

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, and
FIRST QUALITY ENTERPRISES, LLC,
Petitioner,

v.

ESSITY HYGIENE AND HEALTH AB,
Patent Owner.

IPR2024-01487
Patent 9,308,138 B2

Before JAMES A. TARTAL, KRISTINA M. KALAN, and
RYAN H. FLAX, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318

I. INTRODUCTION

We have jurisdiction to conduct this *inter partes* review under 35 U.S.C. § 6 and to issue this Final Written Decision pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that First Quality Retail Services, LLC, First Quality Consumer Products, LLC, First Quality Products, LLC, and First Quality Enterprises, LLC (collectively, “Petitioner”) shows by a preponderance of the evidence that claims 1–5, 7, 8, 20–22, 24, and 25 (“the Challenged Claims”) of U.S. Patent No. 9,308,138 B2 (Ex. 1001, “the ’138 patent”) are unpatentable.

A. Procedural Background

Petitioner filed a Petition requesting *inter partes* review of claims 1–5, 7, 8, 20–22, 24, and 25 of the ’138 patent. Paper 3 (“Petition” or “Pet.”). Essity Hygiene and Health AB (“Patent Owner”) filed a Preliminary Response. Paper 7. Pursuant to 35 U.S.C. § 314(a), we instituted *inter partes* review of claims 1–5, 7, 8, 20–22, 24, and 25 on the grounds advanced in the Petition. Paper 8 (“Institution Decision” or “Dec.”). After institution of trial, Patent Owner filed a Patent Owner Response (“PO Resp.,” Paper 13), Petitioner filed a Reply (“Pet. Reply,” Paper 18), and Patent Owner filed a Sur-Reply (“PO Sur-Reply,” Paper 29). We held an oral hearing on February 18, 2026, and a transcript is included in the record. Paper 43 (“Tr.”).

B. Real Parties in Interest

Petitioner represents 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. Pet. 2; Paper 17, 1. Patent Owner identifies itself as the real party

in interest. Paper 4 (Patent Owner's Mandatory Notice), 2. Neither party objects to the other's identification in this regard.

C. Related Matters

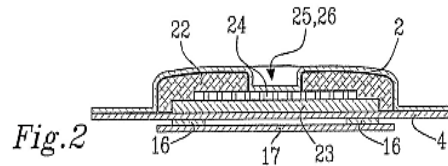
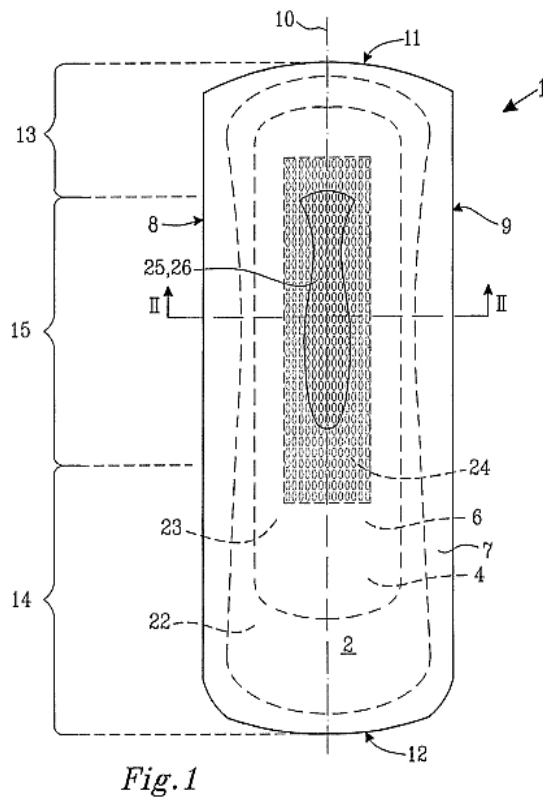
The parties identify the following litigation involving the '138 patent as a related matter: *Essity Hygiene and Health AB et al. v. First Quality Products, Inc. et al.*, 24-cv-00374 (D. Del.) filed Mar. 23, 2024. Pet. 2; Paper 4, 1.

D. The '138 Patent

The '138 patent, titled "Absorbent Article Having Intake Structure," issued on April 12, 2016. Ex. 1001, codes (54), (45). The '138 patent describes an absorbent article having a fluid permeable topsheet, a fluid impermeable backsheet, and an absorbent core enclosed between the topsheet and the backsheet, wherein the absorbent core includes a first absorbent layer; a fluid flow control structure is arranged between the first absorbent layer and the backsheet. *Id.* at code (57).

