glaug-'753 were not challenged by PO and the Examiner did not have the benefit of Nakazawa-'190, and therefore discretionary denial is not warranted because the same arguments were not previously presented to the PTO. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, 2020 WL 740292, at *4 (Feb. 13, 2020). Additionally, the other references applied in Grounds I and IV-V demonstrate ample basis to merit institution.

2. Nakazawa-'190

Nakazawa-'190 was cited in an IDS during prosecution among at least 100 other references and was not discussed during prosecution. EX1003, 1105. Further, a full translation of Nakazawa-'190 was not provided during prosecution. EX1003, 1148-1191. The Board has made clear that “[i]f the record of the Office’s previous consideration of the art is not well-developed or silent, then a petitioner may show the Office erred by overlooking something persuasive.” *Advanced Bionics*, at *4; *see also Amazon.com, Inc., v. M2M Solutions LLC*, IPR2019-01205, 2020 WL 44835, at *7 (P.T.A.B. Jan. 27, 2020). Moreover, the Board has indicated that where “a Japanese-language version of a prior art reference was cited in an IDS without an English translation” the untranslated portions of that prior art reference cannot be

considered disclosure to have previously been before the Patent Office. *See Champion Labs., Inc. v. Hengst SE*, IPR2024-00603, Paper 9 (Sept. 18, 2024).

As presented herein, Nakazawa-'190, including in combination with Glaug-'753 or Ponomarenko-'236, discloses the limitations of each of the challenged claims. *See* Sections X.B-X.D. The Examiner committed a material error by overlooking the teachings of Nakazawa-'190 even if it could be argued that Nakazawa-'190 were considered. 35 U.S.C. § 325(d); *Advanced Bionics*, at *3.

The Board has previously instituted review under these circumstances, and Petitioners respectfully request that it do the same again here. *See, e.g., Mylan Pharm. Inc., v. Merck Sharp & Dohme Corp.*, No. IPR2020-00040, 2020 WL 2478503, at *7 (P.T.A.B. May 12, 2020) (instituting review even though “WO’498 was presented to the Examiner” because the “Examiner never discussed WO’498 or made a rejection based on it” and “gave no reasons for allowance” even though the “disclosure meets the claimed invention” and “[t]he likeliest explanation. . . is that the Examiner simply overlooked [its] teachings”); *see also Advanced Bionics*, 2020 WL740292, at *3, n. 9; *Champion Labs., Inc. v. Hengst SE*, IPR2024-00603, Paper 9 (Sept. 18, 2024).

C. Grounds for Challenge

Petitioners request cancellation of the challenged claims as unpatentable under 35 U.S.C. §§ 102 and 103. The Grounds for Challenge are:

Ground	35 U.S.C. §	Claims	References
I	102	1, 3, 21-22, and 24-25	Bergstrom-'059
II	103	1, 3-5, 20-22, and 24-25	Nakazawa-'190 + Glaug-'753
III	103	7	Nakazawa-'190 + Glaug-'753 + Cohen-'429
IV	103	1-5, 7-8, 21-22, and 24-25	Nakazawa-'190 + Ponomarenko-'236
V	102	1, 3-5, 21-22, and 24-25	Nakazawa-'190

This Petition, supported by the declaration of Dr. Behnam Pourdeyhimi, EX1002-Decl., demonstrates that there is a reasonable likelihood that Petitioners will prevail with respect to at least one challenged claim. 35 U.S.C. § 314(a). Petitioners respectfully request institution. *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018).

V. TECHNOLOGY BACKGROUND

A. Absorbent Articles

Absorbent articles include disposable infant diapers, feminine sanitary napkins, and adult incontinence pads. *See, e.g.*, EX1004-Bergstrom-'059, 1:10-12; EX1005-Kim-'837, 1:12-16; EX1006-Glaug-'753, 1:11-14; EX1008-Nakazawa-'190, [0002]; EX1009-White2003, 243; EX1011-Gupta2002, 372; EX1010-Ajmeri2010, [5.4.1], Table 5.1, p. 90. These articles are constrained both in size and width to fit in the appropriate location without compromising fluid absorption capabilities. EX1010-Amjeri2010, 86; EX1017-Wieseman2011, 316, EX1002-Decl., ¶¶29-30.

These design constraints present a number of challenges: **First**, the absorbent layers in an article must be able to distribute liquid rapidly and efficiently to the outer edges of the article without leakage. EX1005-Kim-'837, 1:37-50; EX1008-Nakazawa-'190, [0005], [0009]; EX1006-Glaug-753, 2:9-20. **Second**, the absorbent article must have sufficient capacity to absorb *all of the fluid* that is expected to be released during the period of wear. EX1011-Amjeri2010, 86; EX1006-Glaug-'753, 2:41-48. This capacity may vary depending on the absorbent article's function (e.g., heavy or light adult incontinence pad vs. sanitary napkin). EX1009-White2003, 245; *see also* EX1006-Glaug-'753, 1:50-52; EX1017-Wieseman2011, 319. **Third**, the absorbent article must be able to absorb fluid at the *speed it is delivered*. Thus, it is desirable for the absorbent article to receive and contain the emitted fluid with corresponding speed. EX1011-Amjeri2010, 86; EX1008-Nakazawa-'190, [0004]. **Finally**, the absorbent article must be able to rapidly absorb fluid, while maintaining the dryness of the outer surfaces of the article, which face the user's skin and undergarments. EX1009-White2003, 246; EX1010-Amjeri2010, 86-87; EX1011-Gupta2002, 374. EX1002-Decl., ¶¶31-35.

The structure and design of absorbent articles has evolved over the last several decades, but generally, absorbent articles as they existed before the alleged priority date of the '138 patent included four primary elements: (1) one or more absorbent cores, (2) a fluid acquisition / distribution layer, (3) a fluid permeable topsheet and

(4) a fluid impermeable backsheet. EX1011-Gupta2002-373; *see also* EX1009-White2003, 246; EX1010-Amjeri2010, 91-93; EX1018-White2000, Figure 2, EX1017-Wieseman2011. EX1002-Decl., ¶36.

B. Components of Absorbent Articles

1. Topsheet

The topsheet is the uppermost layer that comes into direct contact with the user's skin. EX1011-Gupta2002, 373-374; EX1012-Kosemund2009, 82. It is typically made from a nonwoven fabric designed to be soft, hypoallergenic, and free from irritants to ensure comfort and prevent skin irritation. EX1011-Gupta2002, 374; EX1012-Kosemund2009, 82. The topsheet is engineered to be permeable, allowing fluids to quickly pass through to the absorbent core while keeping the surface dry. EX1011-Gupta2002, 373-374, EX1018-White2000, 44.13-44.15. EX1002-Decl., ¶¶37-39.

2. Backsheet

The backsheet is the outermost layer that serves as a protective barrier against leaks. EX1010-Amjeri2010, 92-93; EX1011-Gupta2002, 374; EX1012-Kosemund2009, 82. It is typically made from a thin, flexible, and waterproof material, such as polyethylene or a breathable film, designed to prevent fluid from escaping the pad. EX1011-Gupta2002, 374; EX1012-Kosemund2009, 82, EX1018-White2000, Figures 1 and 2. EX1002-Decl., ¶¶40-44.

3. Absorbent Layers

The absorbent layers, sometimes referred to as absorbent cores, are the core components responsible for capturing, retaining, and locking away fluids. EX1011-Amjeri2010, 92; EX1012-Kosemund2009, 82. These layers typically consist of a blend of materials, including fluff pulp and superabsorbent polymers (“SAPs”). EX1010-Amjeri2010, 92; EX1004-Bergstrom-’059, 4:27-33; EX1008-Nakazawa-’190, [0043], EX1015-US7923597, 5:36-63, EX1018-White2000, 44.14-44.16. Before the ’138 patent, it was known that absorbent articles could have multiple absorbent layers. EX1002-Decl., ¶¶45-49.

Before the ’138 patent, it was known that absorbent layers could have openings or channels to enhance the absorbent article’s overall fluid management capabilities. *E.g.*, EX1005-Kim-’837, Figures 1 and 2 (Prior Art Figures); 1:42-48; EX1004-Bergstrom-’059, 6:33-7:7; EX1008-Nakazawa-’190, [0007]; EX1018-White2000 at 44.6. These openings direct and distribute fluid more efficiently across the absorbent layer, helping to quickly spread liquid away from the point of contact, reducing the likelihood of saturation in one area and preventing leaks. *E.g.*, EX1005-Kim-’837, Figures 1 and 2 (Prior Art Figures); 1:42-48, EX1018-White2000 at 44.6. EX1002-Decl., ¶¶47-48.

Before the ’138 patent, it was also known that absorbent layers may also include a core wrap that either fully or partially encloses the absorbent layer.

EX1017-Wieseman2011, Figure 14.1. The core wrap is also sometimes referred to as a “tissue wrap”. EX1018-White2000, Figure 3. The core wrap or tissue wrap prevent “migration” of the absorbent materials that make up the absorbent layer (e.g., the super absorbent polymer (SAP) and wood pulp fluff. EX1018-White2000, 44.15-44.16). EX1002-Dec1., ¶49

4. Fluid Acquisition Layers

The fluid acquisition layer (also referred to as “the acquisition/distribution layer (ADL),” diffusion sheet, or transfer layer) is a component that is “between the topsheet” and backsheet and functions primarily to quickly acquire and evenly distribute fluids across the absorbent core, preventing leaks and ensuring the absorbent article’s effectiveness. EX1010-Amjeri2010, 92, EX1011-Gupta2002, 374. By rapidly channeling fluid away from the topsheet, the ADL minimizes the time the liquid is in contact with the skin, helping to maintain dryness and comfort. EX1012-Kosemund2009, 82. Additionally, by evenly spreading the fluid throughout “[t]he absorbent core,” the ADL maximizes the core’s capacity, preventing saturation in one area and reducing risk of leaks. EX1011-Gupta2002, 373-374; EX1012-Kosemund2009, 82. EX1002-Dec1., ¶¶50-51.

Fluid acquisition systems were known to sometimes have more than one layer. For example, White2000 describes a two layer “Acquisition/Transport” structure. EX1018-White2000, Figure 2. White Describes the acquisition layer of this

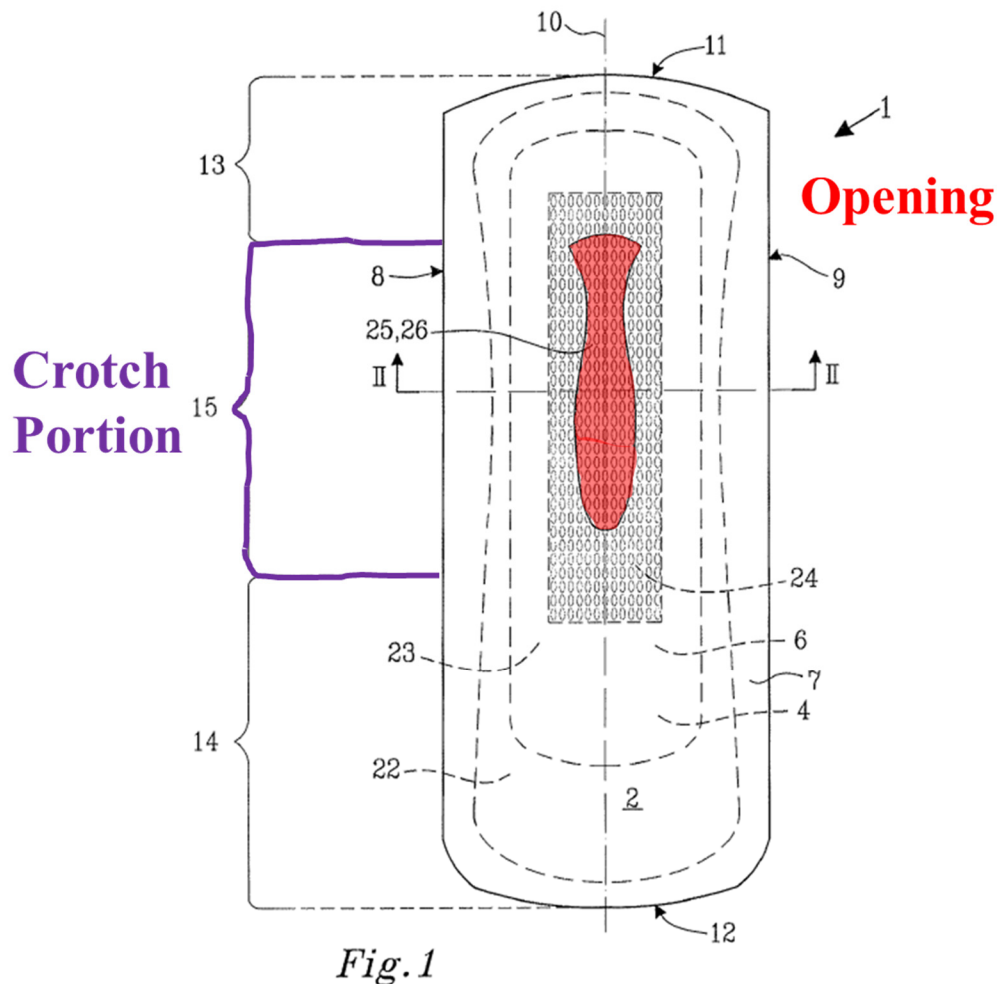
structure to be predominantly hydrophilic.” As White explains “[t]he fluid that is instantaneously transferred through the top sheet must be absorbed quickly by capillary forces in the acquisition layer. . . . For a wicking or transport layer, the important characteristics are wettability, pore size and pore distribution.” EX1018-White2000, 44.14-44.15. EX1002-Decl., ¶52.

VI. THE ’138 PATENT

A. Brief Description

The ’138 patent relates generally to “[a]n absorbent article including a fluid permeable topsheet, a fluid impermeable backsheet and an absorbent core enclosed between the topsheet and the backsheet.” EX1001-USP138, Abstract. EX1002-Decl., ¶53.

Figures 1 and 2 show an “incontinence protector” (e.g., an absorbent article) “seen from the side which will be facing the undergarment when the incontinence protector is worn.” EX1001-USP138, 10:12-15, 33-36. EX1002-Decl., ¶54.

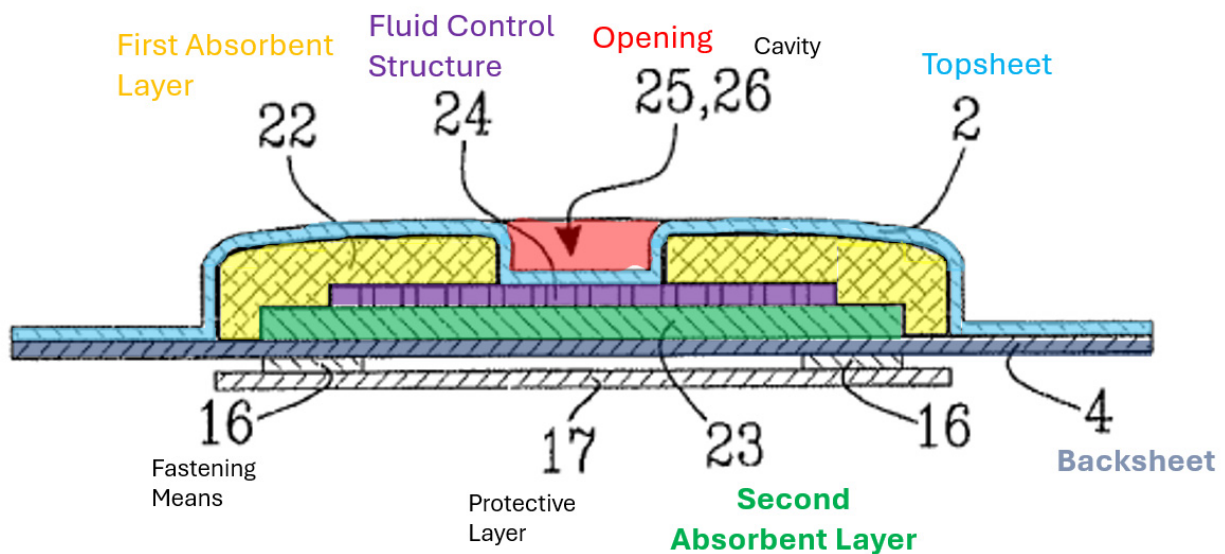


EX1001-USP138, Figure 1 (annotated). EX1002-Decl., ¶54.

“The incontinence protector 1 includes a fluid permeable topsheet 2, a backsheet 4, and an absorbent core 6, enclosed between the topsheet 2 and the backsheet 4.” EX1001-USP138, 10:37-39. “The absorbent core 6 . . . includes a first absorbent layer 22 and a second absorbent layer 23,” with a multi-layered “fluid flow control structure 24” between. *Id.*, 11:34-36. “The first absorbent layer 22 has an opening 25 extending completely through layer 22 in the crotch portion 15 of the

incontinence protector 1.” *Id.*, 11:54-56. “The opening 25 has [an] elongate shape” and is located along a center longitudinal line of the article. *Id.*, Figure 1. EX1002-Decl., ¶ 55. “The fluid flow control structure” is made of at least two layers: “a perforated polymeric layer” and “a non-perforated fibrous layer.” EX1001-USP138, claim 1, 12:27-31. EX1002-Decl., ¶55.

Figure 2 depicts “a cross-section through the incontinence protector” (e.g., absorbent article). EX1001-USP138, 10:16-17; EX1002-Decl., ¶56.



Ex1001-USP138, Figure 2 (annotated)

B. Prosecution History

During prosecution, the pending claims were rejected six times in view of four prior art references. Of note, the Examiner found Glaug-'753 “teaches a layered fluid control structure that comprises a non-perforated fibrous polymeric layer and

a first perforated polymeric layer” that “serves to facilitate the transference of fluid into the core at a rate in which the materials can accommodate thereby preventing undesirable leakage as taught by Glaug.” EX1003-USP138FH, 1067-68 [Final Rejection dated Sept. 11, 2015, page 4-5]. To overcome the various rejections, PO amended the claims as follows during prosecution:

Claim 1 (Currently Amended): An absorbent article having a longitudinal direction and a transverse direction, side edges extending in the longitudinal direction and end edges extending in the transverse direction and comprising:

a fluid permeable topsheet,

a fluid impermeable backsheet, and

an absorbent core enclosed between said topsheet and said backsheet, said absorbent core comprising,

a first absorbent layer having an opening extending therethrough that passes through the first absorbent layer from one major surface to an opposing major surface and therebetween the opening is surrounded by a closed periphery of the first absorbent layer,

a fluid flow control structure, and

a second absorbent layer arranged between the fluid flow control structure and the fluid impermeable backsheet,

wherein the fluid flow control structure is arranged between said first absorbent layer and said backsheet, said fluid flow control structure being a layered structure comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer, and

Wherein the opening extends along a longitudinal center line of the absorbent article, the longitudinal center line being in parallel with the longitudinal direction of the absorbent article, and the fluid permeable top sheet is in direct contact with the fluid flow control structure via the opening

~~the polymers in the first perforated polymeric layer are selected from polyolefins, polyesters, polyamides and blends and combinations thereof, and the first perforated polymeric layer has a basis weight from 50 g/m² to 150 g/m².~~

EX1003-USP138FH, 733 [Office Action Response at 2, dated Jun. 24, 2014],
[781] [Office Action Response dated Oct. 6, 2014, page 2], 849 [Office Action
Response at 2, dated Feb. 6, 2015], 1037 [Office Action Response at 2, dated Apr.
29, 2015], 1301-02 [Office Action Response at 2-3, dated Nov. 20, 2015].

EX1002-Decl., ¶¶57-61.

On December 22, 2015, the Examiner issued a Notice of Allowance.
EX1003-USP138FH, [1389-90] [Notice of Allowance, dated Dec. 11, 2015].
EX1002-Decl., ¶¶57-61.

VII. PERSON OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) at the relevant times, would have had (1) a degree or certificate in chemical engineering, chemistry, paper engineering, materials science, biology or a related field; and (2) two to four years of work experience in product design and testing of disposable absorbent articles, such as diapers, sanitary napkins and incontinence pads. Less work experience may

be compensated by a higher level of education, and vice versa. EX1002-Decl., ¶¶26-28.

VIII. CLAIM CONSTRUCTION

For the purpose of this IPR, the Board need not construe any terms because the challenged claims are invalid under any reasonable interpretation. EX1002-Decl., ¶¶78-81.³

IX. OVERVIEW OF THE ASSERTED PRIOR ART

A. Bergstrom-'059

Bergstrom-'059 discloses an absorbent article comprising a topsheet, a backsheet, and an absorbent core comprising an upper absorbent core and a lower absorbent core. EX1004-Bergstrom-'059, Abstract, 2:9-11. In certain embodiments, an acquisition layer and a forming element are located between the upper and lower cores. *Id.*, Abstract, 2:15-17. The upper absorbent core has an opening at its center. *Id.*, Abstract, 2:17-19, 31-32. EX1002-Decl., ¶62.

Figure 4 depicts an exploded three-dimensional view of an absorbent article as described by Bergstrom-'059. EX1002-Decl., ¶63.

³ Petitioners reserve the right to propose constructions for claim terms in the parallel litigation and respond to any claim construction arguments advanced by PO or any real party in interest in this proceeding and the parallel litigation.

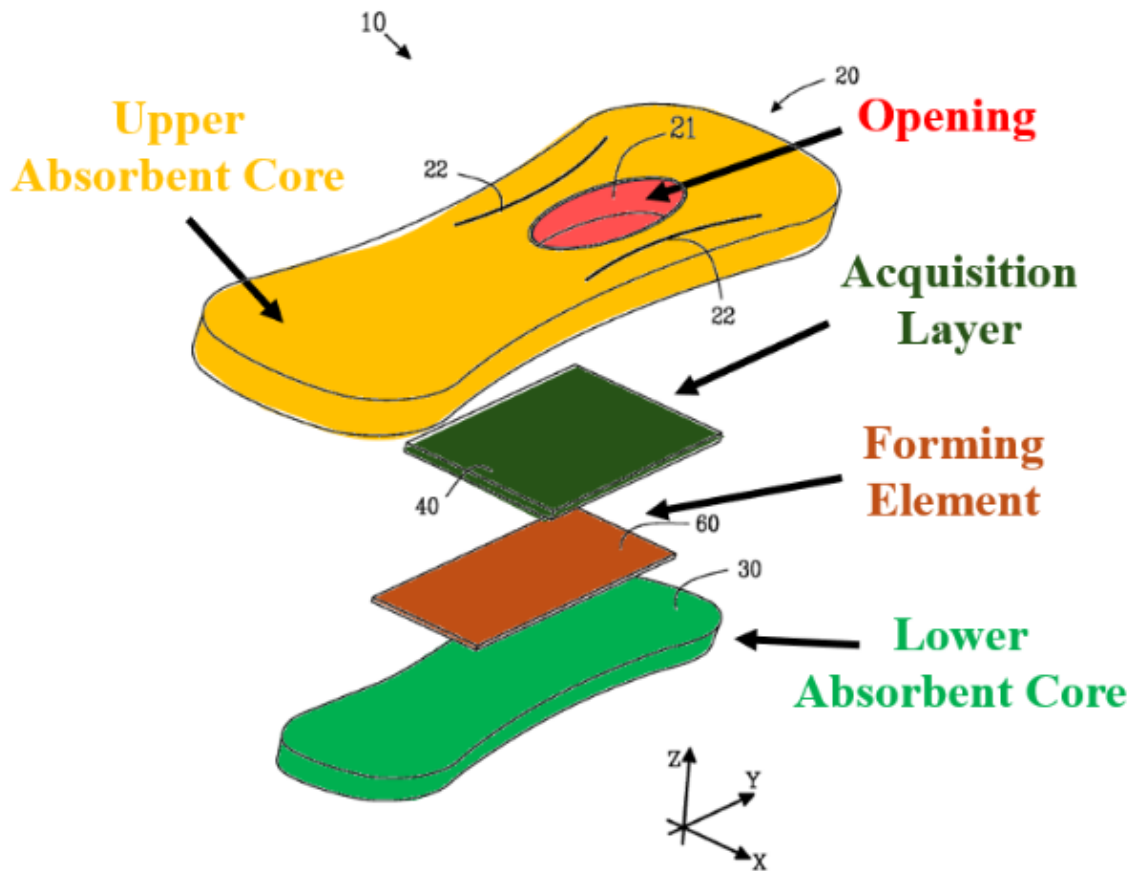


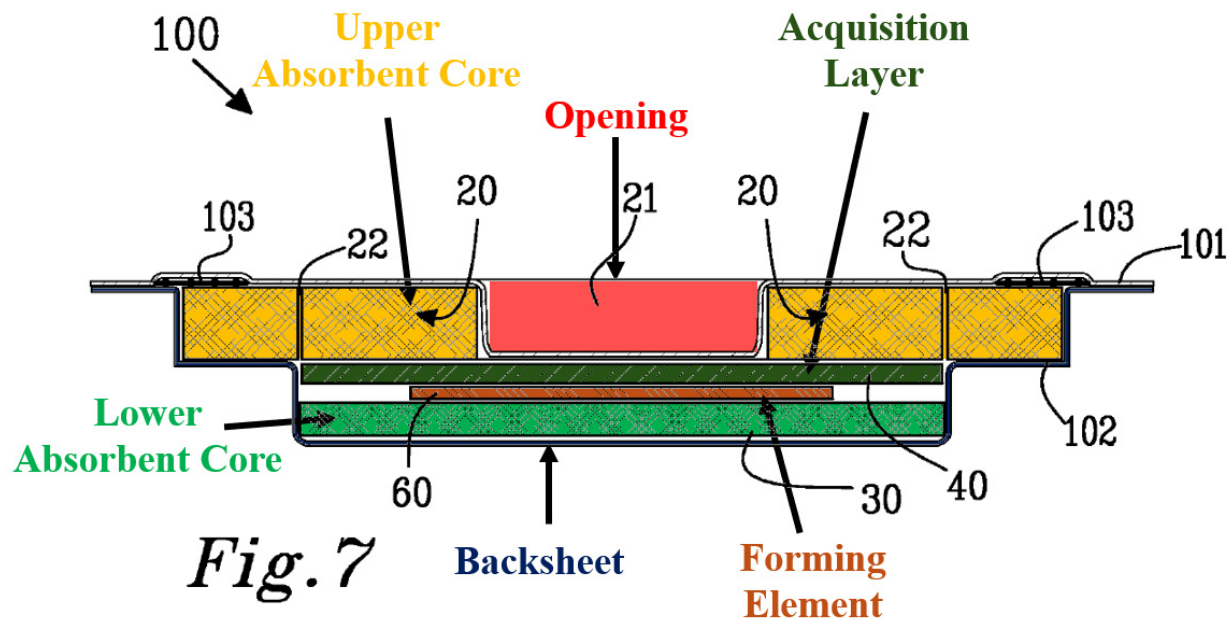
Fig. 4

EX1004-Bergstrom-'059, Figure 4.

Bergstrom-'059 discloses that “[t]he acquisition layer 40 acts to receive liquid rapidly, to temporarily hold it and to distribute it evenly to the upper and lower absorbent cores 20, 30.” EX1004-Bergstrom-'059, 6:17-19. Bergstrom-'059 discloses that the acquisition layer suitably comprises fibrous materials, such as synthetic fib[er]s.” *Id.*, 6:20-21. EX1002-Decl., ¶64. Bergstrom-'059 also discloses that forming element 60 is preferably located between the acquisition layer 40 and the lower absorbent core 30. Bergstrom-'059 discloses that “suitable materials for the forming element 60 are plastic films, perforated plastic films and reinforced

tissue or reinforced nonwoven materials,” and that forming element 60 promotes “[l]iquid flow towards the ends of the core.” EX1004-Bergstrom-’059, 9:27-30, 10:1-4. EX1002-Decl., ¶64.

Figure 7 depicts a cross-sectional view of Bergstrom-’059’s absorbent article. EX1002-Decl., ¶65.



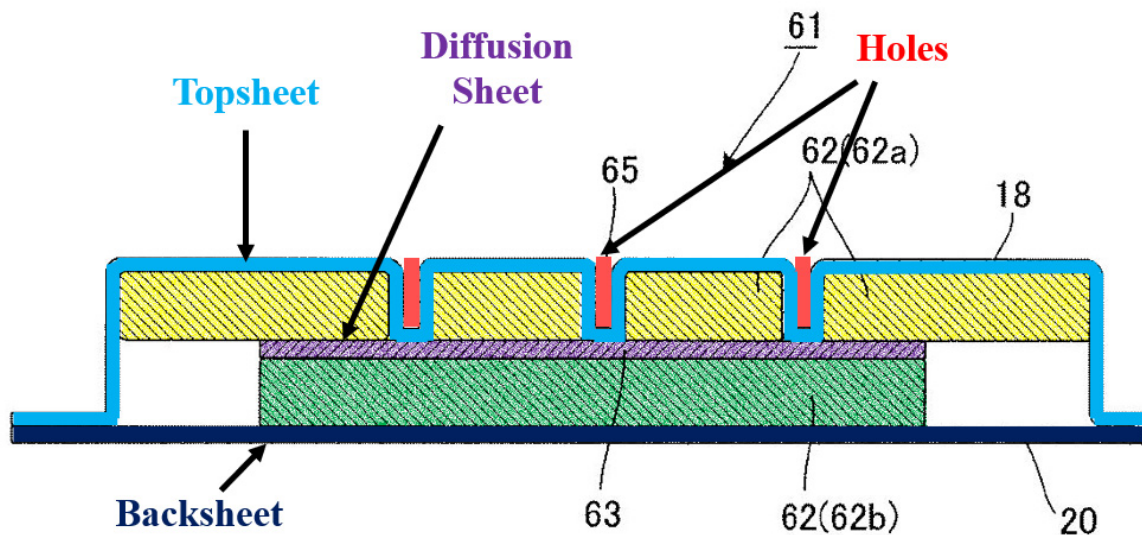
EX1004-Bergstrom-’059, Figure 7 (annotated).

B. Nakazawa-’190

Nakazawa-’190 discloses “[a]n absorbent article comprising an absorbent material, a top sheet [that is] made at least partially of a liquid-permeable material, and a backsheet made of a liquid-impermeable material, . . . [and] a hole portion that

penetrates from the top surface to the back surface of the absorbent material.”
EX1008-Nakazawa-’190, [0013]. In one embodiment, as shown in Figure 14A of
Nakazawa-’190, “the topsheet 18 covers the top surface of [a] first absorbent
material 62a.” EX1008-Nakazawa-’190, [0084]. EX1002-Decl., ¶¶66-70.

[Fig. 14A]



EX1008-Nakazawa-’190, Figure 14A (annotated).

The “first absorbent material 62a” comprises “hole portions 65” that extend through “the first absorbent material.” Nakazawa-’190 teaches that a “diffusion sheet 63 is exposed in the hole portions 65, and the topsheet 18 and the diffusion sheet 63 are joined together at the openings in the hole portions 65 on the back surface of [the] first absorbent material 62a.” EX1008-Nakazawa-’190, [0084]. In this embodiment, “[t]he top sheet and [the] diffusion sheet may be bonded directly

or via the hydrophilic sheet in which the absorbent material is wrapped.” EX1008-Nakazawa-’190, [0084]. EX1002-Decl., ¶¶67.

Nakazawa-’190 teaches that “[t]he diffusion sheet is disposed on the back surface of the absorbent material to cover the region including the openings in the hole portions formed in the absorbent material.” EX1008-Nakazawa-’190, [0061]. Nakazawa-’190 teaches that the “diffusion sheet has a higher liquid permeability than the absorbent material, and when excretory fluid flows into the hole portions of the absorbent material, it can permeate the diffusion sheet and diffuse faster than it can be absorbed by the absorbent material.” EX1008-Nakazawa-’190, [0061]. Nakazawa-’190 teaches that the “diffusion sheet can be made of a porous plastic film.” EX1008-Nakazawa-’190, [0062]. Nakazawa-’190 also discloses that “[w]hile not shown in the figures, the absorbent material is generally wrapped” with a non-porous “hydrophilic sheet serving as a carrier to prevent leakage of [the] superabsorbent polymer.” EX1008-Nakazawa-’190, [0082]. EX1002-Decl., ¶¶68-70.

C. Glaug-’753

Glaug-’753 discloses a wearable, “disposable absorbent article, e.g., a diaper, arranged . . . to trap and collect fluid waste products.” EX1006-Glaug-’753, Abstract, 3:48-50. Glaug-’753’s “disposable absorbent article” includes a topsheet 32 and a

backsheet 38, as well as “a fluid absorbent core 36” and “a fluid acquisition system 34” sandwiched between topsheet 32 and backsheet 38. EX1002-Decl., ¶¶71-73.

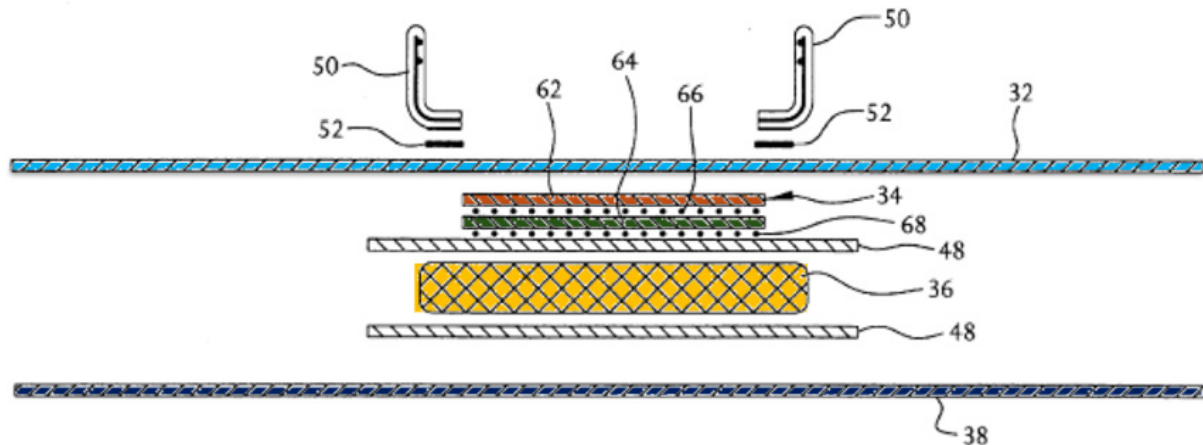


FIG. 2

EX1006-Glaug-’753, Abstract, 3:54-4:4, 4:9-11, Figure 2. EX1002-Decl., ¶¶71-73.

Glaug-’753 discloses that “[t]he fluid acquisition system comprises a first fluid acquisition layer formed of apertured polymeric, e.g., three dimensional, film and a second fluid acquisition layer, e.g., a fibrous material, secured together and located between the top-sheet and the core, with the first fluid acquisition layer facing the top-sheet and the second fluid acquisition layer facing the core.” *Id.*, Abstract, 3:54-4:4. Glaug-’753 teaches that “[t]he fluid acquisition system serves to facilitate the transference of fluid into the core, e.g., spread out the fluid over the

core and providing it to the core at a rate at which materials of the core can accommodate.” *Id.*, Abstract; 4:5-8. EX1002-Decl., ¶¶71-73.

D. Ponomarenko-’236

Ponomorenko-’236 discloses an absorbent article including a backsheet, an absorbent core, a topsheet[], and a sublayer that includes at least one acquisition layer.” EX1007-Ponomarenko-’236, Abstract, claim 1. Ponomarenko-’236 discloses that the sublayer (30) is typically fibrous and “comprises or is typically one or more acquisition layers (e.g., that can temporarily absorb fluids, like urine, and pass on or transport the fluid to the absorbent core that is in proximity to said sublayer (30)).” *Id.*, 6:37-42. Ponomarenko-’236 discloses that sublayer 30 “[i]n general . . . (serves as) . . . an acquisition layer and optionally also (as) a distribution layer, capable to acquire liquid (urine) and temporarily hold the liquid and allow it to pass, or transport it to the absorbent core underneath . . . and optionally also distribute it in the X and Y direction of the sublayer (30).” *Id.*, 7:8-19. Ponomarenko-’236 discloses that it is “[h]ighly preferred . . . that the sublayer (30) comprises two or more (acquisition) layers (e.g., a laminate of two or more layers), and that the holes (31) of the sublayer (30) are preferably formed by the (aligned) holes (31) through either the first or second or first and (part of the) second or subsequent layers.” *Id.*, 6:49-54; *see also* FIG.5. EX1002-Decl., ¶¶74-76.

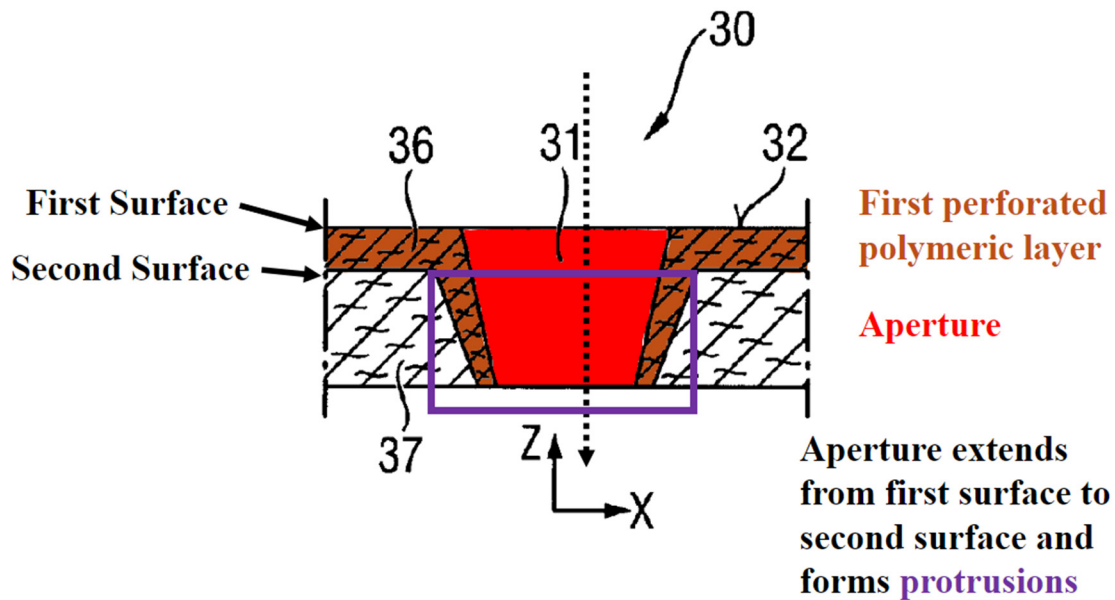


Fig. 5

EX1007-Ponomarenko-'236, Figure 5 (annotated). EX1002-Decl., ¶¶74-76.

Ponomarenko-'236 discloses that in some embodiments only some but not all layers of the sublayer comprise holes. EX1007-Ponomarenko-'236, 9:18-23. Figure 6 and 7 of Ponomarenko-'236 show holes 31 extending through the first layer 36 but extending only partially through the second layer 37. *Id.*, Figures 6-7. Ponomarenko-'236 explains that “[t]he holes (31) of the sublayer (30) [in Figures 6 and 7] are capable to store and immobilize feces and they include blind holes (31).” *Id.*, 7:27-28; *see also* FIGS.6-7. EX1002-Decl., ¶¶74-76.

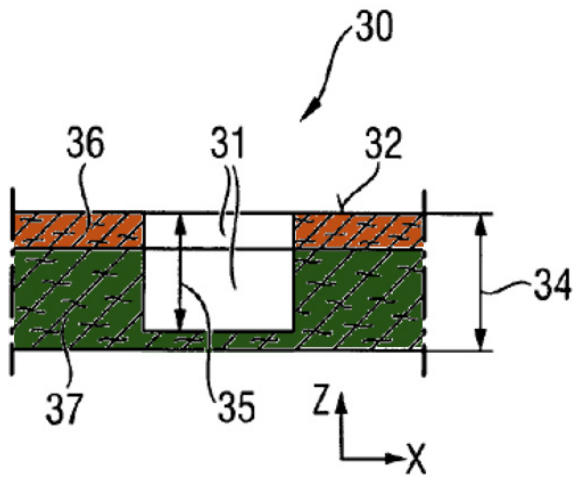


Fig. 6

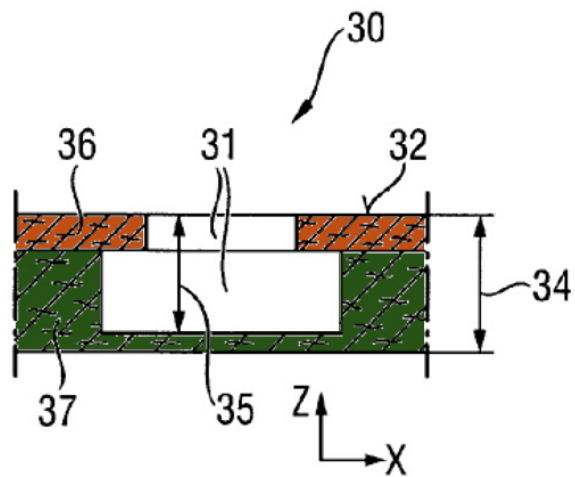


Fig. 7

EX1007-Ponomarenko-'236, Figures 6-7 (annotated). EX1002-Decl., ¶¶74-76.

E. Cohen-'420

Cohen-'429 discloses “[a]n absorbent article that has a topsheet, an absorbent core and an acquisition/distribution transfer system disposed intermediate the topsheet and absorbent core.” EX1016-Cohen-'429, Abstract. Cohen-'429 also discloses that “[t]he system includes at least one aperture material which is three dimensional and defines pores extending appreciably beyond the primary plane of the material in a direction from the absorbent core toward the topsheet.” *Id.* Cohen-'429 describes using a “three dimensional apertured film” sold by Tredegar under the trade name Aquidry as an acquisition/distribution layer. EX016-Cohen-'429, [0032]. Cohen-'429 explains the Tredegar material has an “average

pore size of 0.3-10 mm in diameter, preferably 0.5-5.0 mm, and optimally 1.0-2.0 mm.” EX1016-Cohen-’429, [0024]. EX1002-Decl., ¶77.

X. SPECIFIC GROUNDS FOR UNPATENTABILITY

A. Ground I: Claims 1, 3, 21-22, and 24-25 Are Anticipated By Bergstrom

Bergstrom-’059 anticipates the only independent claim in the ’138 patent and several dependent claims. *See* EX1002-Decl., ¶84.

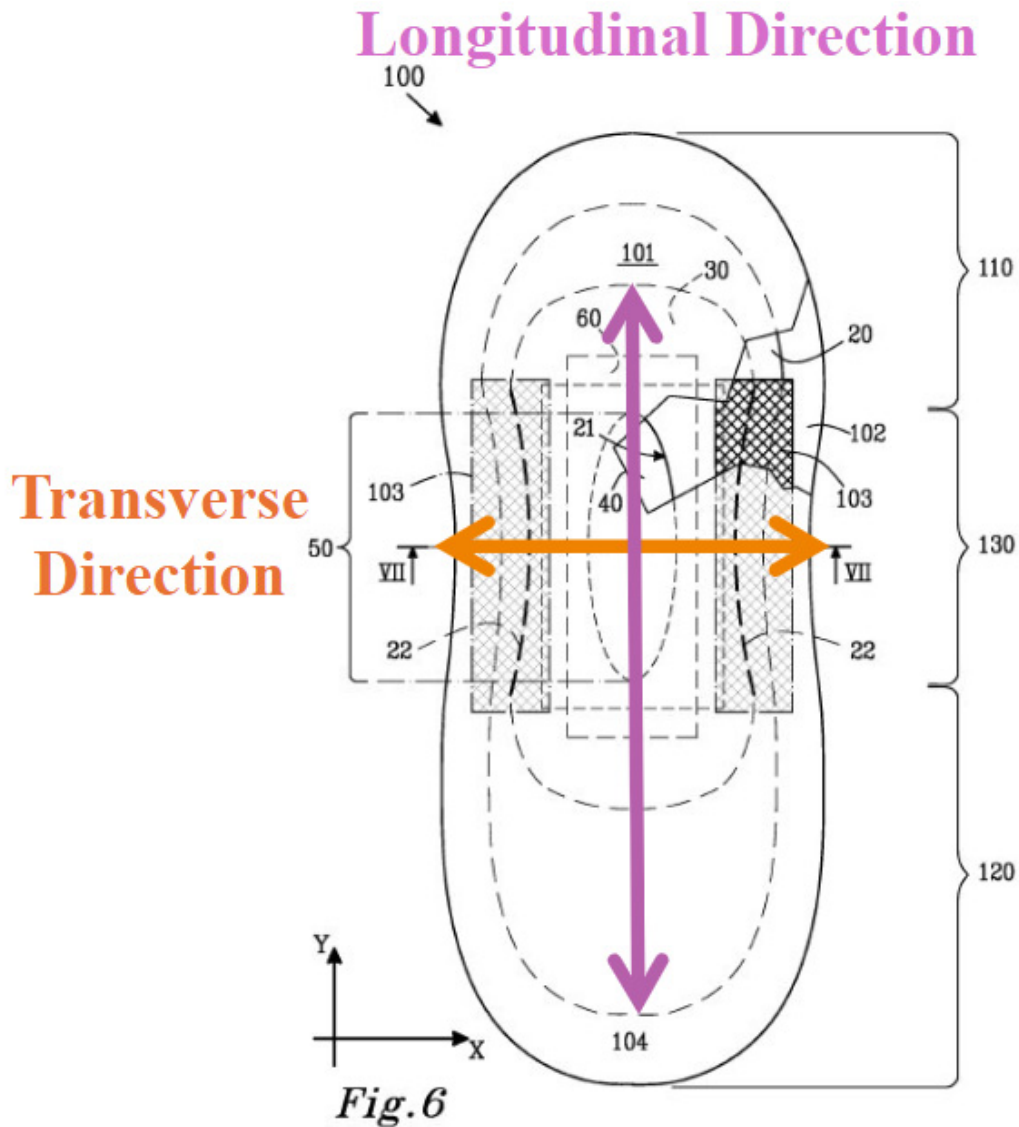
1. Claim 1

a. 1[pre]

If the preamble is limiting, Bergstrom-’059 discloses it; Bergstrom-’059 discloses *an absorbent article* (e.g., absorbent article 100) *having a longitudinal direction and a transverse direction, side edges extending in the longitudinal direction and end edges extending in the transverse direction.* EX1002-Decl., ¶¶85-86.

As shown in Figures 6-8, Bergstrom-’059 discloses “an absorbent article 100.” EX1004-Bergstrom-’059, 10:14-29; *see also, id.*, Abstract; 1:4-7, 2:9-13, 3:11-13, 4:27, claim 1. Bergstrom-’059 discloses “absorbent article 100 extends in the length (Y), width (X), and thickness (Z) directions.” *Id.*, 10:25-26. EX1002-Decl., ¶¶87-88.

Bergstrom-'059 depicts an absorbent article with side edges that extend along a **longitudinal direction** and end edges that extend along a **transverse direction** in Figure 6. EX1004-Bergstrom-'059, Figure 6; EX1002-Decl., ¶89.



EX1004-Bergstrom-'059, Figure 6 (annotated).

b. 1[a]

Bergstrom-'059 discloses *a fluid permeable topsheet* (e.g., **topsheet 101**). EX1002-Decl., ¶90.

As shown in Figures 6-8, Bergstrom-'059 discloses that absorbent article 100 has “a liquid-permeable **topsheet 101**.”⁴ EX1004-Bergstrom-'059, 10:26-27; *see also id.*, 3:13-14 (“The absorbent article typically comprises a liquid-permeable **topsheet** and a liquid-impermeable backsheet.”), 10:31-11:6 (describing properties of the topsheet), 11:22-34, claims 9, 10; EX1002-Decl., ¶91.

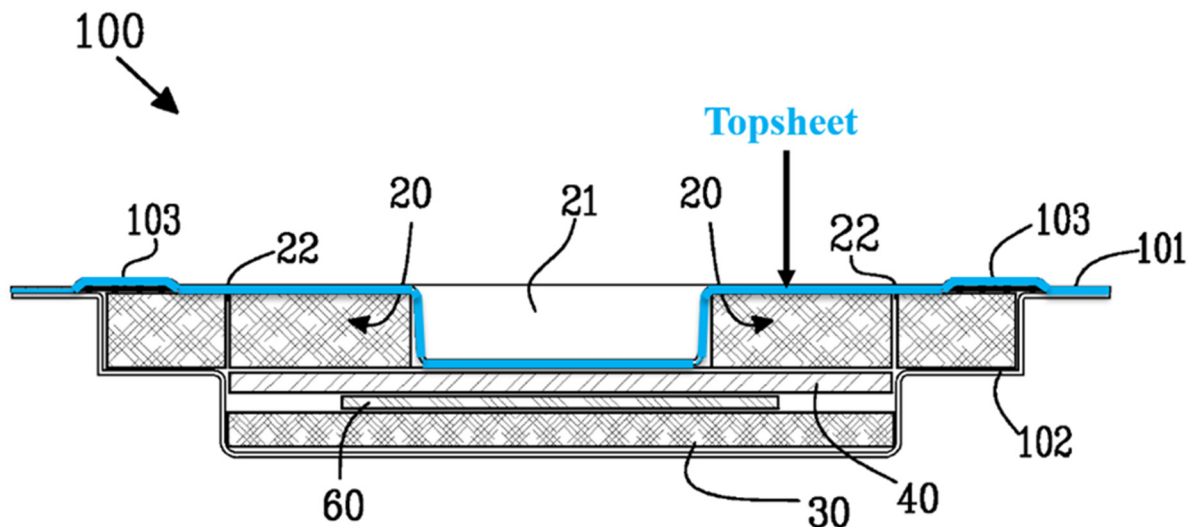


Fig. 7

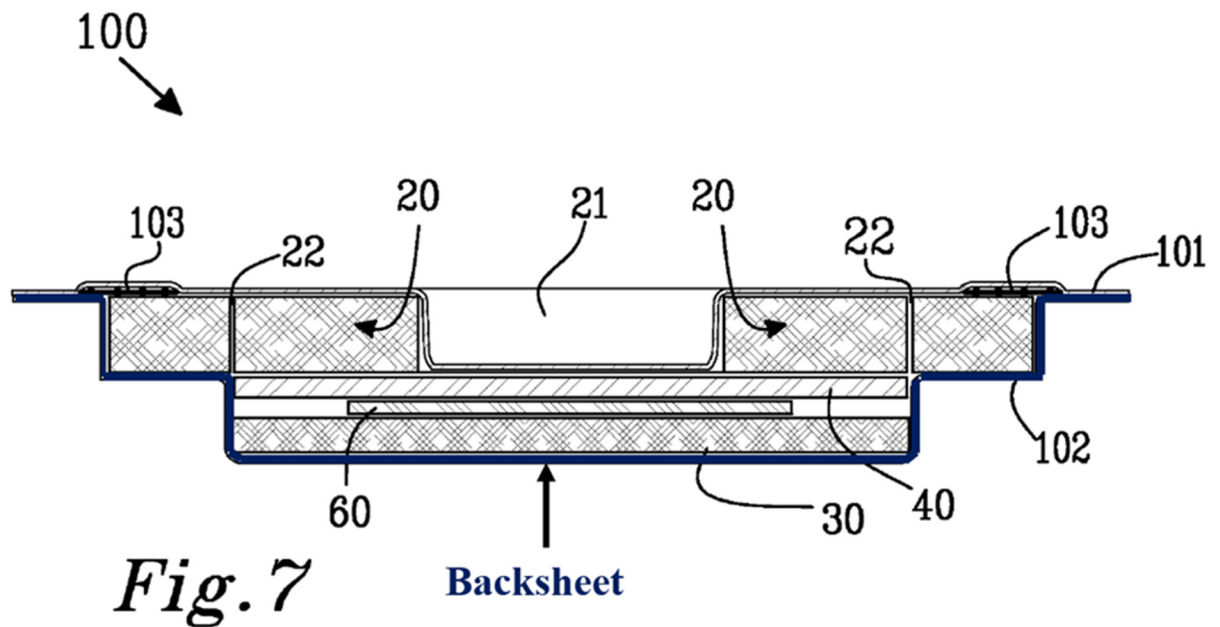
EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶92.