The '138 patent explains that absorbent articles, such as incontinence shields and sanitary napkins with a crotch portion, can leak at their side edges "before the full absorption capacity of the article has been utilized." *Id.* at 1:22–29. The '138 patent purports to remedy this problem by providing "an absorbent article having improved intake capacity, fluid distribution properties and leakage security." *Id.* at 2:3–5.

Figures 1 and 2 of the '138 patent, reproduced below, depict an incontinence protector shown "from the side which will be facing the undergarment when the incontinence protector is being worn," and also a cross-sectional view taken along line II–II of Figure 1, respectively. Ex. 1001, 10:12–17.



Figures 1 and 2 above show urine incontinence protector 1 including fluid permeable topsheet 2, backsheet 4, and absorbent core 6 therebetween. *Id.* at 10:33–39. Topsheet 2 and backsheet 4 “extend together laterally outside of the absorbent core 6” and “along the whole circumference of the absorbent core 6,” and are connected to each other in an edge joint 7. *Id.* at 10:40–44. Incontinence protector 1 has two longitudinal side edges 8, 9 extending along longitudinal center line 10, front and rear end edges 11, 12, front end portion 13, rear end portion 14, and crotch portion 15 “located intermediate to the end portions 13, 14.” *Id.* at 10:61–11:10.

Two fastening means 16, shown in Figure 2, extend in the longitudinal direction and are covered by releasable protective layer 17, such that when exposed, they can fasten the incontinence protector to a garment.

Ex. 1001, 11:11–23. Absorbent core 6 includes first absorbent layer 22,

second absorbent layer 23, and fluid flow control structure 24 therebetween. *Id.* at 11:34–38. Opening 25 defines cavity 26 for fluid collection and distribution, and extends completely through first absorbent layer 22 of the incontinence protector. *Id.* at 11:54–12:2. The majority of fluid continues through the bottom of cavity 26, where it is distributed “longitudinally and laterally along the flow control structure 24.” *Id.* at 12:3–10.

Figure 3 of the '138 patent, reproduced below, shows a section through a fluid flow control structure. Ex. 1001, 10:16–17.

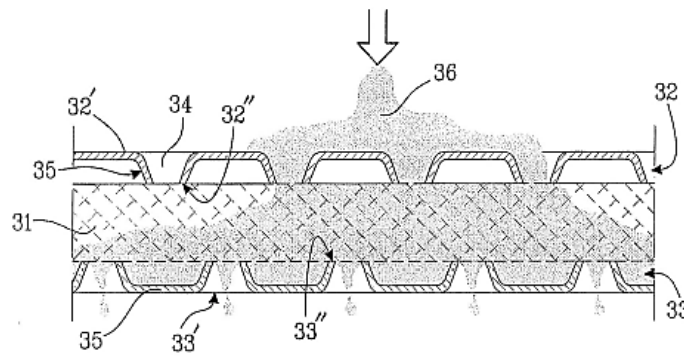


Fig.3

Figure 3 above shows a partial cross-section view of fluid flow control structure 24 including first perforated polymeric layer 32, second perforated polymeric layer 33, and non-perforated fibrous polymeric layer 31 therebetween. *Id.* at 12:27–31. Each perforated polymeric layer has apertures 34 extending between first surface 32', 33' towards second surface 32'', 33'' of the layers, such that the apexes of apertures 34 form protrusions 35 at second surface 32'', 33''; the apertures are tubular structures that can be funnel-shaped. *Id.* at 12:32–41. Fluid 36 flows in the direction of the arrow shown in Figure 3, passing through first perforated polymeric layer 32, then non-perforated fibrous polymeric layer 31, and then second perforated polymeric layer 33, via apertures 34. *Id.* at 12:42–57, Fig. 3.

E. Challenged Claims

Petitioner challenges the patentability of claims 1–5, 7, 8, 20–22, 24, and 25 of the '138 patent. Pet. 4. Claim 1, reproduced below with Petitioner's annotations, is illustrative of the subject matter of the Challenged Claims:

1. [1pre] 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:

[1a] a fluid permeable topsheet,

[1b] a fluid impermeable backsheet, and

[1c] an absorbent core enclosed between said topsheet and said backsheet, said absorbent core comprising,

[1d] 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,

[1e] a fluid flow control structure, and

[1f] a second absorbent layer arranged between the fluid flow control structure and the fluid impermeable backsheet,

[1g] wherein the fluid flow control structure is arranged between said first absorbent layer and said backsheet,

[1h] said fluid flow control structure being a layered structure comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer, and

[1i] 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

[1j] the fluid permeable top sheet is in direct contact with the fluid flow control structure via the opening.