⁴ All emphasis added unless otherwise noted.

c. 1[b]

Bergstrom-'059 discloses *a fluid impermeable **backsheet*** (e.g., **backsheet 102**). EX1002-Decl., ¶93.

As shown in Figures 6-8, Bergstrom-'059 discloses that “absorbent article 100” has “a liquid-impermeable **backsheet 102**.” EX1004-Bergstrom-'059, 10:25-27; *see also id.*, 3:13-14 (“The absorbent article typically comprises a liquid-permeable topsheet and a liquid-impermeable **backsheet**.”), 11:8-20 (describing properties of the backsheet), 11:22-34 (disclosing “the fluid-impermeable **backsheet 102**”), claims 9, 10; EX1002-Decl., ¶94.

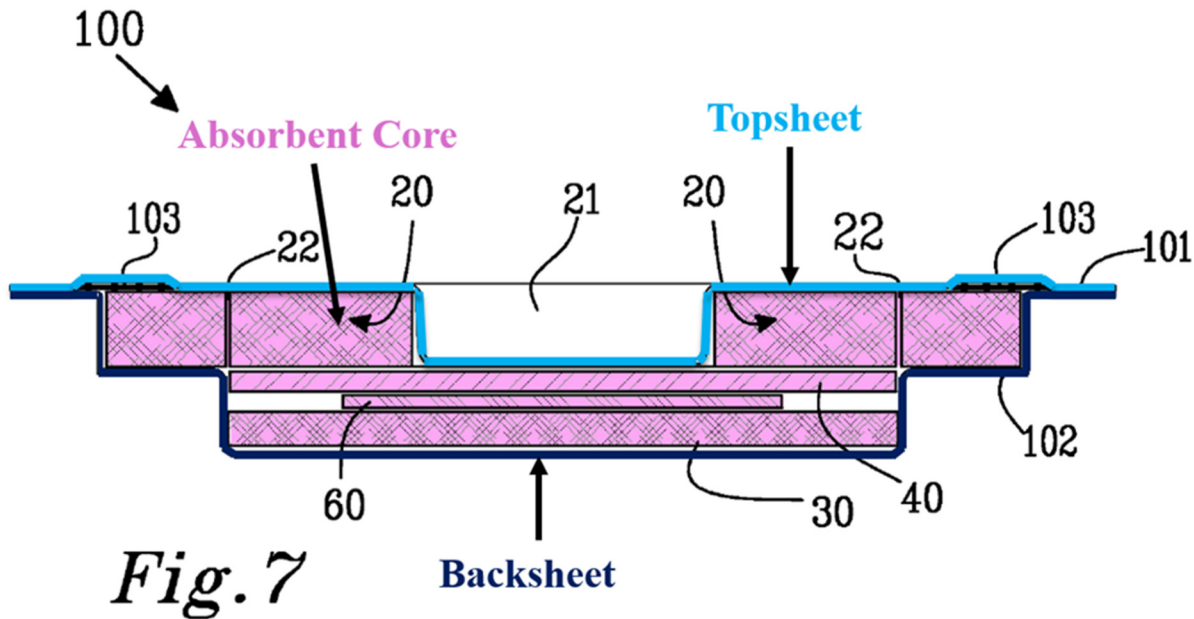


EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶95.

d. 1[c]

Bergstrom-'059 discloses *an absorbent core* (e.g., **absorbent core 10**) *enclosed between said topsheet* (e.g., **topsheet 101**) *and said backsheet* (e.g., **backsheet 102**). EX1002-Decl., ¶96.

As shown in Figures 6-8, Bergstrom-'059 discloses, “[t]he **topsheet 101** and [the] **backsheet 102** are joined to one another around the periphery of the **absorbent core 10**, so that the **core 10** is enclosed within the envelope formed by the **topsheet 101** and [the] **backsheet 102**.” EX1004-Bergstrom-'059, 11:23-26. Bergstrom-'059 also discloses, “the fluid-permeable **topsheet 101** and fluid-impermeable **backsheet 102** extend beyond the **absorbent core (10)** ... and are joined to one another in the area outside the **absorbent core (10)**” EX1004-Bergstrom-'059, 11:26-29; *see also id.*, 17:20-24, Figure 7. Bergstrom-'059 teaches, “[t]he **absorbent core 10** is the component of the absorbent article 100 which receives and contains most liquid and other bodily exudates.” *Id.*, 4:27-29; *see also id.*, 2:9-13, 5:8-11, 5:13-27, 8:14-23, 8:29-32, 10:6-15, 10:25-29; claims 9, 10. EX1002-Decl., ¶¶97-98.



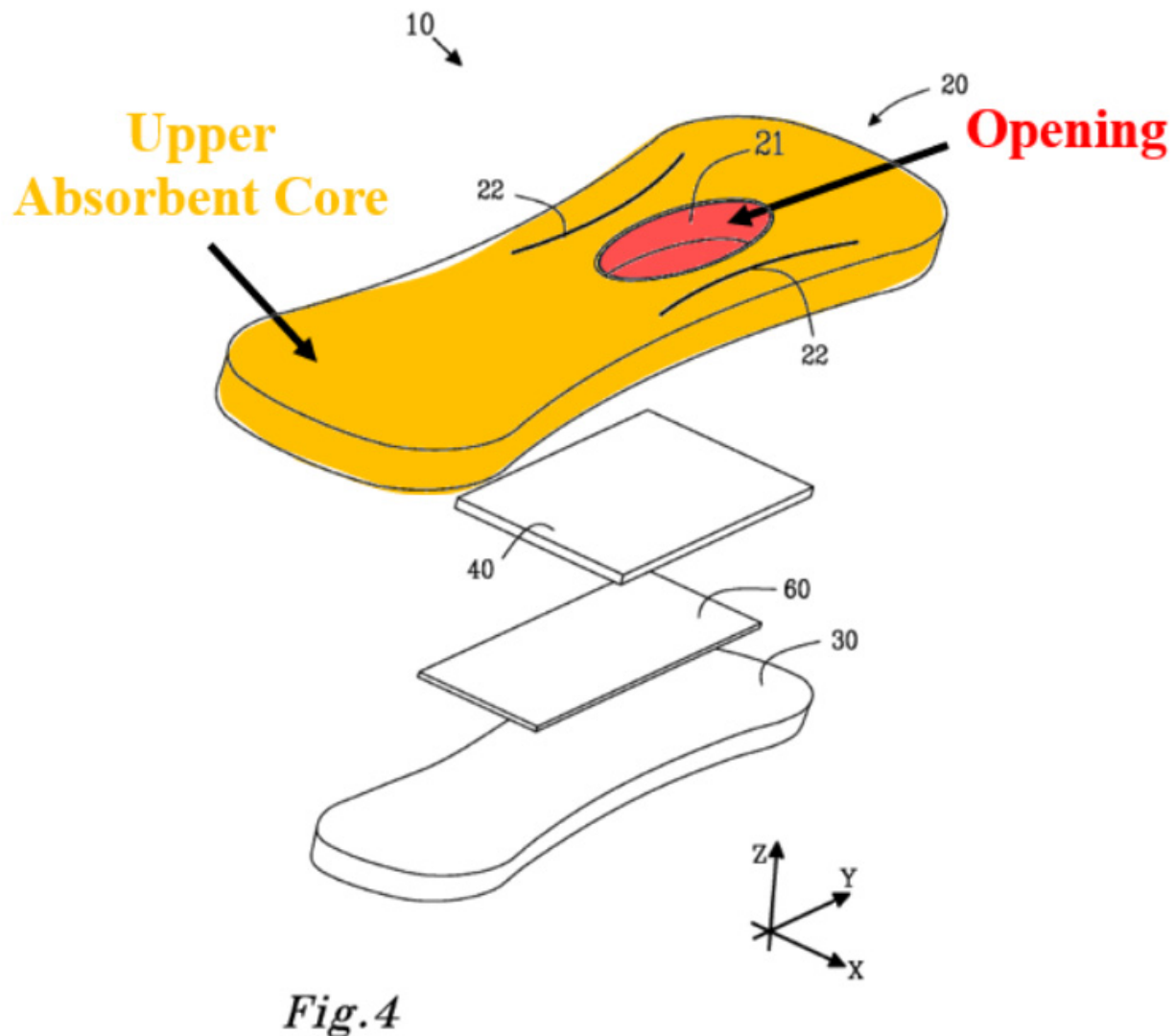
EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶99.

e. 1[d]

Bergstrom-'059 discloses *a first absorbent layer having an opening (e.g., opening 21) that passes through the first absorbent layer from one major surface to an opposing major surface and therebetween the opening is surrounded by a closed periphery of first absorbent layer (e.g., upper absorbent core 20).* EX1002-Decl., ¶100.

As shown in Figures 4, 6-8, Bergstrom-'059 discloses, “the **upper core (20)** compris[es] an **opening (21)** located in at least said region (50), such that the **opening (21)** in the **upper absorbent core (20)** overlies both the acquisition layer (40) and the lower absorbent core (30).” EX1004-Bergstrom-'059, claim 1. Bergstrom-'059 also discloses “[t]he **opening** in the **upper core** is suitably located

in the centre of the upper core in the width (X) direction.” *Id.*, 2:31-32, *see also id.*, 6:33-35 (“The **upper absorbent core 20** comprises an **opening 21**, as shown in Figures 1-8. The **opening 21** extends through the entire thickness of the **upper absorbent core 20**, from one face to the other (see Figure 4).”). *Id.*, Abstract, 2:17-20, 2:31-32, 7:2-7, claims 1-2, Figure 4. EX1002-Decl., ¶101.



EX1004-Bergstrom-'059, Figure 4 (annotated). EX1002-Decl., ¶102.

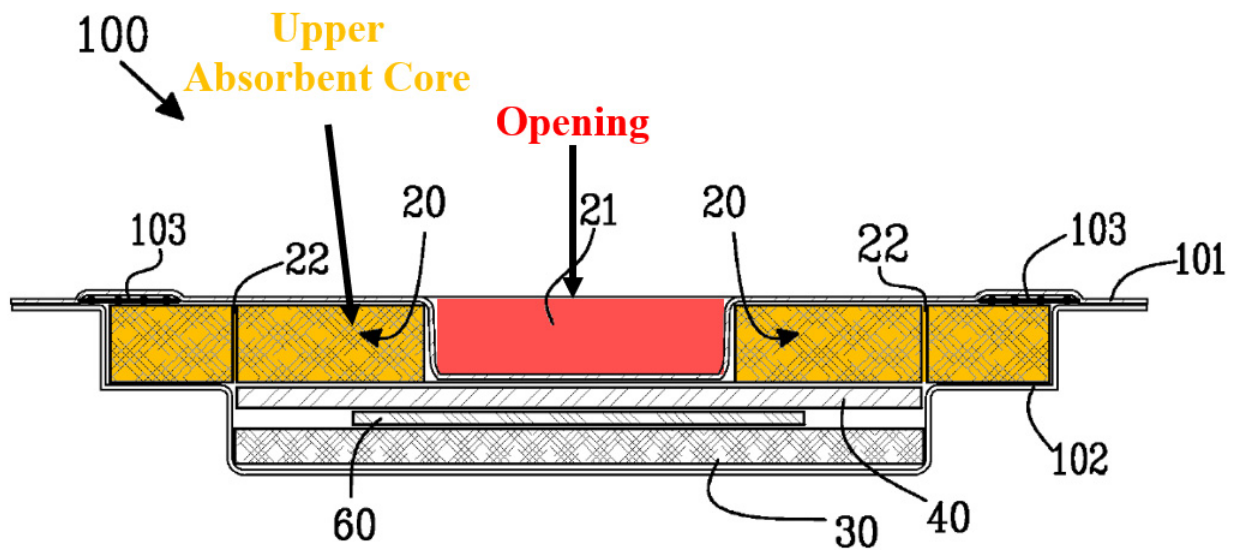


Fig. 7

EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶102.

f. 1[e]

Bergstrom-'059 discloses *a fluid flow control structure* (e.g., **acquisition layer 40** and **forming element 60**). EX1002-Decl., ¶103.

As shown in Figures 4, 6-8, Bergstrom-'059 discloses an “**acquisition layer 40** [that] acts to receive liquid rapidly, to temporarily hold it and to distribute it evenly to the upper and lower absorbent cores 20, 30.” EX1004-Bergstrom-'059, 6:17-20. Bergstrom-'059 also discloses that “the invention may additionally comprise a resilient **forming element 60** ... preferably located between the **acquisition layer 40** and the lower absorbent core 30 ...[that] is typically liquid-impermeable,” and “makes best use of the upper and lower absorbent cores 20, 30 by distributing liquid at least in the width (X) direction.” *Id.*, 8:29-9:27, *see also id.*,

2:15-20, 2:34-3:4, 6:23-31, 8:14-23, 9:34-35, 10:6-12, claims 1, 5, 6, Figures 4 and

7. EX1002-Dec1., ¶¶104-106.

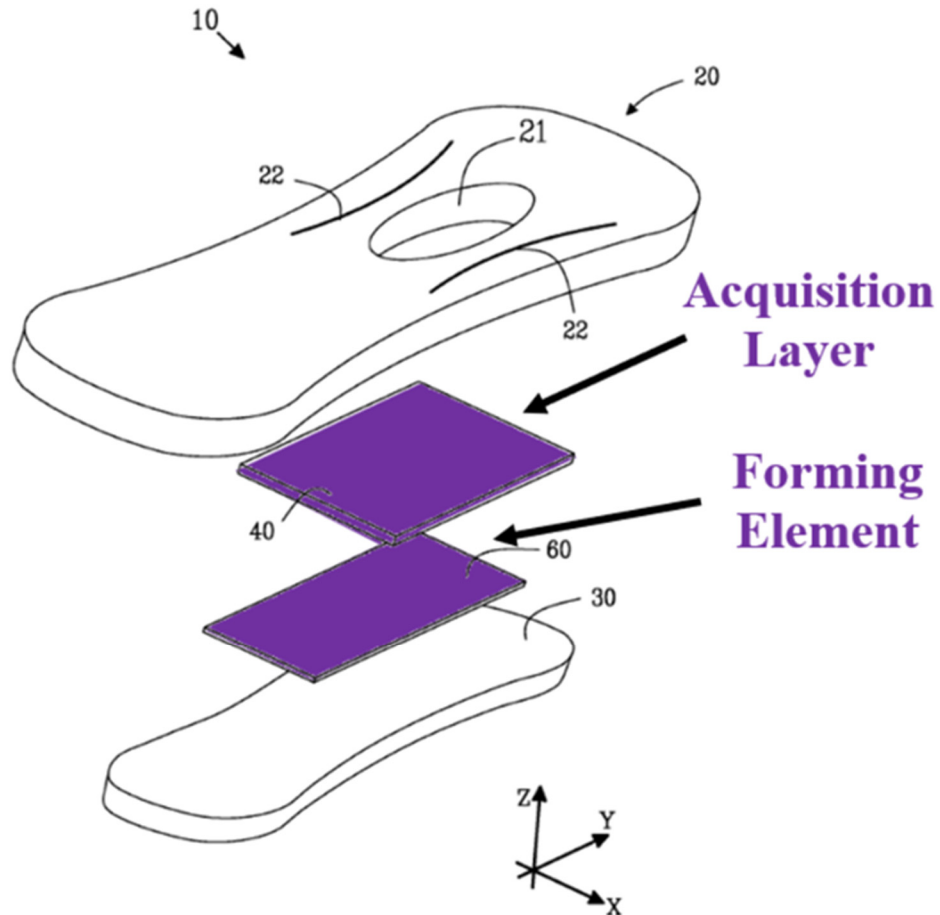
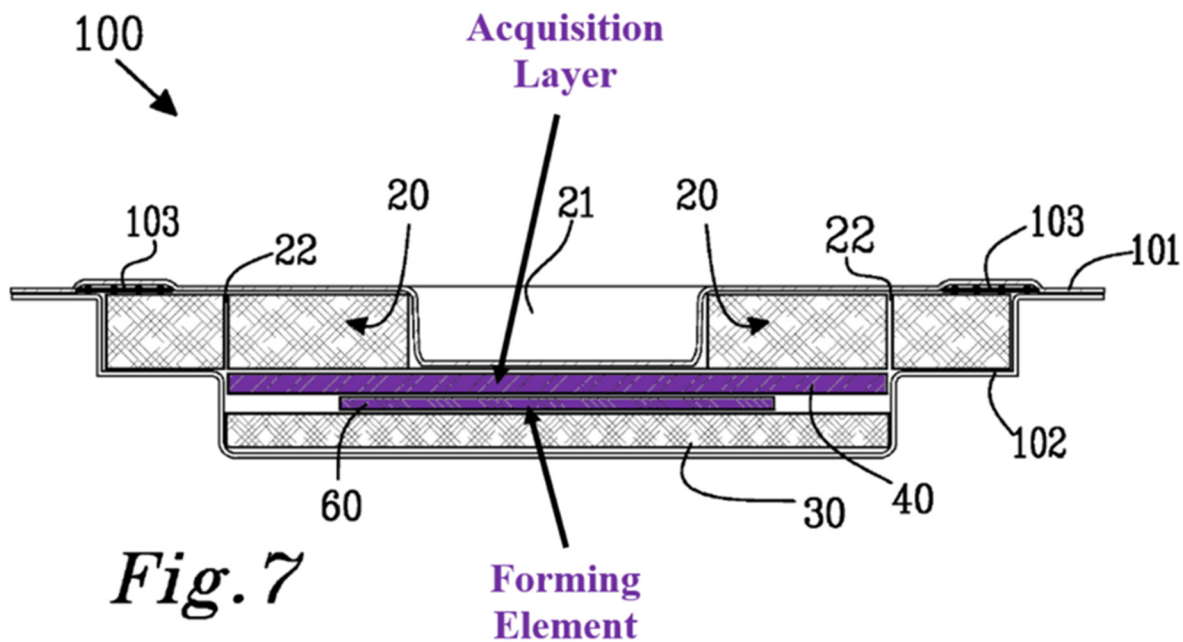


Fig.4

EX1004-Bergstrom-'059, Figure 4 (annotated). EX1002-Decl., ¶107.



EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶107.

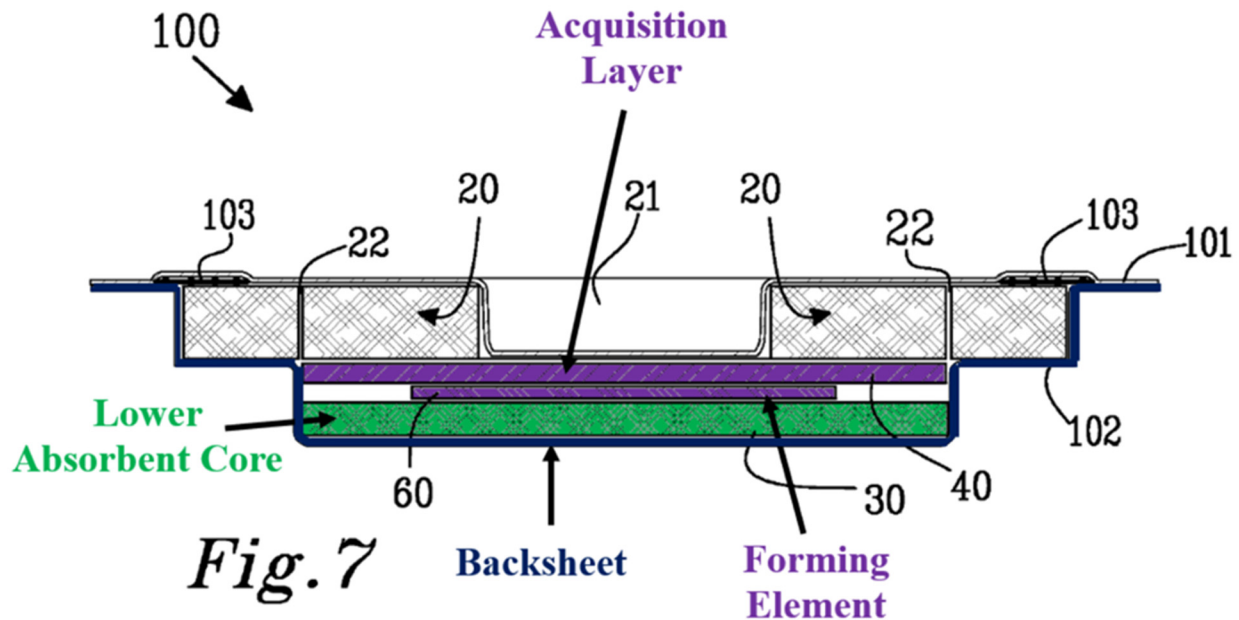
g. 1[f]

Bergstrom-'059 discloses an *absorbent core comprising . . . a second absorbent layer* (e.g., **lower absorbent core 30**) *arranged between the fluid flow control structure* (e.g., **acquisition layer 40** and **forming element 60**) *and the fluid impermeable backsheet* (e.g., **backsheets 102**). EX1002-Decl., ¶108.

As shown in Figures 6-8, Bergstrom-'059 discloses that “[t]he **forming element 60** is preferably located between the **acquisition layer 40** and the **lower absorbent core 30**.” EX1004-Bergstrom-'059, 8:32-33. Bergstrom-'059 also depicts “the **lower absorbent core**” between the **backsheets**, and “the **acquisition layer**” and **forming element** in Figure 7. *See also id.*, Abstract, 2:10-13, 5:13-27,

5:29-6:5, 6:17-21, 7:2-7, 7:30-32, 8:14-18, 8:32-33, 9:21-29, 10:6-12, claims 1, 5.

EX1002-Decl., ¶¶109-110.



EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶110.

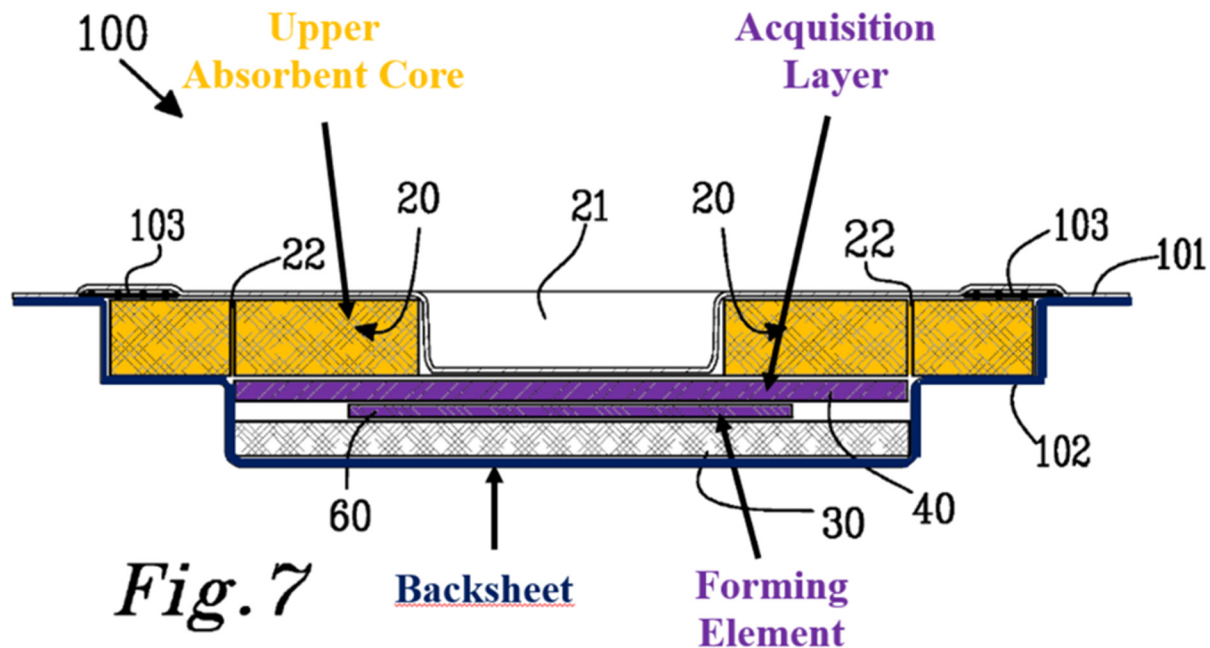
h. 1[g]

Bergstrom-'059 discloses that *the fluid flow control structure* (e.g., **acquisition layer 40** and **forming element 60**) is arranged between said **first absorbent layer** (e.g., **upper absorbent core 20**) and said **backsheet** (e.g., **backsheet 102**). EX1002-Decl., ¶111.

As shown in Figures 4 and 6-8, Bergstrom-'059 discloses “an **acquisition layer (40)** being located between said **upper (20)** and said lower (30) absorbent cores.” EX1004-Bergstrom-'059, 16:8-9. Bergstrom-'059 discloses, “the absorbent core 10 according to the invention may additionally comprise a resilient **forming**

element 60 which underlies at least the opening 21 in the **upper absorbent core 20**.”

Id., 8:20-32. Bergstrom-’059 also discloses, “The **forming element 60** is preferably located between the **acquisition layer 40** and the lower absorbent core 30. ...” *Id.*, 8:32-33. Bergstrom-’059 depicts “the **acquisition layer**” and **forming element** (i.e., the **fluid flow control structure**) arranged between the **upper core** (i.e., first absorbent core) and the **backsheet** in Figures 4 and 7. *See also id.*, 2:34-3:4, 8:29-9:5, 10:6-12, claims 1, 4, 5, 10. EX1002-Decl., ¶112.



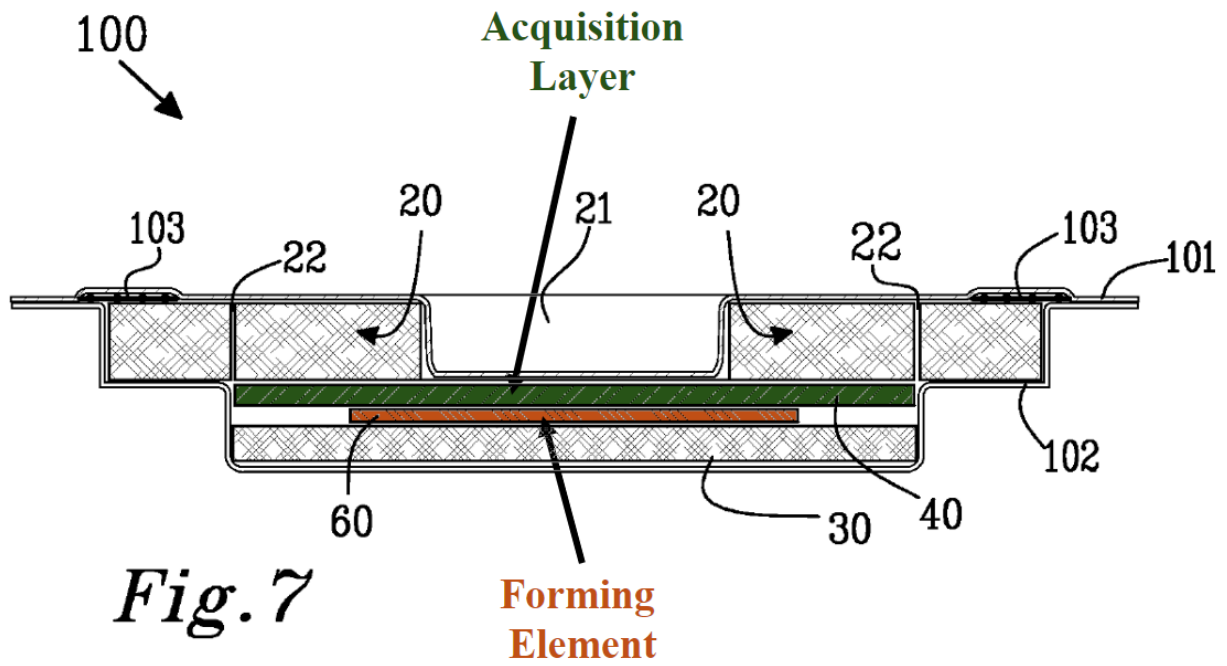
EX1004-Bergstrom-’059, Figure 7 (annotated). EX1002-Decl., ¶113.

i. 1[h]

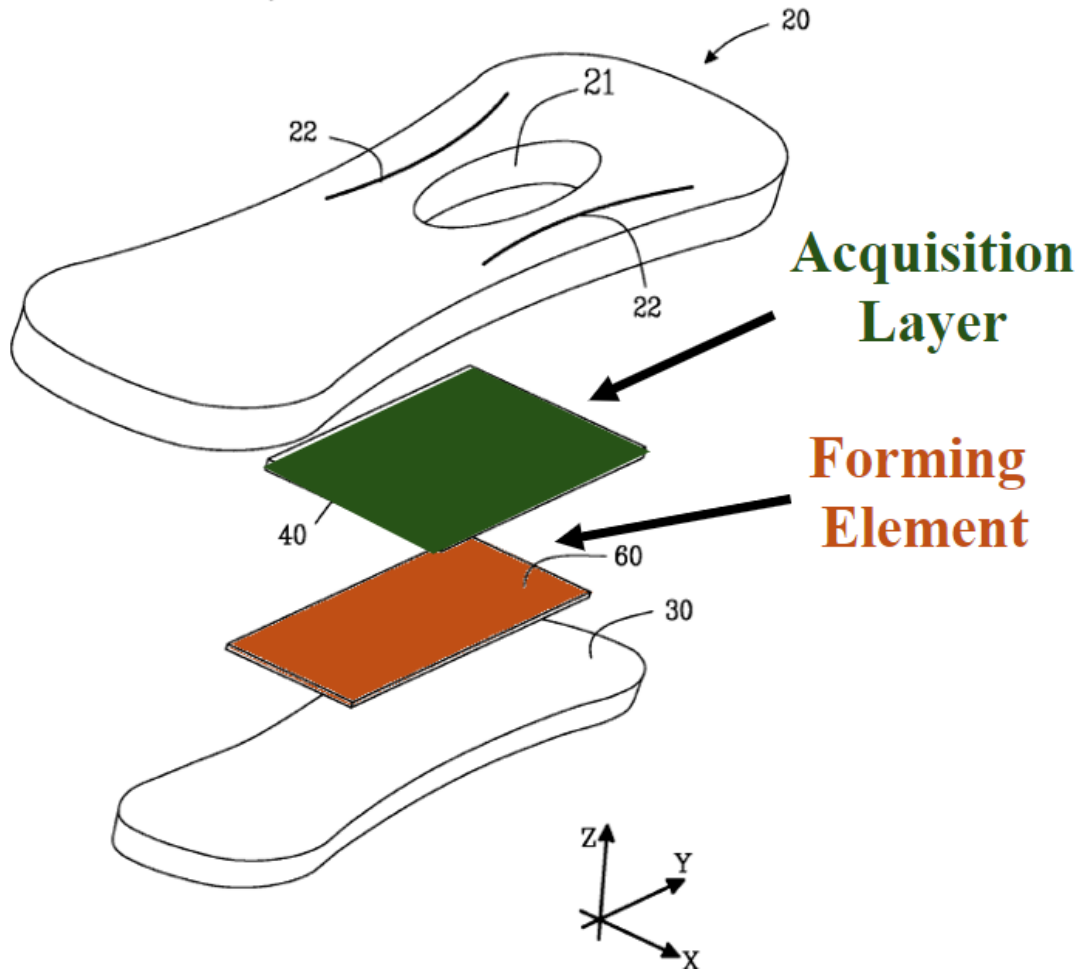
Bergstrom-’059 discloses a *fluid control structure being a layered structure comprising a non-perforated fibrous polymeric layer* (e.g., **acquisition layer 40**)

and a *first perforated polymeric layer* (e.g., **forming element 60**). EX1002-Decl., ¶114.

For example, Bergstrom-'059 discloses “**acquisition layer 40** ... suitably comprises fibrous materials, such as e.g., synthetic fibers.” EX1004-Bergstrom-'059, 6:20-21; *see also id.*, 6:24-31. Bergstrom-'059 also discloses “suitable materials for the **forming element 60** are plastic films, perforated plastic films and reinforced tissue or reinforced nonwoven materials.” *Id.*, 10:1-4. The **acquisition layer** in Bergstrom-'059 is necessarily not perforated because (1) Bergstrom-'059 does not disclose it has any perforations, but elsewhere explicitly identifies which layers can be perforated (11:4-6 (apertured topsheet), 10:1-3 (“perforated plastic film[]”); and (2) a POSITA would know that a layer of synthetic fibers would not be perforated. EX1002-Decl., ¶¶115-116.



EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶117.



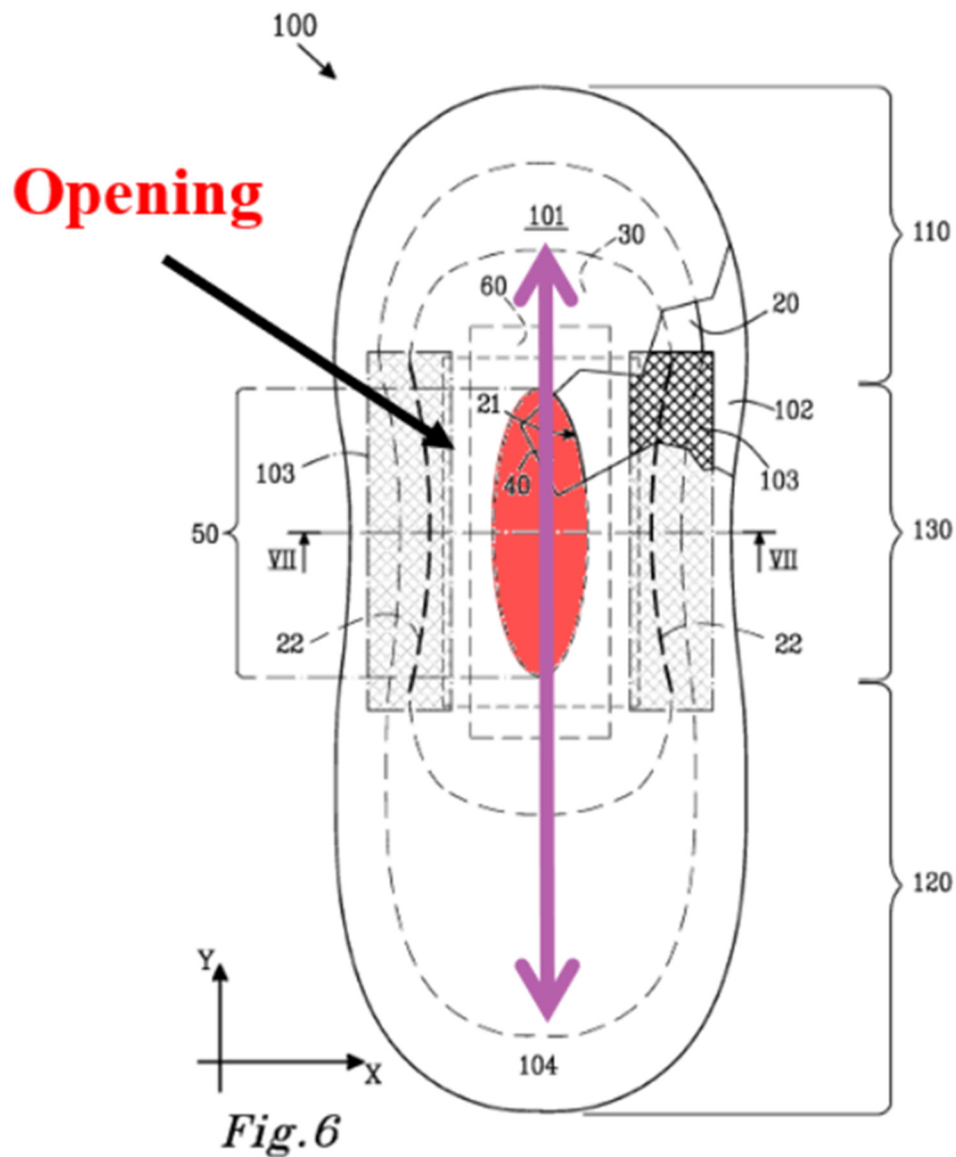
EX1004-Bergstrom-'059, Figure 4 (annotated).

j. 1[i]

Bergstrom-'059 discloses that *the opening* (e.g., **opening 21**) *extends along a longitudinal center line of the absorbent article, the longitudinal center line being parallel with the longitudinal direction of the absorbent article* (e.g., absorbent article 100). EX1002-Decl., ¶118.

As shown in Figures 6-8, the **opening** extends along “the X-Y plane” of the absorbent article. *See, e.g.,* EX1004-Bergstrom-'059, 7:4-7 (“The **opening 21**

should have a surface area in the X-Y plane. ...”), *see also id.*, 2:31-32 (“The opening in the upper core is suitably located in the centre of the upper core in the width (X) direction.”), 8:14-21, 8:25-28, claim 2. EX1002-Decl., ¶¶119-120.

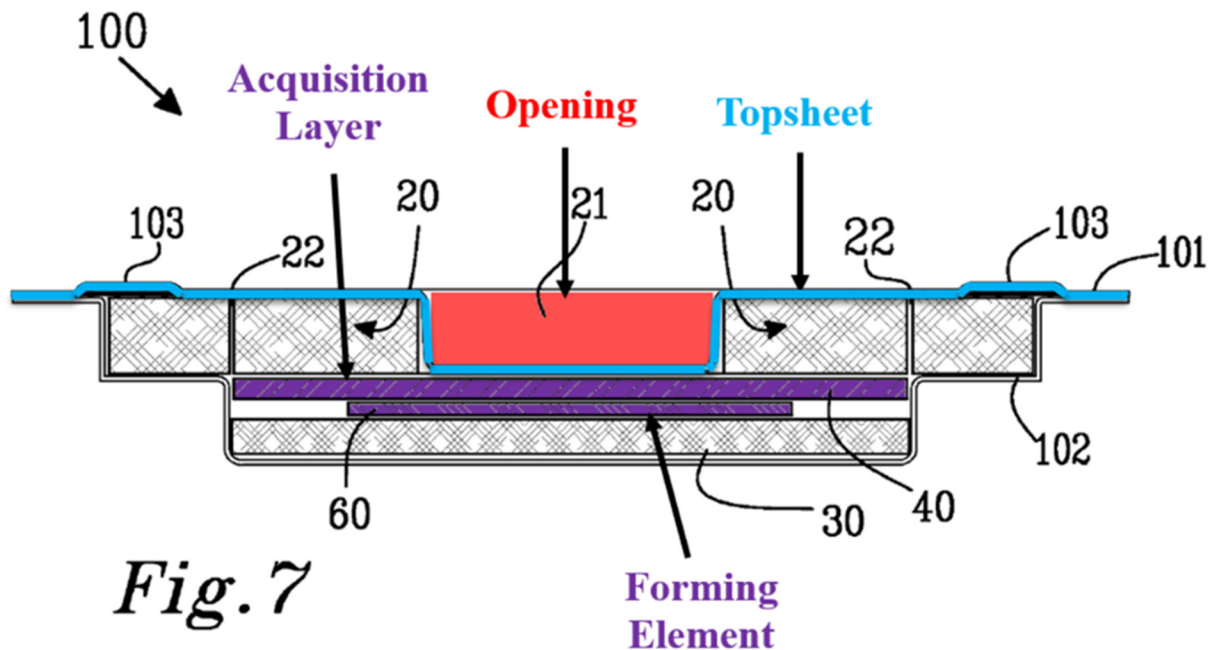


EX1004-Bergstrom-'059, Figure 6 (annotated). EX1002-Decl., ¶120.

k. 1[j]

Bergstrom-'059 discloses a *fluid permeable topsheet* (e.g., **topsheet 101**) in *direct contact with the fluid flow control structure* (e.g., **acquisition layer 40** and **forming element 60**) via the **opening** (e.g., **opening 21**). EX1002-Decl., ¶¶121-124.

As shown in Figures 6-8, Bergstrom-'059 discloses, “the **topsheet 101** is joined to the upper absorbent core 20 even within the **opening 21**, so that it makes contact with the **acquisition layer 40** (as shown in Figure 7).” EX1004-Bergstrom-'059, 11:31-33, Figure 7. EX1002-Decl., ¶122.



EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶123.

2. Claim 3

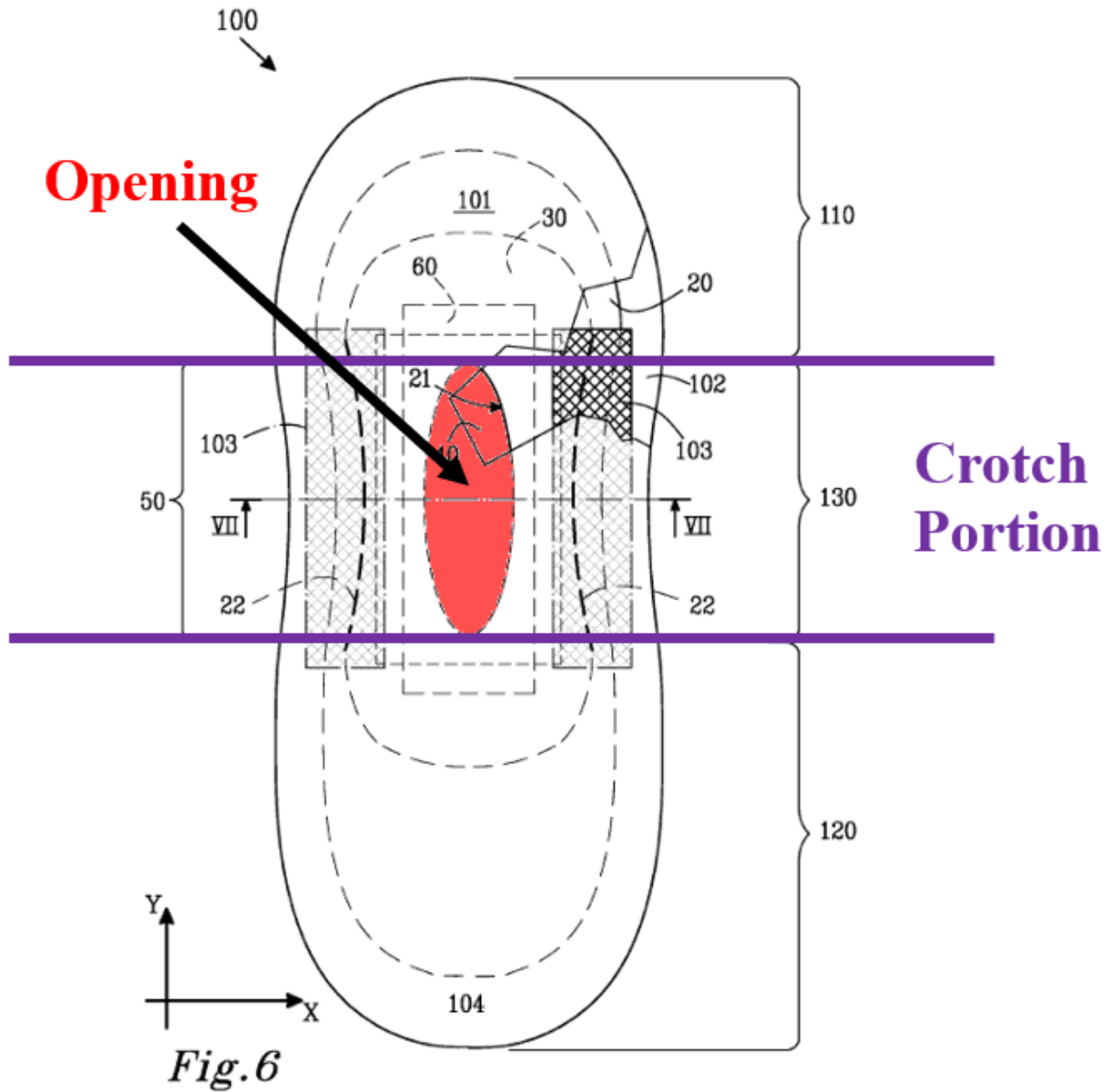
Bergstrom-'059 discloses a *first perforated polymeric layer [that] is a nonwoven, film or a film/nonwoven laminate* (e.g., forming element 60). EX1002-Decl., ¶¶125-128.

For example, Bergstrom-'059 discloses, “suitable materials for the forming element 60 are plastic films, *perforated plastic films* and reinforced tissue or reinforced *nonwoven materials*.” EX1004-Bergstrom-'059, 10:1-4. Bergstrom-'059 further discloses, “Combinations of such materials in laminate form are also possible.” *Id.* EX1002-Decl., ¶¶126-128.

3. Claim 21

Bergstrom-'059 discloses an **opening** (e.g., **opening 21**) *[that] extends through the entire crotch portion of the absorbent article* (e.g., absorbent article 100). EX1002-Decl., ¶¶129-130.

For example, Bergstrom-'059 discloses, “a **crotch portion 130** located between said front and rear portions 110, 120 in the length direction (Y) of the article 100,” and further discloses, an “**opening 21** ... located in at least region 50,” which spans the length of the **crotch portion**, as depicted in Figure 6. EX1004-Bergstrom-'059, 7:2-4, 10:21-23, Figure 6, claim 1. EX1002-Decl., ¶131.



EX1004-Bergstrom-'059, Figure 6 (annotated).

4. Claim 22

Bergstrom-'059 discloses a *fluid permeable topsheet* (e.g., topsheet 101) *[that] is not perforated*. EX1002-Decl., ¶135.

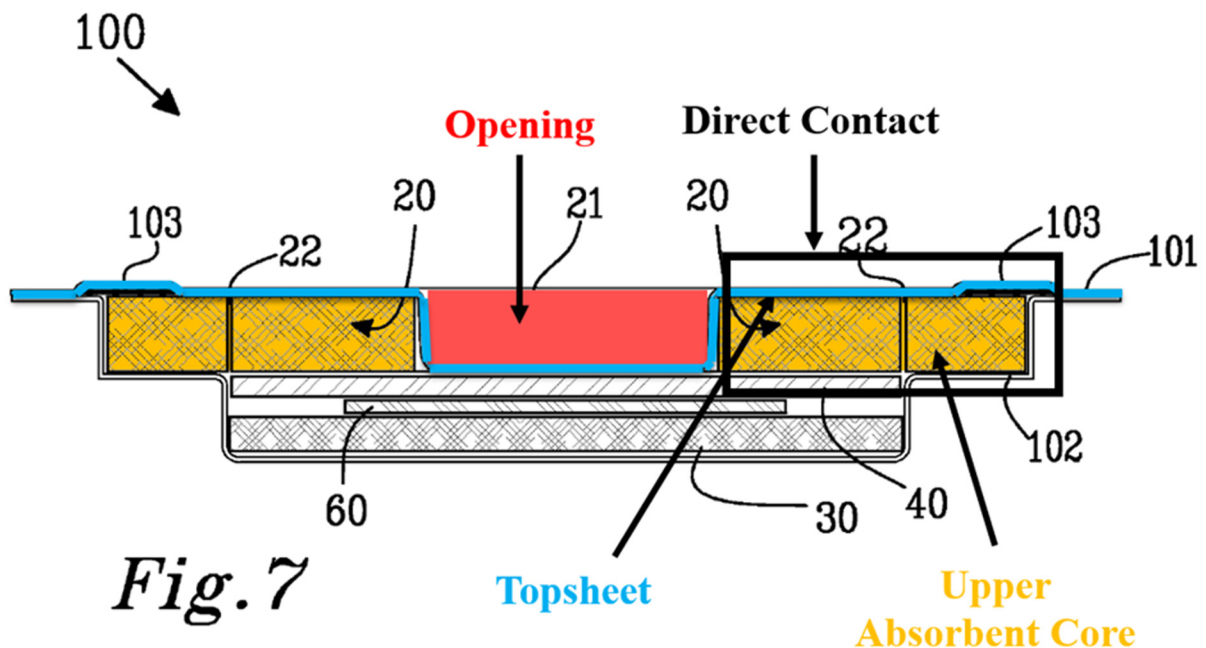
Bergstrom-'059 teaches that “the topsheet 101 can consist of a nonwoven material, e.g., spunbond, meltblown, carded, hydroentangled, wetlaid etc.,” and further instructs that “[s]uitable nonwoven materials can be composed of natural fibers, such as woodpulp or cotton fibres, manmade fibres, such as polyester, polyethylene, polypropylene, viscose, etc.” EX1004-Bergstrom-'059, 10:33-11:3. A POSITA would know that these materials form a topsheet that is not perforated. Bergstrom-'059 lists alternative materials for forming the topsheet that *may* contain openings, such as an “apertured plastic film[,]” indicating that perforations are not *required* and there are necessarily non-perforated materials that can be used for the topsheet. *Id.*, 11:4-5. EX1002-Decl., ¶¶137-139.

5. Claim 24

Bergstrom-'059 discloses a *fluid permeable topsheet* (e.g., **topsheet 101**) ... *in contact with the first absorbent layer* (e.g., **upper absorbent core 20**) *of the absorbent core at an area other than where the opening* (e.g., **opening 21**) *is located.* EX1002-Decl., ¶¶140-144.

For example, Bergstrom-'059 discloses, “[t]he **topsheet 101** and backsheet 102 may be joined to one another, and to the **core 10**, by any means common in the art, e.g., ultrasonic welding, thermal welding or gluing.” EX1004-Bergstrom-'059, 11:29-31, *see also id.*, 3:14-16 (“The liquid-permeable topsheet and liquid-impermeable backsheet may extend beyond the absorbent core in at least the width

(X) direction and be joined to one another in the area outside the absorbent core to form an edge-seam.”), claim 10. As shown in Figure 7, Bergstrom-’059 depicts the fluid permeable **topsheet** in contact with the **upper core** (i.e., the **first absorbent layer**) at an area other than where the **opening** is located. EX1002-Decl., ¶¶140-144.