Ex. 1001, 13:43–14:3; Pet. 98–99¹ (Appendix of Claims).

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1, 3, 21, 22, 24, 25	§ 102	Bergstrom ²
2	1, 3–5, 20–22, 24, 25	§ 103	Nakazawa, ³ Glaug ⁴
3	7	§ 103	Nakazawa, Glaug, Cohen ⁵
4	1–5, 7, 8, 21, 22, 24, 25	§ 103	Nakazawa, Ponomarenko ⁶
5	1, 3–5, 21, 22, 24, 25	§ 102	Nakazawa

Pet. 8. Petitioner relies on the Declarations of Dr. Behnam Pourdeyhimi.

Ex. 1002; Ex. 1021. Patent Owner relies on the Declarations of Donald Sheldon. Ex. 2001; Ex. 2004.⁷

¹ The bracketed claim element numbering added by Petitioner in the Appendix of Claims differs from the numbering Petitioner applies in the body of the Petition. We use the bracketed numbering Petitioner applies in the body of the Petition.

² PCT Pub. No. WO 2009/067059 A1 to Bergstrom et al., published May 28, 2009 (Ex. 1004, “Bergstrom”).

³ JP Pub. No. JP 2008-284190 A to Nakazawa, published Nov. 27, 2008 (Ex. 1020), certified English translation (Ex. 1008, “Nakazawa”).

⁴ U.S. Patent No. US 6,455,753 B1 to Glaug et al., issued Sept. 24, 2002 (Ex. 1006, “Glaug”).

⁵ U.S. Patent App. Pub. No. US 2005/0267429 A1 to Cohen, published Dec. 1, 2005 (Ex. 1016, “Cohen”).

⁶ U.S. Patent No. US 7,956,236 B2 to Ponomarenko et al., issued June 7, 2011 (Ex. 1007, “Ponomarenko”).

⁷ The parties each argue that the other party’s expert’s testimony is entitled to little or no weight. PO Resp. 7–8; Pet. Reply 27–28; PO Sur-Reply 26–27. We acknowledge these arguments and, in our analysis, accord the parties’ declarations and testimony the appropriate weight.

II. ANALYSIS

A. *Principles of Law*

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). A “prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). A “prior art reference may anticipate when the claim limitation or limitations not expressly found in that reference are nonetheless inherent in it.” *MEHL/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Obviousness is resolved based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness, i.e., secondary considerations.⁸ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). Subsumed

⁸ Neither party presents evidence or arguments about objective indicia of nonobviousness.

within the *Graham* factors is the requirement that, if all claim limitations are found in a number of prior art references, then the patent challenger must show that the skilled artisan would have had a reasonable expectation of success in combining the prior art references to achieve the claimed invention. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007).

Petitioner bears the burden of proving unpatentability of the Challenged Claims, and the burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).⁹ Petitioner must demonstrate unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

B. Level of Ordinary Skill in the Art

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every

⁹ At times herein we refer to Patent Owner’s arguments as unpersuasive; however, we do not shift the ultimate burden of proof and such statements are in the context of the record as a whole.

case, and one or more of these or other factors may predominate in a particular case. *Id.*

Petitioner argues that a person of ordinary skill in the art (“POSA”) at the time of the invention “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.” Pet. 17. Petitioner further argues: “Less work experience may be compensated by a higher level of education, and vice versa.” *Id.* at 17–18 (citing Ex. 1002 ¶¶ 26–28).

In the Institution Decision, we adopted Petitioner’s definition. Dec. 9–10. In its Response, Patent Owner cites to Petitioner’s definition and states that Patent Owner “applies Petitioners’ definition.” PO Resp. 7.

Because Petitioner’s definition of the level of skill in the art is consistent with the ’138 patent and the asserted prior art, we maintain it for purposes of this Final Written Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We construe each claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Only those terms in controversy need to be construed,

and only to the extent necessary to resolve the controversy. *Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019). “In determining the meaning of [a] disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner argues that for “the purpose of this IPR, the Board need not construe any terms because the challenged claims are invalid under any reasonable interpretation.” Pet. 18 (citing Ex. 1002 ¶¶ 78–81).

Patent Owner proposes the following construction: “Perforated Polymeric Layer” means “a polymeric layer that is pierced through with holes or apertures such that the layer allows the free flow of liquid bodily waste therethrough.” PO Resp. 19–23 (discussing Specification, declarant testimony, and prosecution history).