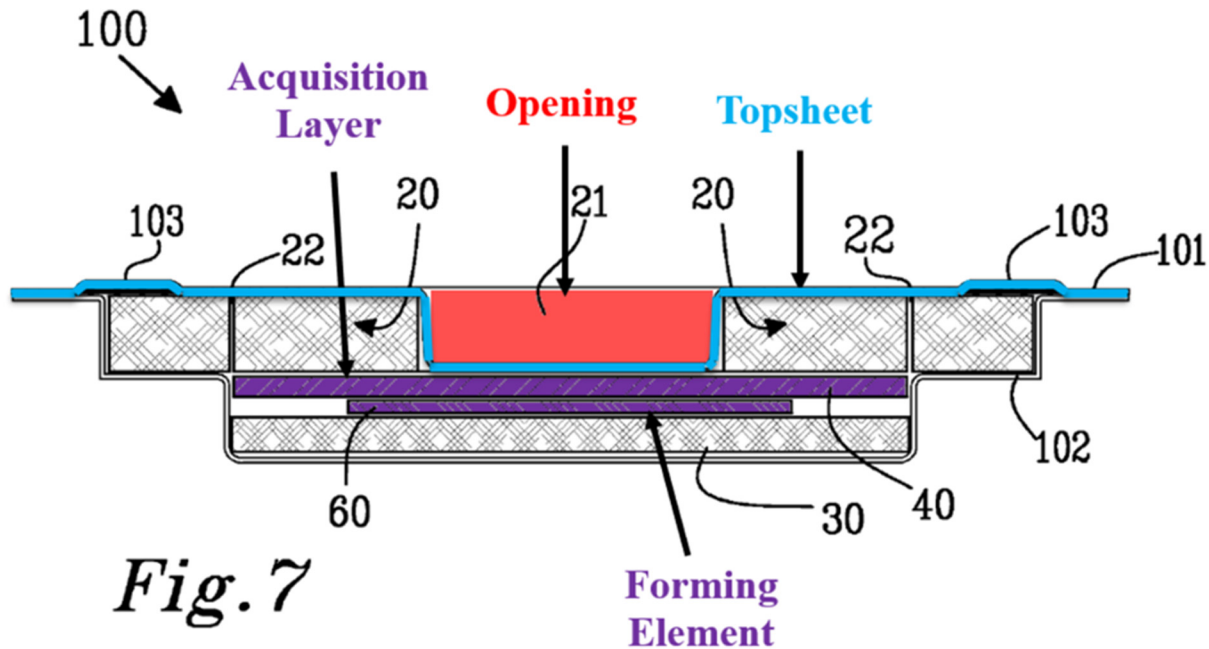


EX1004-Bergstrom-’059, Figure 7 (annotated). EX1002-Decl., ¶¶140-144.

6. Claim 25

Bergstrom-’059 discloses the fluid permeable **topsheet** (e.g., **topsheet 101**) is in contact with the **fluid flow control structure** (e.g., **acquisition layer 40** and **forming element 60**) via the **opening** (e.g., **opening 21**) such that a cavity is formed along the longitudinal center line of the absorbent article. EX1002-Decl., ¶¶145-148.

As shown in Figure 7, there is no material between the **acquisition layer 40** (i.e., the **fluid flow control structure**) and the **topsheet 101** at the **opening 21**, which forms a cavity. EX1004-Bergstrom-'059, 11:31-34, Figure 7; EX1002-Decl., ¶¶145-148.



EX1004-Bergstrom-'059, Figure 7 (annotated). EX1002-Decl., ¶¶145-148.

B. Ground II: Claims 1, 3-5, 21-22 and 24-25 Are Obvious Over Nakazawa-'190 in view of Glaug-'753

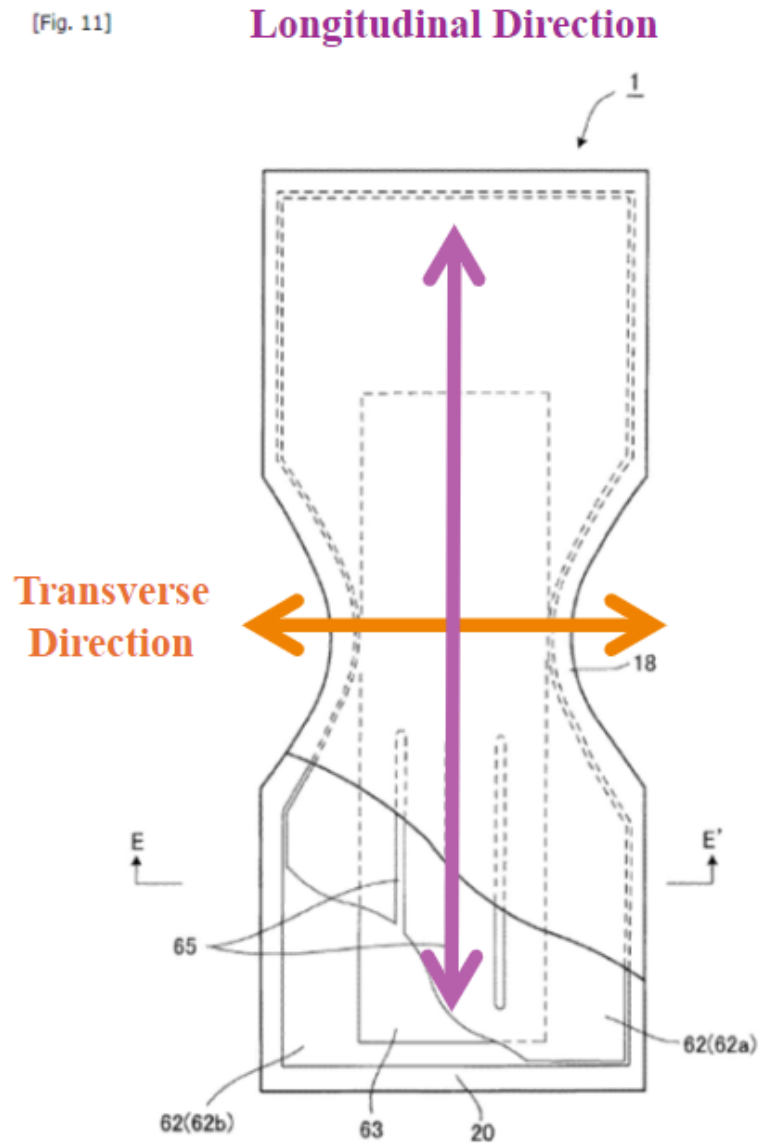
As set forth below, Nakazawa-'190 in view of Glaug-'753 renders obvious the subject matter of claims 4-5, which are not addressed in Ground I. EX1002-Decl., ¶149. The combination further discloses the other challenged claims as an additional or alternative mapping to Bergstrom-'059.

1. Claim 1

a. 1[pre]

If limiting, Nakazawa-'190 discloses *an absorbent article* (e.g., absorbent article 1) *having a longitudinal direction and a transverse direction, side edges extending in the longitudinal direction and edges extending in the transverse direction.* EX1002-Decl., ¶150.

As shown in Figure 11, Nakazawa-'190 discloses an “absorbent article 1.” EX1008-Nakazawa-'190, [0076]; *see also id.*, Abstract, [0011]-[0127], claim 1. Nakazawa-'190 depicts an absorbent article with side edges that extend along a longitudinal direction and end edges that extend along a transverse direction in Figure 11. EX1002-Decl., ¶152.



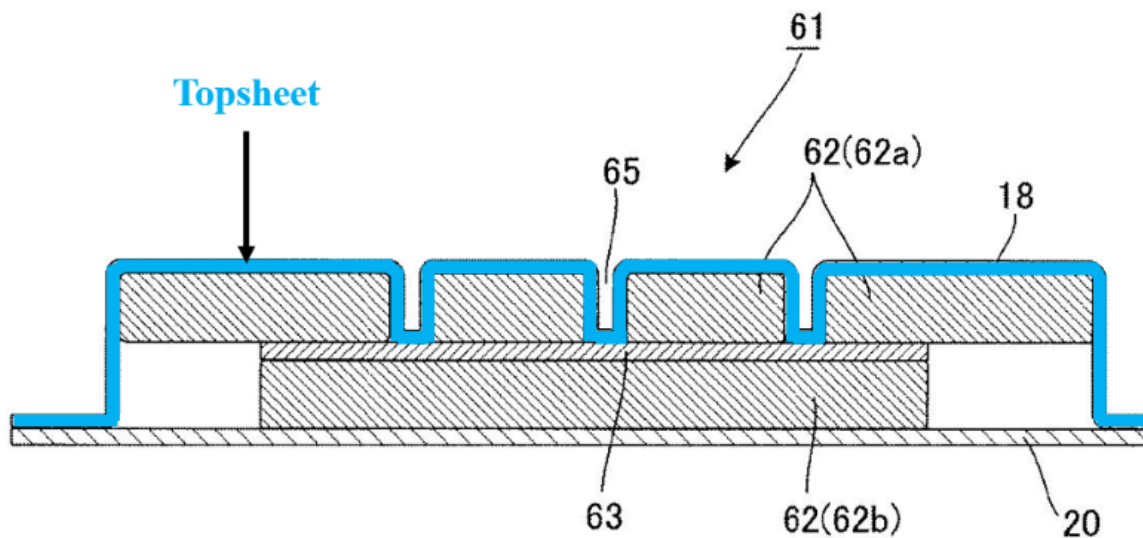
EX1008-Nakazawa-'190, Figure 11 (annotated). EX1002-Decl., ¶152.

b. 1[a]

Nakazawa-'190 discloses *a fluid permeable topsheet* (e.g., **topsheet 18**).
EX1002-Decl., ¶153.

As shown in Figure 14A, Nakazawa-'190 discloses that “absorbent article 1 . . . comprises . . . a **top sheet 18** made at least partially of a liquid-permeable material.”
EX1008-Nakazawa-'190, Abstract, [0074], [0083], [0084], Figure 14A (item 101),
claims 1 and 3. EX1002-Decl., ¶154.

[Fig. 14A]



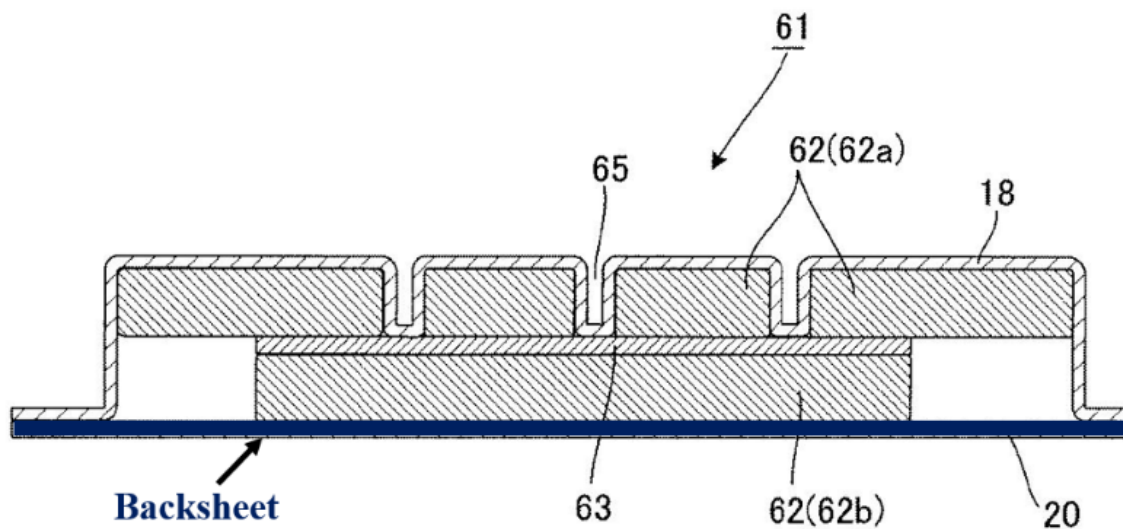
EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶155.

c. 1[b]

Nakazawa-'190 discloses *a fluid impermeable backsheet* (e.g., **backsheet 20**).
EX1002-Decl., ¶156.

As shown in Figure 14A, Nakazawa-'190 discloses that “absorbent article 1” has “a **back sheet 20** made of a liquid-impermeable material.” EX1008-Nakazawa-'190, Abstract, [0074] (same), Figure 14A (item 101), claims 1 and 3. EX1002-Decl., ¶157.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶158.

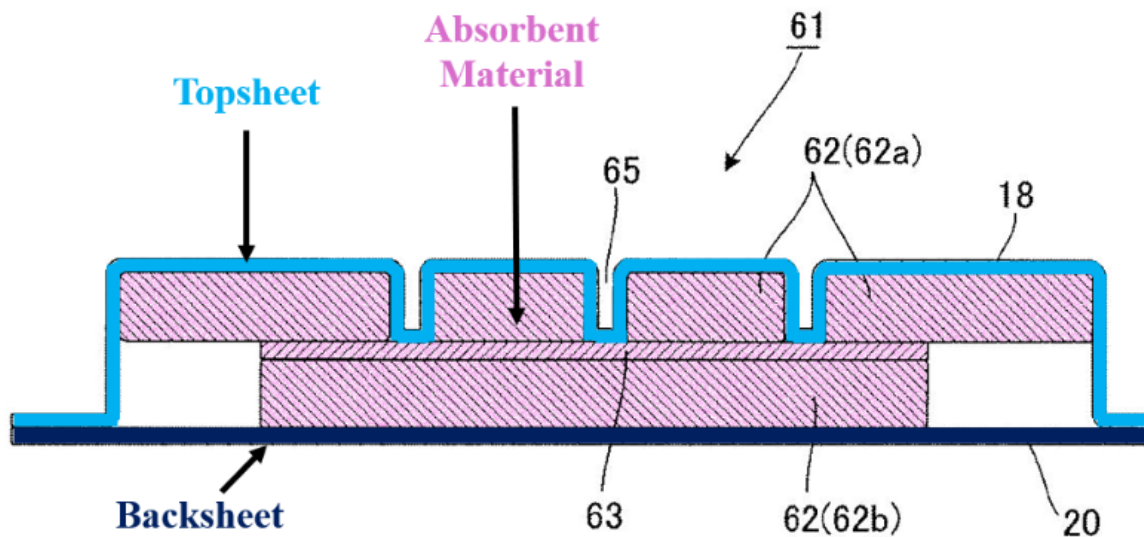
d. 1[c]

Nakazawa-'190 discloses an *absorbent core* (e.g., **absorbent material 62**, **diffusion sheet 63**) enclosed between said *topsheet* (e.g., **topsheet 18**) and said *backsheet* (e.g., **backsheet 20**). EX1002-Decl., ¶159.

As shown in Figure 14A, Nakazawa-'190 discloses, “an absorbent article 61 comprising an **absorbent material 62**, a **top sheet 18** made at least partially of a liquid-permeable material and disposed so as to cover the top surface of the

absorbent material 62, and a **back sheet 20** made of a liquid-impermeable material and disposed on the back surface of the **absorbent material 62**.” EX1008-Nakazawa-’190, [0074]; *see also id.*, [0181] (“Each absorbent material ... was interposed by a **topsheet** and a **backsheet**.”), *see, e.g., id.*, Figure 14A, claims 1-3, 5, 6. Nakazawa-’190 discloses, that “a diffusion sheet 63 with higher liquid permeability than the first absorbent material 62a is disposed between the first absorbent material 62a and the second absorbent material 62b.” *Id.*, [0074], Figure 14A. As shown in Figure 14A, the **absorbent material 62** is arranged between the **topsheet 18** and the **backsheet 20**. EX1002-Decl., ¶¶160-162.

[Fig. 14A]



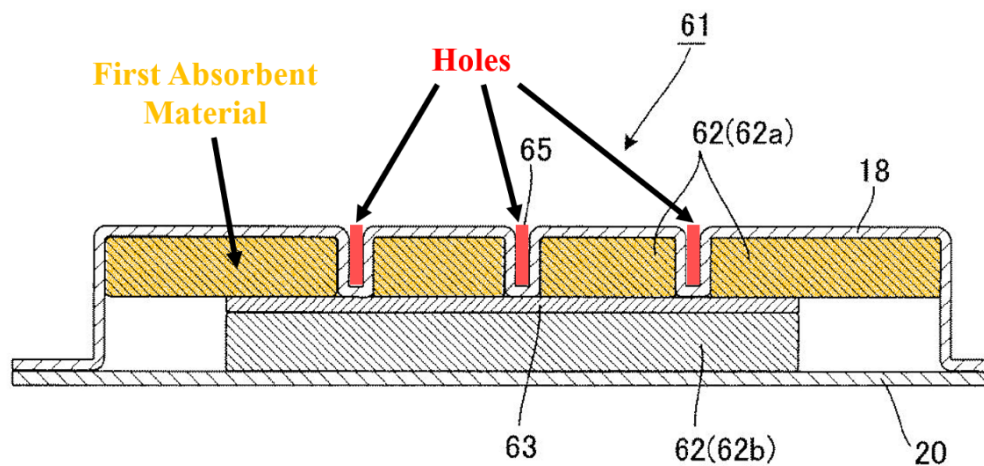
EX1008-Nakazawa-’190, Figure 14A (annotated). EX1002-Decl., ¶162

e. 1[d]

Nakazawa-'190 discloses *a first absorbent layer having an opening* (e.g., **hole portion 65**) *that passes through the first absorbent layer* (e.g., **first absorbent material 62a**) *from one major surface to an opposing major surface and therebetween the opening is surrounded by a closed periphery of first absorbent layer*. EX1002-Decl., ¶163.

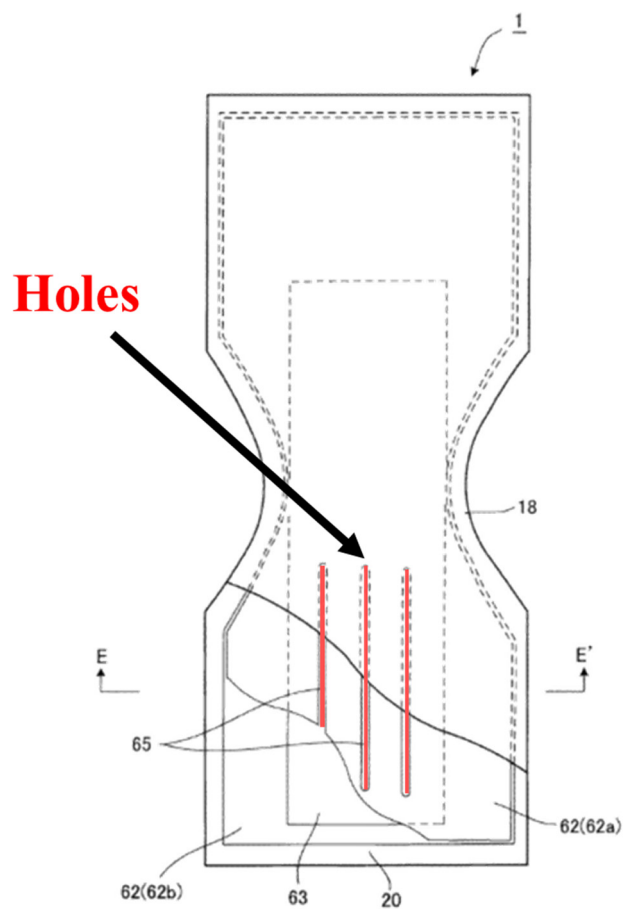
As shown in Figure 14A, Nakazawa-'190 discloses, “a **hole portion 65** ... penetrates from the top surface to the back surface of the **first absorbent material 62a**”. EX1008-Nakazawa-'190, [0074]. Nakazawa-'190 also discloses, “[i]n the absorbent articles shown in Figures 14A and Figure 14B, the topsheet 18 covers ... the inner surfaces of the **hole portions 65** in the **first absorbent material 62a**.” *Id.*, [0084], *see also id.* (“[T]he top sheet 18 and the diffusion sheet 63 are joined together at the openings in **hole portions 65** on the back surface of **first absorbent material 62a**”), Figures 14A, claims 1-7; EX1002-Decl., ¶¶164-165.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶166.

[Fig. 11]



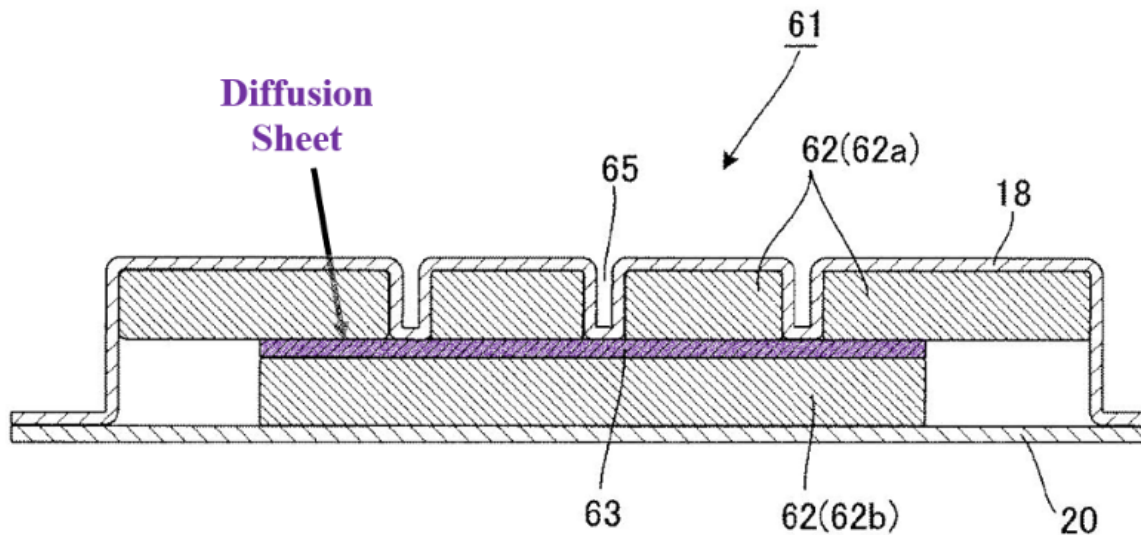
EX1008-Nakazawa-'190, Figure 11 (annotated). EX1002-Decl., ¶166.

f. 1[e]

Nakazawa-'190 discloses a *fluid flow control structure* (e.g., **diffusion sheet 63**). EX1002-Decl., ¶167.

Nakazawa-'190 discloses a “**diffusion sheet** [that] has higher liquid permeability than the absorbent material, and when excretory fluid flows into the hole portions of the absorbent material, it can permeate the **diffusion sheet** and diffuse faster than it can be absorbed by the absorbent material.” EX1008-Nakazawa-'190, [0061]. Nakazawa-'190 further discloses “a **diffusion sheet 63** with higher liquid permeability than the first absorbent material 62a is disposed between the first absorbent material 62a and the second absorbent material 62b” *Id.*, Abstract, [0074], [0172], Figure 14A, claims 1-7, *see also id.*, [0012], [0013], [0015], [0018]. EX1002-Decl., ¶168.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶169.

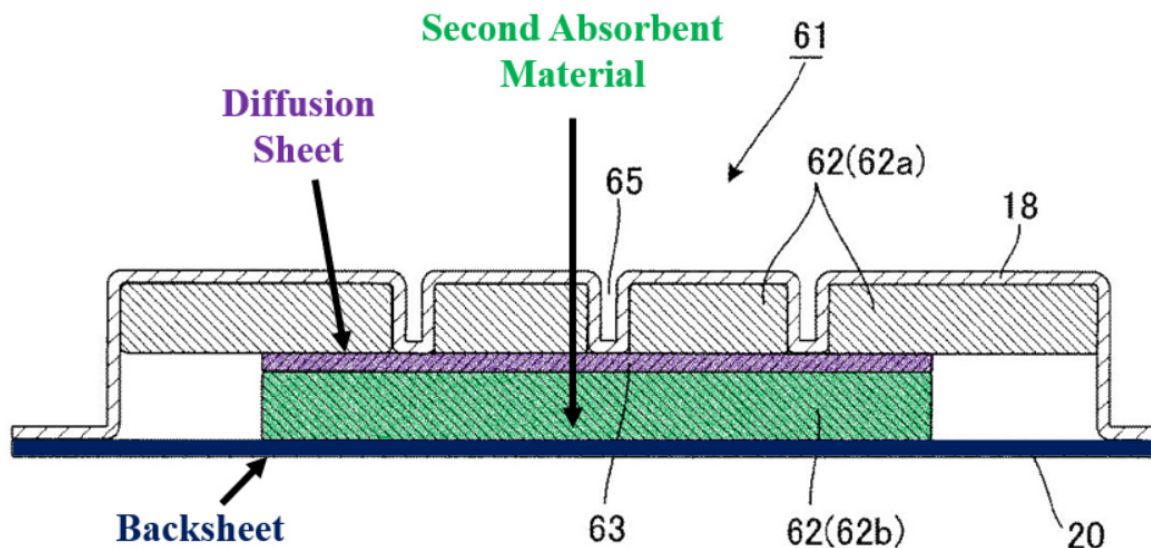
g. 1[f]

Nakazawa-'190 discloses an *absorbent core comprising . . . a **second absorbent layer*** (e.g., **second absorbent material 62b**) *arranged between the **fluid flow control structure*** (e.g., **diffusion sheet 63**) *and the fluid impermeable backsheet* (e.g., **backsheet 20**). EX1002-Decl., ¶170.

Nakazawa-'190 discloses “a **diffusion sheet 63** ... is disposed between the first absorbent material 62a and the **second absorbent material 62b**,” and further discloses, “a **backsheet 20** ... disposed on the back surface of the **absorbent material 62b**. EX1008-Nakazawa-'190, [0074], *see also id.*, [0079], [0081], claims 3, 5, 6. As depicted in Figure 14A, “the **second absorbent material 62b**” (i.e., a **second absorbent layer**) is arranged between “the **diffusion sheet 63**” (i.e., the

fluid flow control structure) and a **backsheet 20**. See *id.*, Figure 14A; EX1002-Decl., ¶¶171-172.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated).

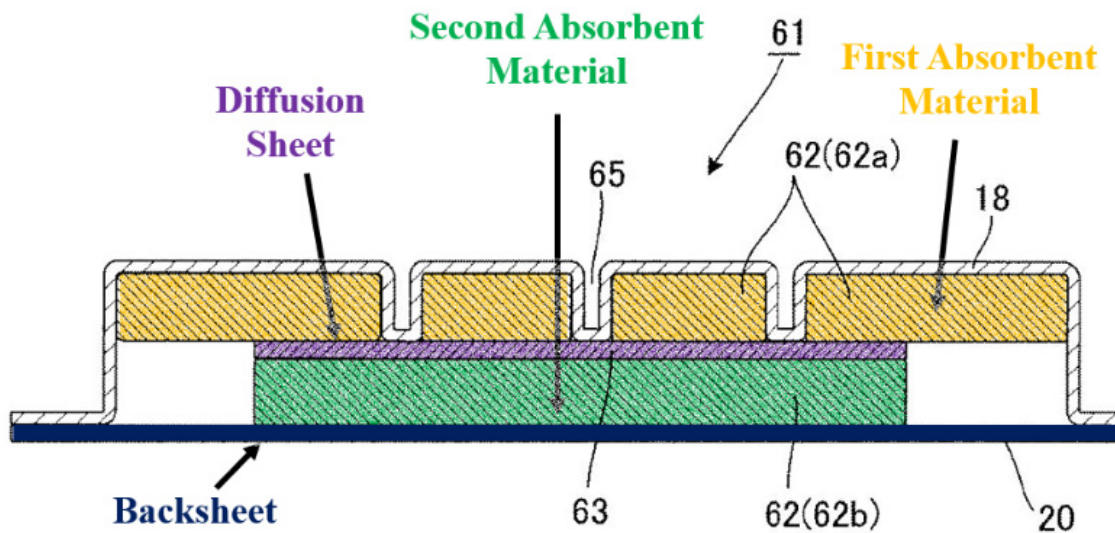
h. 1[g]

Nakazawa-'190 discloses that *the fluid flow control structure* (e.g., **diffusion sheet 63**) is arranged between said **first absorbent layer** (e.g., **first absorbent material 62a**) and said **backsheet** (e.g., **backsheet 20**). EX1002-Decl., ¶173.

Nakazawa-'190 discloses “a **diffusion sheet 63** ... is disposed between the **first absorbent material 62a** and the **second absorbent material 62b**,” and further discloses, “a **back sheet 20** ... disposed on the back surface of the **absorbent material 62[b]**.” EX1008-Nakazawa-'190, [0074], [0079], [0081]; see also *id.*, claims 3-5. The **diffusion sheet 63** (i.e., the **fluid flow control structure**) is

arranged between the **first absorbent material 62a** (i.e., a **first absorbent layer**) and a **backsheet 20** as depicted in Figure 14A. EX1002-Decl., ¶¶174-175.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶175

i. 1[h]

Nakazawa-'190 in view of Glaug-'753 discloses *a* fluid control structure (e.g., Nakazawa-'190 diffusion sheet 63; Glaug-'753 fluid acquisition system 34) *being a layered structure comprising a non-perforated fibrous polymeric layer* (e.g., Glaug-'753 **lower most layer 64**) *and a first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Glaug-'753 **apertured polymeric film 62**). EX1002-Decl., ¶176.

Nakazawa-'190 discloses that the “diffusion sheet has higher liquid permeability than the absorbent material, and when excretory fluid flows into the hole portions of the absorbent material, it can permeate the diffusion sheet and diffuse faster than it can be absorbed by the absorbent material.” EX1008-Nakazawa-'190, [0061]. Nakazawa-'190 also discloses that “[w]hen a porous plastic film is used as a diffusion sheet, the shape of the pores in the porous plastic film should be funnel-shaped ... [t]his configuration allows excretory fluid to pass through the pores of the porous plastic film and reduces liquid backflow.” *Id.*, [0068]. EX1002-Decl., ¶¶177-178

Glaug-'753

As shown in Figure 2, Glaug-'753 discloses an absorbent article, which comprises a “fluid acquisition system 34” with “at least two layers disposed over each other.” EX1006-Glaug-'753, 8:1-2, Figure 2, claim 1, *see also id.*, Abstract, 3:29-40, 54, 4:5-8, 4:35-39, 4:58-50, 6:11-18, 8:1-2, 9:17-49. EX1002-Decl., ¶¶179-180.

Glaug-'753 discloses that “the uppermost of the layers making up the fluid acquisition system 34 comprises an **apertured polymeric film 62.**” *Id.*, Abstract, 8:3-5, 9:19-27, claim 1. Glaug-'753 further discloses that “[t]he **lowermost layer** making up the fluid acquisition system 34 is designated by the reference **number 64** and can be any type of *fibrous* material.” *Id.*, Abstract, 4:1-4, 8:18-29 (“The bi-

component fibers are made of a polypropylene inner core and polyethylene outer sheath.”), claims 1, 15-17; *see also id.*, Figure 2. EX1002-Decl., ¶¶181-182.

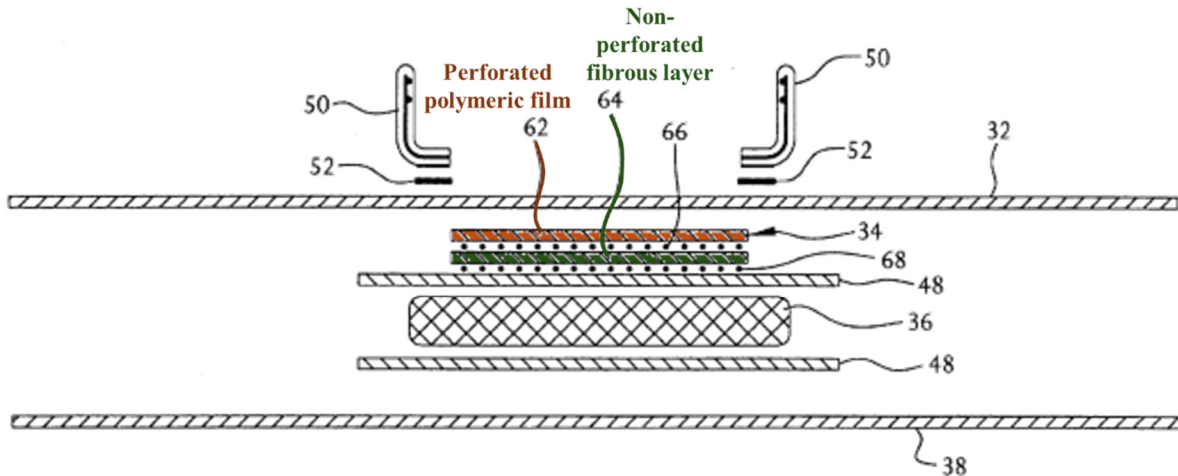


FIG. 2

EX1006-Glaug-’753, Figure 2 (annotated). EX1002-Decl., ¶183.

Motivation to combine Nakazawa-’190 and Glaug-’753

Obviousness requires the references in a combination “are analogous to the claims being challenged,” and that a POSITA would have been motivated to combine the references with a reasonable expectation of success. *See Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1004 (Fed. Cir. 2023). Each is met here. *See* EX1002-Decl., ¶184.

First, Nakazawa-’190, like Glaug-’753, is analogous art to the challenged claims. Both are in the same field as the ’138 patent and are reasonably pertinent to solving the problems addressed in the ’138 patent—absorbent articles (e.g.,

incontinence shields and sanitary napkins) for the rapid absorption of fluid (EX1001-USP138, '138 Patent)—with the same types of solutions—e.g., a multilayered absorbent core with (i) an opening in the upper core and (ii) a fluid flow control structure for rapid acquisition and distribution of fluid. *See, e.g.*, EX1002-Decl., ¶185.

Second, a POSITA would have been motivated to combine the teachings of Nakazawa-'190 with Glaug-'753 for many reasons and would have had a reasonable expectation of success. EX1002-Decl., ¶186.

Fluid flow control structures, which are also commonly referred to as acquisition and/or distribution layers, were commonly used in absorbent articles before the '138 patent. *See, e.g.*, EX1006-Glaug-'753, 1:21-23. Absorbent layers were known to be very good at storing fluid, but they typically store fluid at the location the fluid encountered the absorbent layer. *Id.*, 1:50-2:2. Absorbent layers also were known to take time to absorb fluid. *Id.* “Acquisition/distribution layers” were known to help move fluid quickly away from a user’s body, faster than the fluid could be absorbed, and distribute the fluid more evenly to different areas of the absorbent layer, before it got stored. *Id.*, 2:2-16; *see also* EX1009-White2003, Table 1; EX1010-Ajmeri2010, 88, 92; EX1011-Gupta2002, 373. EX1002-Decl., ¶187.

Both Nakazawa-'190 and Glaug-'753 recognized the utility of an acquisition layer, especially a perforated layer having three-dimensional apertures that channel

fluid to an absorbent article further away from the user's body. EX1008-Nakazawa-'190, [0012], [0013]; EX1006-Glaug-'753, 9:24-27. They also both recognize that the acquisition layer helps make the transfer of the liquid to the absorbent layers faster. EX1008-Nakazawa-'190, [0061], [0068]; EX1006-Glaug-'753, 2:41-48. The only difference between Nakazawa-'190's diffusion sheet and Glaug-'753's fluid acquisition system is that Glaug-'753 teaches having a fibrous, non-perforated layer in addition to the perforated film. EX1006-Glaug-'753, Abstract, 4:1-4, 8:3-5, 8:18-20, claims 1, 15-17. EX1002-Decl., ¶188.

Glaug-'753 teaches the benefits of adding a non-perforated fibrous layer to the acquisition layer in an absorbent article. Glaug-'753 explains that its multi-layered fluid flow control structure ("the fluid acquisition system 34") provides several improvements over known acquisition layers; as explained above, Glaug-'753 discloses that the top perforated layer 62 provides "faster and higher fluid volume intake into" the disclosed absorbent article (a diaper). EX1006-Glaug-'753, 9:24-34. This is because the perforated layer has "three dimensionally shaped apertures directed inwardly toward[] the core 36." *Id.*, 9:24-27. Glaug-'753 also teaches that the lower non-perforated layer provides "lateral distribution both transversely and longitudinally" of fluid "due to the fiber orientation of that layer." *Id.*, 9:34-39. Together, these two layers "optimize[] the fluid penetration rate and volume into the absorbent core 36 below it, while also minimizing the fluid from

exiting the diaper 20 when it is saturated and under high stress.” *Id.*, 9:43-46, *see also id.*, 6:11-18 (the layers of the fluid acquisition system “cooperate to manage, transport, accommodate and/or direct high volumes and high flow rates of urine or other body fluid received from the top sheet target zone into the absorbent core 36 at a rate that the core can handle, despite multiple insults of such fluid”). EX1002-Decl., ¶189.

These benefits would have motivated a POSITA to modify Nakazawa-’190 by either replacing its diffusion sheet with Glaug-’753’s “fluid acquisition system,” or by adding Glaug-’753’s lower non-perforated layer to the diffusion sheet. Implementing Glaug-’753’s “fluid acquisition system” or lower non-perforated layer would offer the same advantages of “fluid penetration rate and volume” while reducing fluid leakage from the absorbent article, which are also goals that Nakazawa-’190 seeks to address. *See* EX1006-Glaug-’753, 9:43-46; *see also id.*, 6:11-18.; EX1008-Nakazawa-’190, [0031]. EX1002-Decl., ¶190.

A POSITA would have likewise found it obvious to use Glaug-’753’s fluid acquisition system or lower non-perforated layer in Nakazawa-’190 because doing so either (1) involves the simple substitution of one known element (Glaug-’753’s two-layer fluid acquisition system) for another (Nakazawa-’190’s single layer diffusion sheet) to obtain predictable results (optimized fluid acquisition and distribution), and/or (2) involves use of a known technique (Glaug-’753’s fluid

acquisition system or lower non-perforated layer) to improve a similar device (Nakazawa-'190's multi-layer absorbent article) in the same way (by improving fluid acquisition and distribution). EX1002-Decl., ¶191.

A POSITA would have had a reasonable expectation of success in using Glaug-'753's fluid acquisition system in place of Nakazawa-'190's diffusion sheet, or using Glaug-'753's lower non-perforated layer with Nakazawa-'190's perforated diffusion sheet. Nakazawa-'190 and Glaug-'753 teach similarly designed multi-layered absorbent articles. For example, both disclosures include a fluid-permeable topsheet, a fluid-impermeable backsheet, a layer for fluid acquisition/distribution, and one or more absorbent cores. Acquisition layers were well-known and well-understood before the '138 patent and were predictable components for multi-layered absorbent articles. Thus, Glaug-'753's teachings would have been applied to Nakazawa-'190 in the same way those teachings are used in Glaug-'753 itself. Combining these embodiments required no more than routine skill and was the simple combination of known, mechanical components to yield predictable results. Thus, this limitation would have been obvious in view of Nakazawa-'190 and Glaug-'753. EX1002-Decl., ¶192.

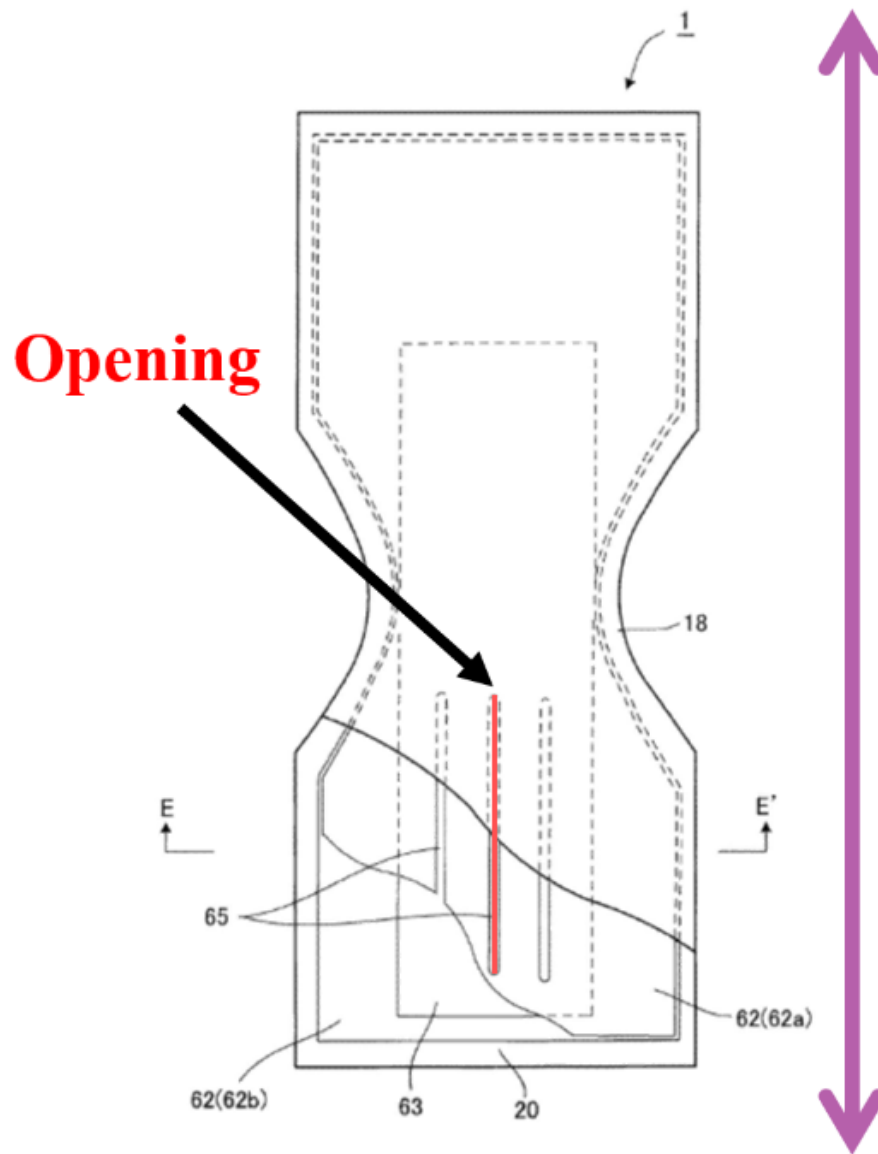
j. 1[i]

Nakazawa-'190 discloses that *the opening* (e.g., **opening (65)**) *extends along a longitudinal center line of the absorbent article, the longitudinal center line being*

parallel with the longitudinal direction of the absorbent article. EX1002-Decl.,
¶193.

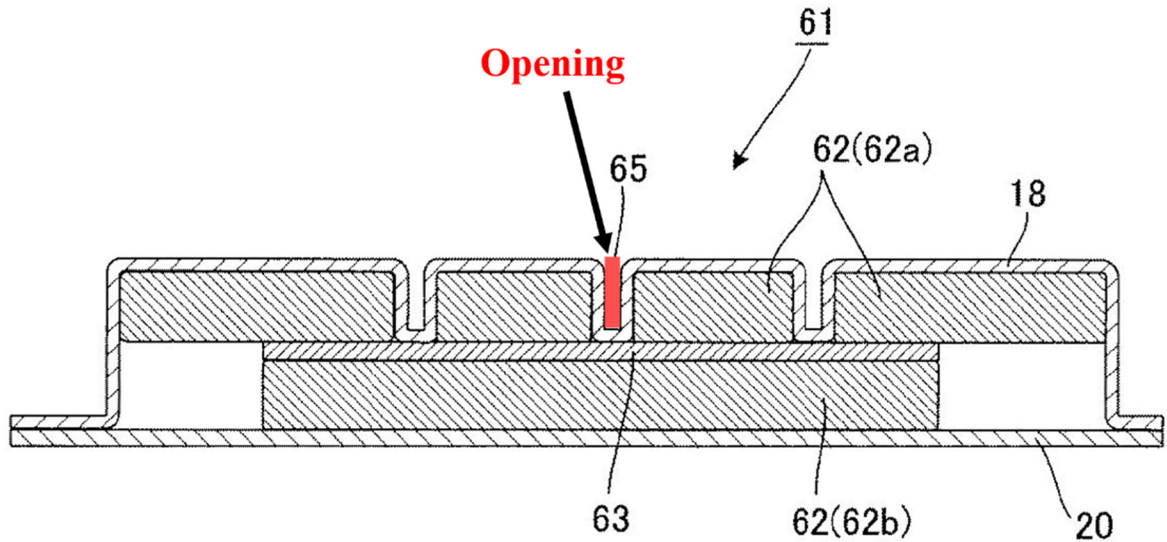
As shown in Figure 11, the center **opening** extends along a **longitudinal direction** in the center of the absorbent article. *See, e.g.,* EX1008-Nakazawa-'190, Figure 11. EX1002-Decl., ¶194.

[Fig. 11]



EX1008-Nakazawa-'190, Figure 11 (annotated). EX1002-Decl., ¶194.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶194.

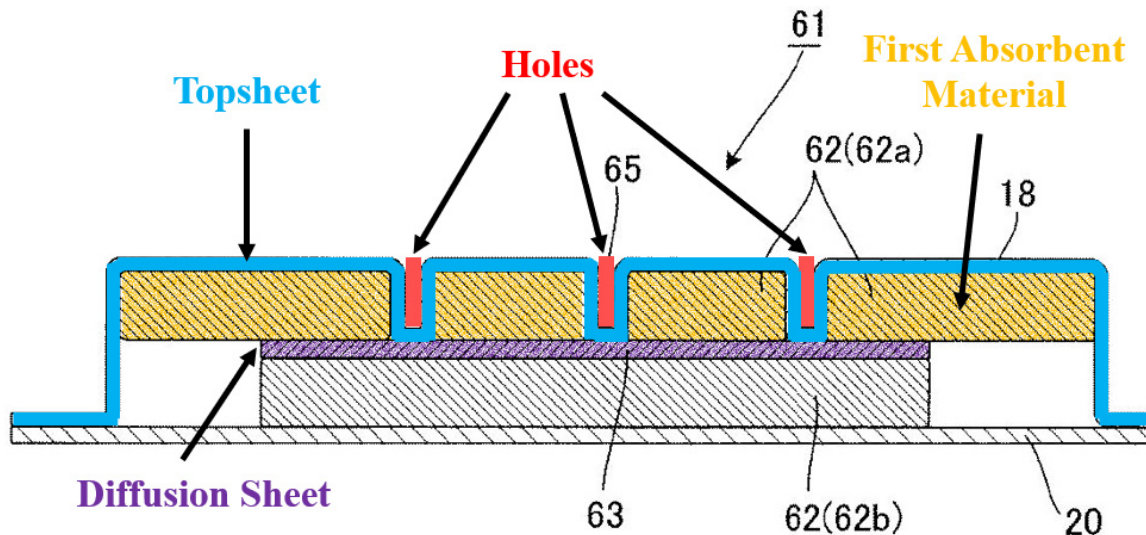
k. 1[j]

Nakazawa-'190 discloses a *fluid permeable topsheet* (e.g., **topsheet 18**) in *direct contact with the fluid flow control structure* (e.g., **diffusion sheet 63**) via the *opening* (e.g., **hole portions 65**). EX1002-Decl., ¶¶195-196.

As shown in Figure 14A, Nakazawa-'190 discloses, “the **top sheet 18** covers ... the inner surfaces of the **hole portions 65** in the **first absorbent material 62a**.”

EX1008-Nakazawa-'190, [0014], [0016], [0019], [0084], [0119], Figure 14A, claims 2, 4, 7. EX1002-Decl., ¶197.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). EX1002-Decl., ¶198.

2. Claim 3

Nakazawa-'190 in view of Glaug-'753 discloses *a first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Glaug-'753 apertured polymeric film 62) *[that] is a nonwoven, a film or a film/nonwoven laminate*. EX1002-Decl., ¶199. Nakazawa-'190 discloses the “diffusion sheet can be made of a nonwoven fabric or porous plastic film.” EX1008-Nakazawa-'190, [0062]. Nakazawa-'190 discloses, “[t]he main fibers and resin that constitute the diffusion sheet can be a polyolefin such as polypropylene or polyethylene, a polyamide such as polyester or nylon, an acrylic, vinylon, or composite fibers or a composite resin of these.” *Id.* EX1002-Decl., ¶200.

Similarly, Glaug-'753 describes "an apertured [i.e., perforated] polymeric [layer] film 62 of the fluid acquisition system." EX1006-Glaug-'753, 8:1-7. Glaug-'753 also notes that "[o]ne particularly suitable material is available from Tredegar Film Products of Terra Haute, Ind. under the trade designation C120 and basically comprises a polyethylene film apertured like that shown in U.S. Design Pat. No. D362,120." *Id.*, 8:7-12. Glaug-'753 discloses that "[o]ther three dimensional polymeric apertured films, such as those in the patents discussed above, can be utilized to form the first fluid acquisition layer 62." *Id.*, 8:12-15. "In fact, for some applications two dimensional apertured films, like those of the prior art, may be used for the layer 62." *Id.*, 8:15-17; EX1002-Decl., ¶201.

For the reasons explained above in Section X.B.1.i, a POSITA would have been motivated to modify Nakazawa-'190 in view of Glaug-'753 and would have had a reasonable expectation of success in doing so. EX1002-Decl., ¶202.

3. Claim 4

Nakazawa-'190 in view of Glaug-'753 discloses *wherein the first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Glaug-'753 apertured polymeric film 62) *is a three-dimensionally formed layer having penetrating apertures extending from a first surface of the first perforated polymeric layer towards a second surface of the first perforated polymeric layer and forming protrusions on said second surface.* EX1002-Decl., ¶¶203-204. As discussed in

Section X.B.1.i and incorporated by reference here, Nakazawa-'190 discloses "a porous plastic film" may be used for the diffusion sheet. EX1008-Nakazawa-'190, [0068]. Nakazawa-'190 discloses "the shape of the pores in the porous plastic film should be funnel-shaped, that is, the size of the opening in the pores decreases progressively from the front surface to the back surface of the porous plastic film." *Id.* Nakazawa-'190 teaches that "[t]his configuration allows excretory fluid to pass through the pores of the porous plastic film and reduces liquid backflow." *Id.* EX1002-Decl., ¶205.

Glaug-'753 discloses that "the fluid acquisition system 34 comprises an apertured polymeric film 62, which is preferably three dimensional in nature." EX1006-Glaug-'753, 8:3-17, *see also id.*, Abstract, 1:32-49, 2:63-65, 3:67-4:1, 8:8-15, 9:2-5, claims 20, 21. Glaug-'753 teaches that "the apertured film 62 includes a myriad of very tiny conically shaped apertures, which taper in the direction from the top sheet 32 towards the core 36. This arrangement results in a faster and higher fluid volume intake into the diaper and a slower and lower fluid volume output after the diaper has been saturated with fluid and exposed to compressive forces." *Id.*, 9:24-34; *see also id.*, 6:11-18; *see also*, claim 20, 21. EX1002-Decl., ¶206.

As explained in limitation 1[h], a POSITA would have found it obvious to modify Nakazawa-'190 by replacing the diffusion sheet with Glaug-'753's two-layer fluid acquisition system, or by adding Glaug-'753's lower non-perforated layer,

and reasonably expected success for the same reasons provided above for limitation 1[h]. It likewise would have been obvious and a POSITA would have reasonably expected success to use *a three-dimensionally formed layer* as claimed for the first perforated layer because both Nakazawa-'190 and Glaug-'753 teach such material is preferred and had particular advantages. EX1008-Nakazawa-'190, [0068]; EX1006-Glaug-'753, 9:16-40. EX1002-Decl., ¶207.

4. Claim 5

Nakazawa-'190 in view of Glaug-'753 discloses *the first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Glaug-'753 apertured polymeric film 62) *is arranged with said second surface facing the non-perforated polymeric layer* (Glaug-'753 lower most layer 64). EX1002-Decl., ¶208.

Glaug-'753 discloses that the fluid acquisition system 34 comprises “an apertured polymeric film 62, which is preferably three dimensional in nature.” EX1006-Glaug-753, 8:3-7. In a preferred embodiment, “the three dimensionally shaped apertures [are] directed inwardly towards the core.” *Id.*, 9:24-27. Under this configuration, the second surface (i.e., the surface towards which the “conically shaped apertures” taper faces the non-perforated polymeric layer 64, which is disposed between the perforated layer 62 and “the core 36.” *Id.*, 9:27-30, claim 21. EX1002-Decl., ¶209.

For the same reasons as stated above in limitation 1[h] and Claim 4, and incorporated by reference here, a POSITA would have found it obvious to modify Nakazawa-'190 by replacing the diffusion sheet with Glaug-'753's two-layer fluid acquisition system, or by adding Glaug-'753's lower non-perforated layer, and would have reasonably expected success. EX1002-Decl., ¶210.

5. Claim 20

Nakazawa-'190 in view of Glaug-'753 discloses *wherein the basis weight of the non-perforated fibrous polymeric layer is from 20-120 gsm*. EX1002-Decl., ¶¶211-212.

Glaug-753 discloses a “lower layer 64, of **20 gsm**/70mm through air bonded bicomponent fibers adhered on top of the absorbent core.” EX1006-Glaug-753, 8:40-47. Glaug-'753 also discloses “[a] higher basis weight acquisition layer 64, e.g., **50 gsm**/70 mm thermal bonded polypropylene fibers with variety of fiber material combinations.” EX1006-Glaug-753, 8:47-50. Glaug-'753 discloses that “[t]he lower layer 64 may be in the range of **10-50 gsm**/20-230 mm through air bonded bicomponent fibers.” EX1006-Glaug-753, 8:50-52. EX1002-Decl., ¶¶ 211-212.

For the same reasons as stated above in limitation 1[h] and Claim 4, and incorporated by reference here, a POSITA would have found it obvious to modify Nakazawa-'190 by replacing the diffusion sheet with Glaug-'753's two-layer fluid

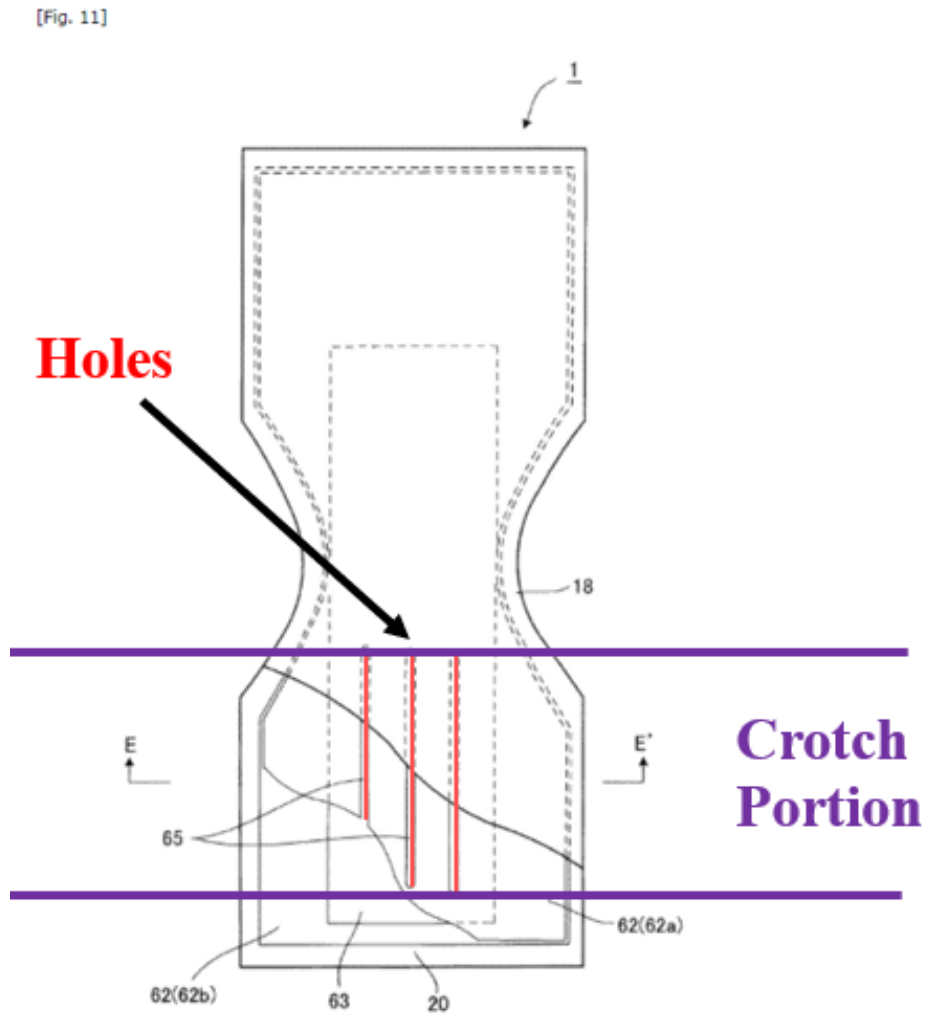
acquisition system, or by adding Glaug-'753's lower non-perforated layer *which has a basis weight from 20-120 gsm* and would have reasonably expected success.

EX1002-Decl., ¶¶211-212.

6. Claim 21

Nakazawa-'190 discloses *wherein the opening* (e.g., **opening 65**) *extends through the entire crotch portion of the absorbent article*. EX1002-Decl., ¶213.

As shown in Figure 11, Nakazawa-'190 depicts an **opening** in the **crotch portion** of the absorbent article. *See also* EX1008-Nakazawa-'190, [0089].



EX1008-Nakazawa-'190, Figure 11 (annotated). EX1002-Decl., ¶214.

7. Claim 22

Nakazawa-'190 discloses a *fluid permeable topsheet* (e.g., topsheet 18) *is not perforated*. EX1002-Decl., ¶216.

Nakazawa-'190 discloses that “a woven fabric, nonwoven fabric, or porous film can be used as the liquid-permeable materials constituting the top sheet.” EX1008-Nakazawa-'190, [0117]. But it does not describe the topsheet 18 as being

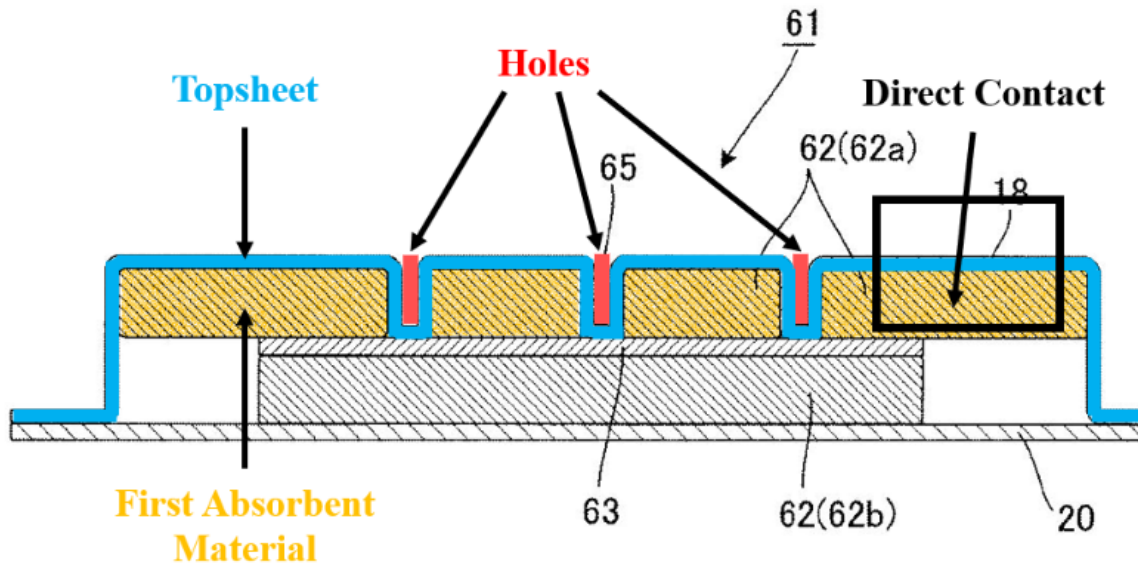
perforated. *See generally id.* Further, to the extent that the Board considers “porosity” to be synonymous with “perforated,” Nakazawa-’190 describes the topsheet *may* include a material that has porosity, not that it is *required*. A POSITA would understand that a non-perforated topsheet could be used with the disclosed absorbent article of Nakazawa-’190. EX1002-Decl., ¶217.

8. Claim 24

Nakazawa-’190 discloses *the fluid permeable topsheet* (e.g., **topsheet 18**) *is in contact with the first absorbent layer* (e.g., **first absorbent material 62a**) *of the absorbent core at an area other than where the opening is located*. EX1002-Decl., ¶218.

Nakazawa-’190 discloses, “the **top sheet 18** is disposed on the top surface of the **first absorbent material 62a**.” EX1008-Nakazawa-’190, [0074]. Nakazawa-’190 discloses, “In the absorbent articles shown in Figure 14A and Figure 14B, the **top sheet 18** covers the top surface of the **first absorbent material 62a**, the inner surfaces of the **hole portions 65** in the **first absorbent material 62a**. *Id.*, [0084], *see also id.*, Figures 14A, 14B, claims 1, 3. EX1002-Decl., ¶219

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated). The contact between the fluid permeable topsheet and the first absorbent material—as depicted in Figure 14A—is at an area other than where the **opening** is located. EX1002-Decl., ¶¶221-222.

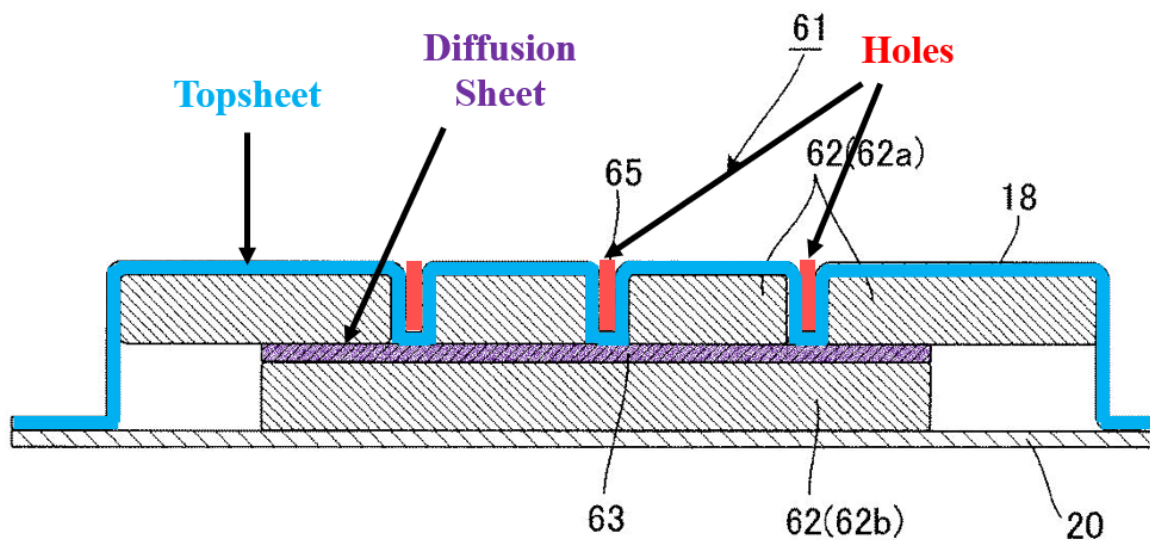
9. Claim 25

Nakazawa-'190 discloses wherein the fluid permeable **topsheet** (e.g., **topsheet 18**) is in contact with the **fluid flow control structure** (e.g., **diffusion sheet 63**) via the **opening** (e.g., **hole portions 65**) such that a cavity is formed along the longitudinal center line of the absorbent article. EX1002-Decl., ¶¶223-224.

For example, as shown in Figures 14A and 14B, there is no material between the **diffusion sheet** (i.e., the **fluid flow control structure**) and the **topsheet 18** at the **hole portions 65** such that a cavity is formed along the longitudinal center line

of the absorbent article. EX1008-Nakazawa-'190, Figures 14A-14B; *see also id.*, [0074] (“[A] hole portion 65 that penetrates from the top surface to the back surface of the first absorbent material 62a is formed in the first absorbent material 62a”). EX1002-Decl., ¶224.

[Fig. 14A]



EX1008-Nakazawa-'190, Figure 14A (annotated).

C. Ground III: Claim 7 Is Obvious Over Nakazawa-'190 in view of Glaug-'753 and Cohen-'429

As discussed in Ground II, claims 1 and 4 are obvious over Nakazawa-'190 in view of Glaug-'753. Nakazawa-'190 in view of Glaug-'753 and Cohen-'429 teaches that *the average size of the apertures in the first perforated polymeric layer is 0.5-5 mm*. EX1002-Decl., ¶¶226-227.

The '138 patent states “[t]he apertures in the first perforated polymeric layer may have an average size of 0.5-5 mm, measured at the smallest diameter of the apertures.” EX1001- USP138, 3:45-47. EX1002-Decl., ¶227.

Glaug-'753 discloses that a preferred material for its apertured polymeric film 62 is “available from Tredegar Film Products of Terra Haute, Ind. Under the trade designation C120 and basically comprises a polyethylene film apertured like that shown in U.S. Design Pat. No. D362,120.” EX1006-Glaug-753, 8:7-12. Glaug-'753 does not disclose the size of the apertures in the Tredegar film. EX1002-Decl., ¶228.

However, other references disclose aperture sizes for Tredegar films. For example, Cohen-'429 discloses using a “three dimensional apertured film” sold by Tredegar under the trade name Aquidry as an acquisition/distribution layer. EX1016-Cohen-429, [0032]. Cohen-'429 discloses the material has an “an average pore size of 0.3-10 mm in diameter, *preferably 0.5-5.0 mm*, and optimally 1.0-2.0 mm.” EX1016-Cohen-429, [0041]. Cohen-'429 discloses this pore size is

“sufficiently large to enable rapid liquid acquisition.” *Id.*, [0024]. EX1002-Decl., ¶229.

For the same reasons as stated above in limitation 1[h] and Claims 4-5, and incorporated by reference here, a POSITA would have found it obvious to modify Nakazawa-’190 by replacing the diffusion sheet with Glaug-’753’s two-layer fluid acquisition system and would have reasonably expected success. Further, a POSITA would have been motivated to use a three-dimensional perforated polymeric layer having apertures with an average size of 0.5-5.0mm for Glaug-’753’s perforated layer 62 and would have had a reasonable expectation of success in doing so. This is because Cohen-’429 discloses that three-dimensional Tredegar films available before the ’138 patent and known to be preferable acquisition/distribution layers had an average aperture size of 0.5-5.0mm. EX1002-Decl., ¶¶230-231.

D. Ground IV: Claims 1-5, 7-8, 21-22, and 24 Are Obvious Over Nakazawa-’190 in view of Ponomarenko-’236

As set forth below, Nakazawa-’190 in view of Ponomarenko-’236 renders obvious the subject matter of claims 2 and 8, which are not addressed in Grounds I, II, or III. The combination further discloses each of the remaining challenged claims as an additional or alternative mapping to Nakazawa-’190 in view of Glaug-’753. Any limitation not specifically addressed below is disclosed by Nakazawa-’190 for the reasons provided in Ground II. EX1002-Decl., ¶232.

1. Claim 1

a. 1[h]

Nakazawa-'190 in view of Ponomarenko-'236 discloses *a* fluid control structure (e.g., Nakazawa-'190 diffusion sheet 63; Ponomarenko-'236 sublayer 30) *being a layered structure comprising a **non-perforated fibrous polymeric layer** (e.g., Ponomarenko-'236 **acquisition layer 37 and/or additional acquisition layers**) and a **first perforated polymeric layer** (e.g., Ponomarenko-'236 **acquisition layer 36 and/or additional acquisition layer**).* EX1002-Decl., ¶233.

Ponomarenko-'236

Ponomarenko-'236 discloses a sublayer 30 which “in general ... serves as ... an acquisition layer and optionally also as a distribution layer, capable to acquire liquid (urine) and temporarily hold the liquid and allow it to pass, or transport it to the absorbent core underneath ... and optionally also distribute it in the X and Y direction of the sublayer (30).” EX1007-Ponomarenko-'236, 7:8-19; *see also id.*, claims 1, 7. Ponomarenko-'236 discloses that the sublayer “comprises typically a fibrous layer.” *Id.*, 7:24. Ponomarenko-'236 discloses that it is “[h]ighly preferred that the sublayer (30) comprises two or more (acquisition layers (e.g., a laminate of two or more layers), and that the holes (31) of the sublayer (30) are preferably formed by the (aligned) holes (31) through either the first or second or first and (part of the) second or subsequent layers.” *Id.*, 6:49-54. Ponomarenko-'236 discloses

that in some embodiments only some but not all layers of the sublayer comprise holes. *Id.*, 9:18-23. EX1002-Decl., ¶¶76, 234-236.

As shown in Figures 6 and 7, Ponomarenko-'236 shows embodiments where **acquisition layer 36 is completely perforated** and **acquisition layer 37** remains non-perforated because the holes 31 do not extend all the way through **layer 37**. EX1007-Ponomarenko-'236, 7:27-28. EX1002-Decl., ¶237.

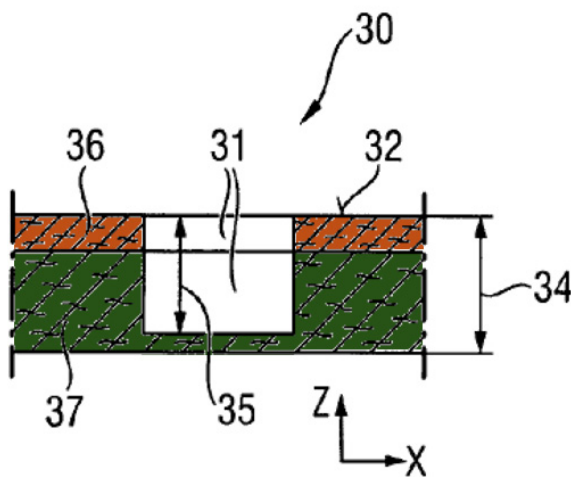


Fig. 6

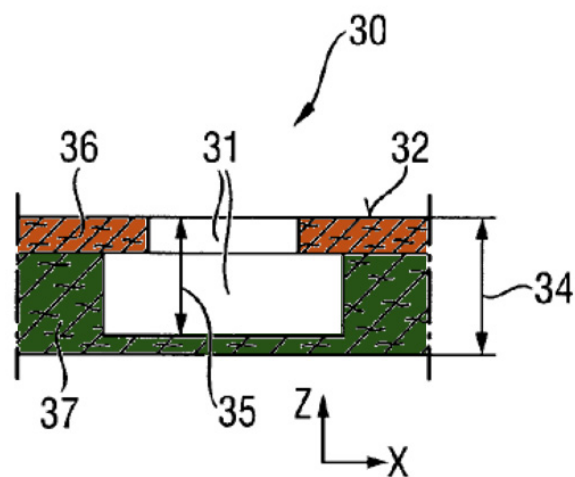


Fig. 7

Motivation to combine Nakazawa-'190 and Ponomarenko-'236

Nakazawa-'190 and Ponomarenko-'236 are “analogous to the claims being challenged,” and a POSITA would have been motivated to combine these references with a reasonable expectation of success. *See Corephotonics*, 84 F.4th at 1004; EX1002-Decl., ¶238.

First, like Nakazawa-'190, Ponomarenko-'236 is analogous art to the challenged claims. It is in the same field as the '138 patent and is reasonably pertinent to solving the same problems addressed in the '138 patent with the same type of solutions discussed in Section X.B.1.i above. *See* EX1002-Decl., ¶239.

Second, a POSITA would have been motivated to combine the teachings of Nakazawa-'190 with Ponomarenko-'236 for a number of reasons with a reasonable expectation of success. EX1002-Decl., ¶ 241. As discussed in Section X.B.1.i above, before the '138 patent was filed, fluid flow control structures were already commonly used in multi-layered absorbent articles and were recognized for facilitating the flow of fluid into absorbent layers and distributing fluid to different areas of the absorbent layers. *Id.* EX1002-Decl., ¶240.

As explained above in Section X.B.1.i, Nakazawa-'190 recognized the utility of an acquisition layer, especially a perforated layer. EX1008-Nakazawa-'190, [0012], [0013]. The difference between Nakazawa-'190's diffusion sheet and Ponomarenko-'236's sublayer is that Ponomarenko-'236 teaches having additional layers, including non-perforated fibrous layers in addition to the perforated film. EX1006-Glaug-'753, Abstract, 4:1-4, 8:3-5, 8:18-20, 9:19-27, claims 1, 15-17; EX1002-Decl., ¶241.

Ponomarenko-'236 teaches that its multi-layered fluid flow control structure (sublayer 30) provides several improvements. Ponomarenko-'236 discloses that

sublayer 30 helps “acquire liquid (urine) and temporarily hold the liquid and allow it to pass, or transport it to the absorbent core underneath (in Z-direction), and optionally also distribute it in the X and Y direction of the sublayer” and “facilitates the absorption of the fluid by the absorbent core below.” EX1007-Ponomarenko-’236, 7:8-16; *see also, id.*, 6:47-49 (sublayer design “ensures excellent feces storage and isolation during the whole usage of the diaper, even when a user is moving or sitting on the diaper”). Ponomarenko-’236’s sublayer 30 therefore helps provide fluid acquisition and distribution. EX1002-Decl., ¶242.

These benefits would have motivated a POSITA to modify Nakazawa-’190 by replacing its diffusion sheet with Ponomarenko-’236’s sublayer to realize the same results in the Nakazawa-’190 absorbent article. Using Ponomarenko-’236’s sublayer would improve Nakazawa-’190 by increasing fluid penetration rate and volume while reducing fluid leakage from the absorbent article. EX1002-Decl., ¶243.

Further, A POSITA would have found it obvious to use Ponomarenko-’236’s sublayer in Nakazawa-’190 because doing so (1) involves the simple substitution of one known element (Ponomarenko-’236’s sublayer) for another (Nakazawa-’190’s diffusion sheet) to obtain predictable results (optimized fluid acquisition and distribution), and/or (2) involves use of a known technique (Ponomarenko-’236’s sublayer) to improve a similar device (Nakazawa-’190’s multi-layer absorbent

article) in the same way (by improving fluid acquisition and distribution). EX1002-Decl., ¶244.

A POSITA would have had a reasonable expectation of success replacing Nakazawa-'190's diffusion sheet with Ponomarenko-'236's sublayer. Nakazawa-'190's and Ponomarenko-'236 teach similarly designed multi-layered absorbent articles. Thus, Ponomarenko-'236's teachings would have been applied to Nakazawa-'190 in the same way those teachings are used in Ponomarenko-'236's absorbent article itself. Combining these embodiments required no more than routine skill and was the simple combination of known, mechanical components to yield predictable results. Thus, this limitation and claim 1 would have been obvious in view of Nakazawa-'190 and Ponomarenko-'236's sublayer. EX1002-Decl., ¶¶245-246.

2. Claim 2

Nakazawa-'190 in view of Ponomarenko-'236 renders obvious that the *first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Ponomarenko-'236 additional acquisition layer) *has a basis weight from 60 g/m² to 100 g/m²*. EX1002-Decl., ¶¶247-248.

Ponomarenko-'236 teaches that sublayer 30 comprises at least one nonwoven acquisition layer and that it is “preferred that such materials have a high basis weight, i.e., 40 gsm or more, preferably even 60 gsm.” EX1007-Ponomarenko-'236, 10:4-

17. Ponomarenko-'236 goes on to teach that holes can be formed through the different layers of sublayer 30, such that a POSITA would have found it obvious that Ponomarenko-'236 teaches forming perforations in a layer with a basis weight of over 60 gsm. EX1007-Ponomarenko-'236, 10:31-41; EX1002-Decl., ¶249.

A POSITA would have found it obvious to modify Nakazawa-'190 by replacing the diffusion sheet with Ponomarenko-'236's sublayer and reasonably expected success for the same reasons provided above for limitation 1[h] and incorporated here. *See* Section X.D.1.a. Because Ponomarenko-'236 teaches that a high basis weight was preferable, a POSITA would have been motivated to use the high basis weight sublayer of Ponomarenko-'236 in place of the diffusion sheet of Nakazawa-'190 to obtain the same advantages as disclosed in Ponomarenko-'236. EX1002-Decl., ¶250.

3. Claim 3

Nakazawa-'190 in view of Ponomarenko-'236 discloses a *first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Ponomarenko-'236 acquisition layer 36 and/or additional acquisition layer) *[that] is a nonwoven, a film or a film/nonwoven laminate*. EX1002-Decl., ¶¶251-252.

As explained above, Nakazawa-'190 discloses the diffusion sheet “can be made of a nonwoven fabric or porous plastic film.” EX1008-Nakazawa-'190, [0062]. Ponomarenko-'236 discloses that “[i]t may also be preferred that the

sublayer (30) comprises, in addition to the fibrous acquisition layer above, one or more layers of nonwoven acquisition layers, including carded bonded nonwoven acquisition layers, such as carded resin-bonded nonwovens, embossed carded resin-bonded non-woven acquisition layers, and optionally high loft carded resin-bonded nonwoven acquisition layers, or preferably carded through-air-bounded woven acquisition layers, carded thermos-bonded nonwoven acquisition layers; most preferably are non-embossed carded resin-bonded non-woven acquisition layers.” EX1007-Ponomarenko-’236, 10:4-15. Further, as explained above for Claim 2, it would have been obvious to a POSITA that this layer in Ponomarenko-’236 would have been perforated in certain embodiments. EX1002-Decl., ¶¶253-254.

As explained in limitation 1[h] and incorporated by reference here, the benefits of Ponomarenko-’236’s sublayer described above would have motivated a POSITA to modify Nakazawa-’190 by replacing the diffusion sheet with Ponomarenko-’236’s sublayer to realize the same results in Nakazawa-’190 absorbent article. It likewise would have been obvious and a POSITA would have reasonably expected success to use a nonwoven, a film or a film/nonwoven laminate for the first perforated layer because as Ponomarenko-’236 instructs, such materials were preferred. For these reasons, a POSITA would have been motivated to use Ponomarenko-’236’s sublayer, including its first perforated layer comprised of nonwoven, film, or film/nonwoven laminate, in place of the diffusion sheet of

Nakazawa-'190 to obtain the same advantages as disclosed in Ponomarenko-'236. *Id.* EX1002-Decl., ¶¶253-254.

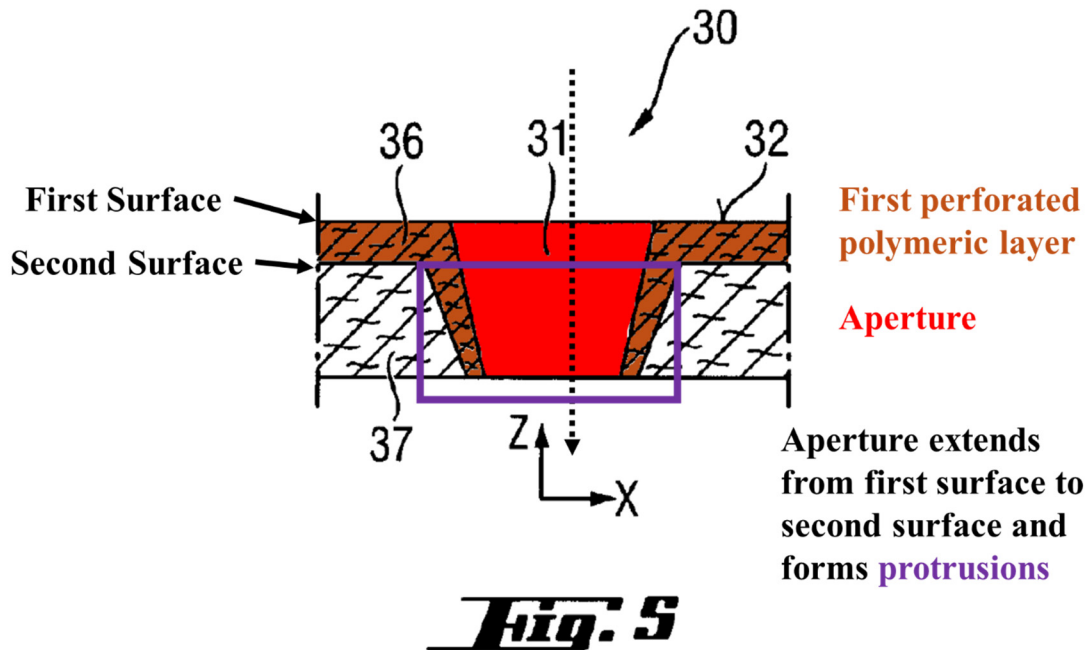
A POSITA would have had a reasonable expectation of success at combining Nakazawa-'190 and Ponomarenko-'236 for the same reasons discussed in Sections X.D.1.a and X.D.2. EX1002-Decl., ¶255.

4. Claim 4

Nakazawa-'190 in view of Ponomarenko-'236 discloses *wherein the **first perforated polymeric layer** (e.g., Ponomarenko-'236 **acquisition layer 36** of sublayer 30) is a three-dimensionally formed layer having penetrating apertures extending from a first surface of the first perforated polymeric layer towards a second surface of the first perforated polymeric layer and forming protrusions on said second surface.* As discussed in Section X.B.3 and incorporated by reference here, Nakazawa-'190 discloses this limitation. EX1002-Decl., ¶¶256-258.

Ponomarenko-'236 discloses that “[w]hen the sublayer (30) comprises two or more layers, it may be beneficial that the holes (31) are formed, e.g., by pushing a hole forming tool onto the surface of the first layer 36) and through the first and second layer (37) and further layers, such that part of the material of the first layer (36) is pushed into the holes (31).” EX1007-Ponomarenko-'236, 10:31-37; claim 1; EX1002-Decl., ¶259.

As shown in Figure 5, Ponomarenko-'236 depicts an aperture with a first and second surface where the aperture protrudes on to said second surface. EX1002-Decl., ¶260.



As explained in limitation 1[h] and incorporated by reference here, the benefits of Ponomarenko-'236's sublayer described above would have motivated a POSITA to modify Nakazawa-'190 by replacing the diffusion sheet with Ponomarenko-'236's sublayer to realize the same results in the Nakazawa-'190 absorbent article. It likewise would have been obvious and a POSITA would have reasonably expected success to include a *first perforated polymeric layer that is a three-dimensionally formed layer having penetrating apertures extending from a first surface of the first perforated polymeric layer towards a second surface of the*

first perforated polymeric layer and forming protrusions on said second surface because Ponomarenko-'236 teaches that such a configuration “may provide smooth edges and walls of the holes, and furthermore it may inhibit the fibres of the second layer (37) to migrate into the holes.” EX1007-Ponomarenko-'236, 10:37-41. For these reasons, a POSITA would have been motivated to use Ponomarenko-'236 first perforated polymeric layer with apertures in place of the diffusion sheet of Nakazawa-'190 to obtain the same advantages as disclosed in Ponomarenko-'236. EX1002-Decl., ¶261.

A POSITA would have had a reasonable expectation of success at combining Nakazawa-'190 and Ponomarenko-'236 for the reasons discussed in Sections X.D.1.a, X.D.2 and X.D.3. EX1002-Decl., ¶262.

5. Claim 5

Nakazawa-'190 in view of Ponomarenko-'236 discloses *the first perforated polymeric layer* (e.g., Ponomarenko-'236 acquisition layer 36 of sublayer 30) *is arranged with said second surface facing the non-perforated polymeric layer* (Ponomarenko-'236 acquisition layer 37 and/or other acquisition layer EX1002-Decl., ¶¶263-266.

Ponomarenko-'236 discloses that “[t]he sublayer (30) may be made by forming holes (31) in a continuous layer (30) (i.e., without holes (31)), for example by punching or pushing holes (31) in a said sublayer (30).” EX1007-

Ponomarenko-'236, 10:24-30. Ponomarenko-'236 teaches that “[w]hen the sublayer (30) comprises two or more layers, it may be beneficial that the holes (31) are formed by pushing, e.g., by pushing a hole forming tool onto the surface of the first layer 36) and through the first and second layer (37) and further layers, such that part of the material of the first layer (36) is pushed into the holes (31).” *Id.*, 10:31-37; EX1002-Decl., ¶¶263-266.

For the same reasons as stated above in limitation 1[h] and Claims 2-4, and incorporated by reference here, a POSITA would have found it obvious to modify Nakazawa-'190 by replacing the diffusion sheet with Ponomarenko-'236's sublayer and would have reasonably expected success. EX1002-Decl., ¶¶263-266.

6. Claim 7

Nakazawa-'190 in view of Ponomarenko-'236 discloses that *wherein the average size of the apertures in the first perforated polymeric layer* (e.g., Nakazawa-'190 diffusion sheet 63; Ponomarenko-'236 acquisition layer 36 of sublayer 30) *is 0.5-5 mm*. EX1002-Decl., ¶¶267-270.

Ponomarenko-'236 discloses *wherein the average size of the apertures in the first perforated polymeric layer is 0.5-5 mm*. For example, Ponomarenko-'236 discloses that “the sublayer has holes that have a circular circumference with an average smallest dimension of from 4 mm to 10 mm, said holes being disposed in the topsheet-facing surface of the sublayer.” EX1006-Ponomarenko-'236, claim 5;

see also id., 7:48-53. Further, the claimed range of aperture sizes was well-known in the prior art. *See* EX1016-’Cohen-’429, [0014] (teaching an acquisition/distribution layer that has an “average pore size of 0.3-10, preferably 0.5-5.0...mm in diameter”). EX1002-Decl., ¶¶267-270.

A POSITA would have been motivated to combine the teachings of Nakazawa-’190 with Ponomarenko-’236 to achieve the claimed invention of claim 7 and would have had a reasonable expectation of doing so, for the same reasons discussed in Sections X.D.1.a, X.D.2, X.D.3, X.D.4, and X.D.5 and incorporated by reference here. EX1002-Decl., ¶¶267-270.

7. Claim 8

Nakazawa-’190 in view of Ponomarenko-’236 discloses *open areas of the first perforated polymeric layer* (e.g., Ponomarenko-’236 acquisition layer 36 of sublayer 30) *comprise 5-30% of the first perforated polymeric layer*. EX1002-Decl., ¶¶271-273.

Ponomarenko-’236 discloses “[t]he sublayer (30) herein has a region (33) with through or blind holes (31) that has an open area of from 15% to 50% of the total surface area of said region (33), whereby the open area is the sum of the surface area of the holes (31) as measured in the cross section of the holes in or on the surface (32) of the sublayer (30) that faces the topsheet (20)).” EX1007-Ponomarenko-’236, 8:1-6, claim 2. EX1002-Decl., ¶¶271-273.

A POSITA would have been motivated to combine the teachings of Nakazawa-'190 with Ponomarenko-'236 to achieve the claimed invention of claim 8 and would have had a reasonable expectation of doing so, for the same reasons discussed in Sections X.D.1.a, X.D.2, X.D.3, X.D.4, X.D.5 and X.D.6 and incorporated by reference here. EX1002-Decl., ¶¶271-273.

E. Ground V: Claims 1, 3-5, 21-22, and 24-25 Are Anticipated By Nakazawa-'190

The analysis in Ground IV for limitations 1[a]-[g] and [i]-[j], 3-5, 21-22, and 24-25 are incorporated by reference. EX1002-Decl., ¶¶275-277.

Ground V is based on PO's incorrect reading of the scope of the claimed "fluid flow control structure." In Appendix A to the Complaint in the parallel district court litigation, PO identifies the "core wrap" around the lower absorbent core in the accused product as being the non-perforated fibrous polymeric layer of the claimed "fluid flow control structure." EX1014-Complaint at Appendix A. Core wrap is a well-known component in absorbent articles that is "designed to contain the storage layer and provide structural integrity when the storage layer is wet or dry." EX1015-US7923597, 1:35-37. In contrast, the claimed "fluid flow control structure" is a multi-layered component that "provides the [absorbent] article with high intake capacity" and does not provide structural integrity to the storage layer, i.e., the absorbent core. EX1001-USP138, 2:21-22. In view of PO's reading of the scope of

the claim, Nakazawa-'190 anticipates Claims 1, 3-5, 21-22, and 24-25 of the '138 patent. EX1002-Decl., ¶¶275-277.

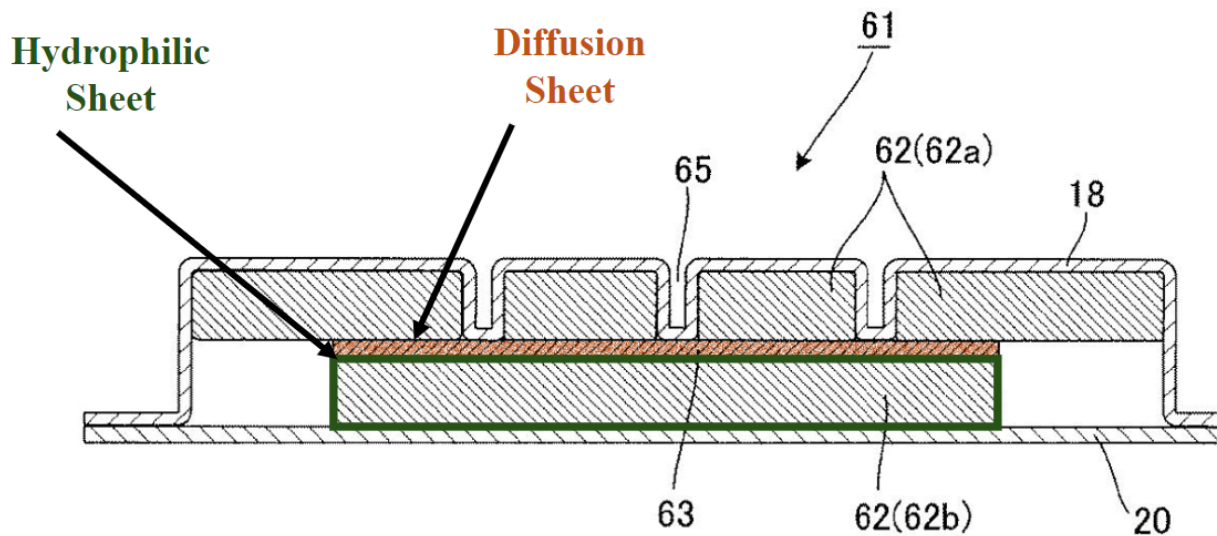
1. Claim 1[h]

Nakazawa-'190 discloses a *fluid control structure being a layered structure comprising a non-perforated fibrous polymeric layer* (e.g., **hydrophilic sheet**) and *a first perforated polymeric layer* (e.g., **diffusion sheet 63**). EX1002-Decl., ¶279.

As explained above in Grounds II and IV, discussed in Sections X.B and X.D incorporated by reference here, Nakazawa-'190 discloses a single layer diffusion sheet 63 that can be made of a porous plastic film. EX1002-Decl., ¶¶278-280.

Nakazawa-'190 further discloses, “[w]hile not shown in the figures, the absorbent material is generally wrapped on the back surface and side surfaces with a **hydrophilic sheet** serving as a carrier to prevent leakage of superabsorbent polymer and to prevent deformation of the absorbent material on the production line.” EX1008-Nakazawa-'190, [0082]. Nakazawa-'190 teaches that either the first absorbent material 62a or the lower absorbent material 62b can be wrapped in the hydrophilic sheet. *Id.* In the embodiment shown in Figure 14A, the topsheet and the diffusion sheet may be bonded directly or via the hydrophilic sheet in which the absorbent material is wrapped. *Id.*, [0084]. EX1002-Decl., ¶280.

[Fig. 14A]



EX1002-Decl., ¶¶281-282.

2. Claim 3

Nakazawa-'190 discloses *a first perforated polymeric layer (e.g., diffusion sheet 63) [that] is a nonwoven, a film or a film/nonwoven laminate.* EX1002-Decl., ¶¶283-284.

As discussed in Section X.B.2 and incorporated by reference here, Nakazawa-'190 discloses the diffusion sheet “can be made of a nonwoven fabric or porous plastic film.” EX1008-Nakazawa-'190, [0062]. EX1002-Decl., ¶285.

3. Claim 4

Nakazawa-'190 discloses *wherein the first perforated polymeric layer (e.g., Nakazawa-'190 diffusion sheet 63;) is a three-dimensionally formed layer having penetrating apertures extending from a first surface of the first perforated polymeric*

layer towards a second surface of the first perforated polymeric layer and forming protrusions on said second surface. EX1002-Decl., ¶¶286-287.

As discussed in Section IX.B, X.B.3 and X.D.4 and incorporated by reference here, Nakazawa-'190 discloses “a porous plastic film” may be used for the diffusion sheet (i.e., fluid flow control structure). EX1008-Nakazawa-'190, [0068]. Nakazawa-'190 discloses “the shape of the pores in the porous plastic film should be funnel-shaped, that is, the size of the opening in the pores decreases progressively from the front surface to the back surface of the porous plastic film.” *Id.* Nakazawa-'190 teaches that “[t]his configuration allows excretory fluid to pass through the pores of the porous plastic film and reduces liquid backflow.” *Id.* EX1002-Decl., ¶288.

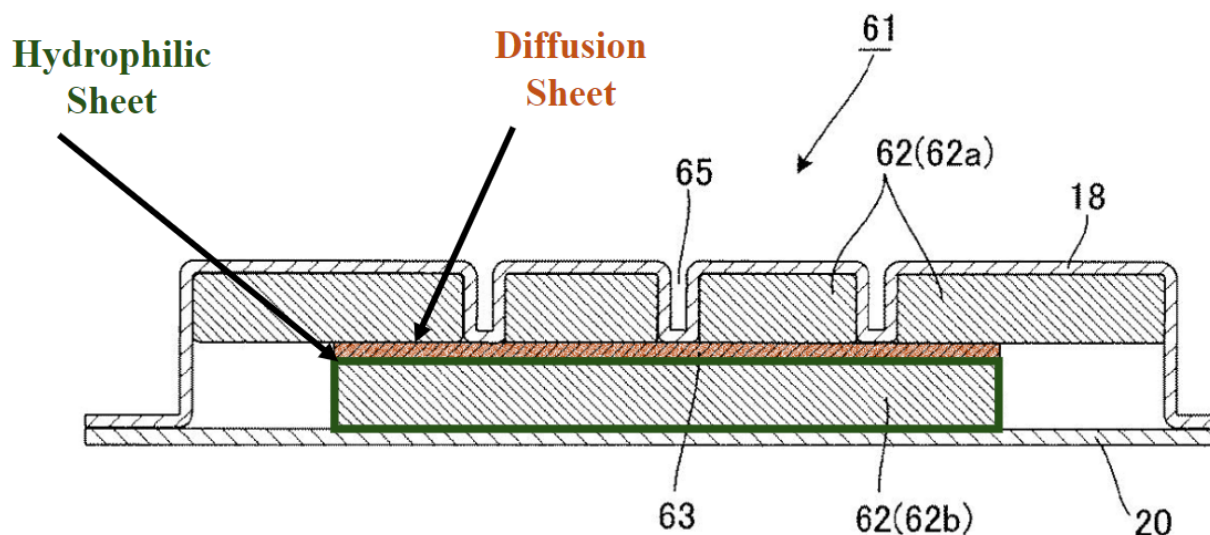
4. Claim 5

Nakazawa-'190 discloses *the first perforated polymeric layer* (e.g., Nakazawa-'190 **diffusion sheet 63**;) *is arranged with said second surface facing the non-perforated polymeric layer* (e.g., Nakazawa-'190 **hydrophillic sheet 63**;) EX1002-Decl., ¶¶289-292.

As discussed in Section IX.B, X.B.4 and X.D.5 and incorporated by reference here, Nakazawa-'190 discloses that diffusion sheet 63 can have “funnel-shaped” pores that go from the front surface (the surface facing the user) to the back surface (the surface facing the backsheet) of the “porous plastic film.” EX1008-

Nakazawa-'190, [0068], Abstract, claim 1, [0013]. Thus, the “second surface” of the diffusion sheet 63 of Nakazawa-'190 into which the funnel-shaped pores protrude faces the *non-perforated fibrous polymeric layer* (e.g., **hydrophilic sheet**), which is wrapped around the second absorbent layer. EX1002-Decl., ¶292.

[Fig. 14A]



XI. CONCLUSION

The Challenged Claims of the '138 patent are anticipated or obvious in view of the prior art Grounds set forth herein. Accordingly, Petitioners request institution of an *inter partes* review to cancel these claims.

Respectfully Submitted,

By: /Alexis R. Cohen/

Alexis R. Cohen
Registration No. 76,998
Counsel for Petitioners

Appendix of Claims

Claim 1	
Limitation	Claim Language
1[pre]	An absorbent article having a longitudinal direction and a transverse direction, side edges extending in the longitudinal direction and end edges extending in the transverse direction and comprising:
1[a]	a fluid permeable topsheet,
1[b]	a fluid impermeable backsheet, and
1[c]	an absorbent core enclosed between said topsheet and said backsheet, said absorbent core comprising,
1[d]	a first absorbent layer having an opening that passes through the first absorbent layer from one major surface to an opposing major surface and therebetween the opening is surrounded by a closed periphery of first absorbent layer,
1[e]	a fluid flow control structure, and
1[f]	a second absorbent layer arranged between the fluid flow control structure and the fluid impermeable backsheet,
1[g]	wherein the fluid flow control structure is arranged between said first absorbent layer and said backsheet, said fluid flow control structure being a layered structure comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer, and

Claim 1	
Limitation	Claim Language
1[h]	wherein the opening extends along a longitudinal center line of the absorbent article, the longitudinal center line being in parallel with the longitudinal direction of the absorbent article, and the fluid permeable top sheet is in direct contact with the fluid flow control structure via the opening.

Claim 2
The absorbent article according to claim 1, wherein the first perforated polymeric layer has a basis weight of from 60 g/m ² to 100 g/m ² .

Claim 3
The absorbent article according to claim 1, wherein the first perforated polymeric layer is a nonwoven, a film or a film/nonwoven laminate.

Claim 4
The absorbent article according to claim 1, wherein the first perforated polymeric layer is a three-dimensionally formed layer having penetrating apertures extending from a first surface of the first perforated polymeric layer towards a second surface of the first perforated polymeric layer and forming protrusions on said second surface.

Claim 5

The absorbent article according to claim 4, wherein the first perforated polymeric layer is arranged with said second surface facing the non-perforated fibrous polymeric layer.

Claim 7

The absorbent article according to claim 4, wherein the average size of the apertures in the first perforated polymeric layer is 0.5-5 mm.

Claim 8

The absorbent article according to claim 1, wherein open areas of the first perforated polymeric layer comprise 5-30% of the first perforated polymeric layer.

Claim 20

The absorbent article according to claim 1, wherein the basis weight of the non-perforated fibrous polymeric layer is from 20-120 gsm.

Claim 21

The absorbent article according to claim 1, wherein the opening extends through an entire crotch portion of the absorbent article.

Claim 22

The absorbent article according to claim 1, wherein the fluid permeable topsheet is not perforated.

Claim 24

The absorbent article according to claim 1, wherein the fluid permeable top sheet is in contact with the first absorbent layer of the absorbent core at an area other than where the opening is located.

Claim 25

The absorbent article according to claim 1, wherein the fluid permeable top sheet is in contact with the fluid flow control structure via the opening, such that a cavity is formed along the longitudinal center line of the absorbent article.

CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing, Petition for *Inter Partes* Review, contains 13,004 words as measured by the word processing software used to prepare the document, in compliance with 37 C.F.R. §42.24(d), excluding the parts of the Petition exempted from the word count by 37 C.F.R. §42.24(a)(1).

/Amy L. Mahan/
Amy L. Mahan
Registration No. 75,997

CERTIFICATE OF SERVICE

I hereby certify that, on October 25, 2024, I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent No. 9,308,138
- Appendix of Claims
- Petitioners' Table of Exhibits
- Exhibits 1001-1020
- Certificate of Compliance Regarding Word Count
- Fee Authorization
- Power of Attorney

to be served via express mail on the Patent Owner at the following correspondence address of record as listed in Patent Center:

FAEGRE DRINKER BIDDLE & REATH LLP
1500 K Street NW, Suite 1100
Washington, DC 20005

A courtesy copy has also been provided via electronic mail to counsel for Patent Owner in IPR2024-01487 at the following addresses:

Daniel Roberts (daniel.roberts@dechert.com)
Kevin Flannery (kevin.flannery@dechert.com)
Martin Black (martin.black@dechert.com)
Sharon Gagliardi (sharon.gagliardi@dechert.com)
Brian Farnan (bfarnan@farnanlaw.com)
Michael Farnan (mfarnan@farnanlaw.com)

/Amy L. Mahan/
Amy L. Mahan
Registration No. 75,997

Petitioner's Table of Exhibits

Exhibit	Description
1001	U.S. Patent No. 9,308,138 (“’138 patent”)
1002	Declaration of Dr. Behnam Pourdeyhimi
1003	File History of U.S. Patent No. 9,308,138
1004	WO 2009/067059 (“Bergstrom-’059”)
1005	U.S. Patent No. 9,066,837 (“Kim”)
1006	U.S. Patent No. 6,455,753 (“Glaug-’753”)
1007	U.S. Patent No. 7,956,236 (“Ponomarenko-’236”)
1008	JP2008-284190 (“Nakazawa-’190) (English translation with Translator Declaration)
1009	White C.F., “Engineered structures for use in disposable incontinence products,” Proc Inst Mech Eng H. 2003;217(4):243-251 (“White2003”)
1010	Ajmeri J. R. and Ajmeri C.J., “Nonwoven personal hygiene materials and products,” In Chapman R (eds) Applications of Nonwovens in Technical Textiles, CRC Press, 2010, pp. 85-102 (“Ajmeri2010”)
1011	Gupta B.S. and Smith D. K., “Nonwovens in Absorbent Materials,” Textile Science and Technology, 2002, 13, 349-388 (“Gupta-2002”)
1012	Kosemund et al., “Safety evaluation of superabsorbent baby diapers, Regulatory Toxicology and Pharmacology 2009, 53, 81-89 (“Kosemund 2009”)

Exhibit	Description
1013	Docket Navigator Statistics on Delaware Trials (as of Oct. 16, 2024)
1014	<i>Essity Hygiene et al., v. First Quality Products Inc. et al.</i> , 24-cv-00374, Complaint with attachments
1015	U.S. Patent No. 7,923,597 (Ponomarenko-'597)
1016	U.S. Pat. App. Pub. No. 2005/026742 (Cohen-'429)
1017	Weisemann and Adam, 2011, Handbook of Medical Textiles, Ch. 14, "Absorbent products for personal health care and hygiene" (Woodhead Publishing, ed. V.T. Bartels)
1018	White, C, 2000, Developments in Absorbent Products and their Impact on the Nonwovens Industry, International Nonwovens Technical Conference, September 26-28, 2000, Dallas Tx.
1019	European Patent No. EP0701805B1
1020	JP2008-284190 (Japanese version)