Petitioner replies that because “polymeric layer” appears in Patent Owner’s proposed construction, “the only term [Patent Owner] actually proposes construing is ‘perforated.’” Pet. Reply 1–2. Petitioner argues that “perforated” is “a common word and does not require construction.” *Id.* Petitioner agrees that, if construed, “perforated” refers to “having holes or apertures that are pierced/extend through a layer.” *Id.*

Patent Owner responds that it is “clear the parties agree that a perforated polymeric layer in the context of the ’138 patent (1) must be pierced through with holes or apertures and (2) must allow the flow of liquid bodily waste therethrough.” PO Sur-Reply 5.

We begin our analysis with the language of the claims. *Phillips*, 415 F.3d at 1312; *see also SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 874–875 (Fed. Cir. 2004) (“There is a ‘heavy presumption’ that the terms used in the claims ‘mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art.’”). Claim 1 recites, in relevant part, “said fluid flow control structure being a layered structure comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer.” Ex. 1001, 13:62–64 (limitation [1h]). The plain language of claim 1 does not address additional properties of the perforated polymeric layer; the language of the dependent claims, however, imposes additional limitations on the properties of the perforated polymeric layer such as a particular basis weight (claim 2), a particular makeup (claim 3), a particular aperture size (claim 7), a particular open area (claim 8), and that it “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 4). The dependent claims’ additional language indicates that the term “perforated” within the term “perforated polymeric layer” in claim 1 is not limited in the manner asserted by Patent Owner’s proposed construction.

We turn next to other portions of the Specification. *Phillips*, 415 F.3d at 1315; *see also SuperGuide*, 358 F.3d at 875 (“We review the patent’s written description and drawings to confirm that the patentee’s own use of the disputed term is consistent with the meaning given to it by the court.”). Patent Owner argues that the ’138 patent “requires that the perforated polymeric layer has ‘three-dimensionally formed layers’ with ‘penetrating

apertures' passing from a first surface to a second surface, an aperture size of 0.5-5mm, and an 'open area' of 5-30% or 10-25%," and that the perforations must be "large enough that fluid can flow through the layer as intended." PO Resp. 20 (citing Ex. 1001, 3:29–49, 12:32–46). Patent Owner further argues the holes must be "of sufficient size that one can analyze the open area of the surface of the perforated polymeric layer as described in the specification." *Id.* at 21 (citing Ex. 1001, 9:46–10:5). Petitioner argues that "this incorrectly limits the claim to an embodiment and mischaracterizes the specification," which describes "alternative methods for determining open area and hole diameter... such as manual methods and methods based on scanning electron microscopy." Pet. Reply 2 (citing Ex. 1001, 10:3–5).

The Specification includes language that mirrors claim 4, regarding the "penetrating apertures" passing from a first surface to a second surface. Ex. 1001, 3:29–49 (describing the first perforated polymeric layer generally as having "penetrating apertures"), 12:32–46 (describing perforated polymeric layers 32, 33 and penetrating apertures 34 with reference to Figures 3 and 4). These disclosures in the '138 patent indicate that the first perforated polymeric layer has a particular physical structure, i.e., "penetrating apertures," but does not appear to require that we import any particular function having to do with movement of liquid bodily waste therethrough into the construction of "perforated" as urged by Patent Owner. Petitioner's understanding of "perforated" is consistent with the way "perforated" is used in the '138 patent's Specification, including claim 1, and with the plain and ordinary meaning of "perforated." *See* Tr. 7:12–8:2. The idea of movement of liquid bodily waste adds a functional component

and, thus, we disagree with Patent Owner that a fluid flow requirement must be incorporated into the construction of the term “perforated.”

We have also considered the prosecution history discussed by Patent Owner. PO Resp. 21–23; *see also SuperGuide*, 358 F.3d at 875 (“the prosecution history is always relevant to claim construction,” but “it is also true that the prosecution history may not be used to infer the intentional narrowing of a claim absent the applicant’s clear disavowal of claim coverage”). The prosecution history here, however, does not support a narrowing of the term “perforated” in the manner proposed by Patent Owner, for similar reasons to those given above in our discussion of the Specification.

For these reasons, we determine that “perforated polymeric layer” as used in claim [1h] of the ’138 patent means “a polymeric layer pierced through with holes or apertures.”

D. Ground 1: Alleged Anticipation Based on Bergstrom

Petitioner contends Bergstrom anticipates claims 1, 3, 21, 22, 24, and 25, and identifies where it asserts Bergstrom discloses each claim limitation. Pet. 27–48. We focus our analysis on the disputed elements of claim 1: limitation [1h] and “a first perforated polymeric layer,” and limitation [1e] and “a fluid flow control structure.”

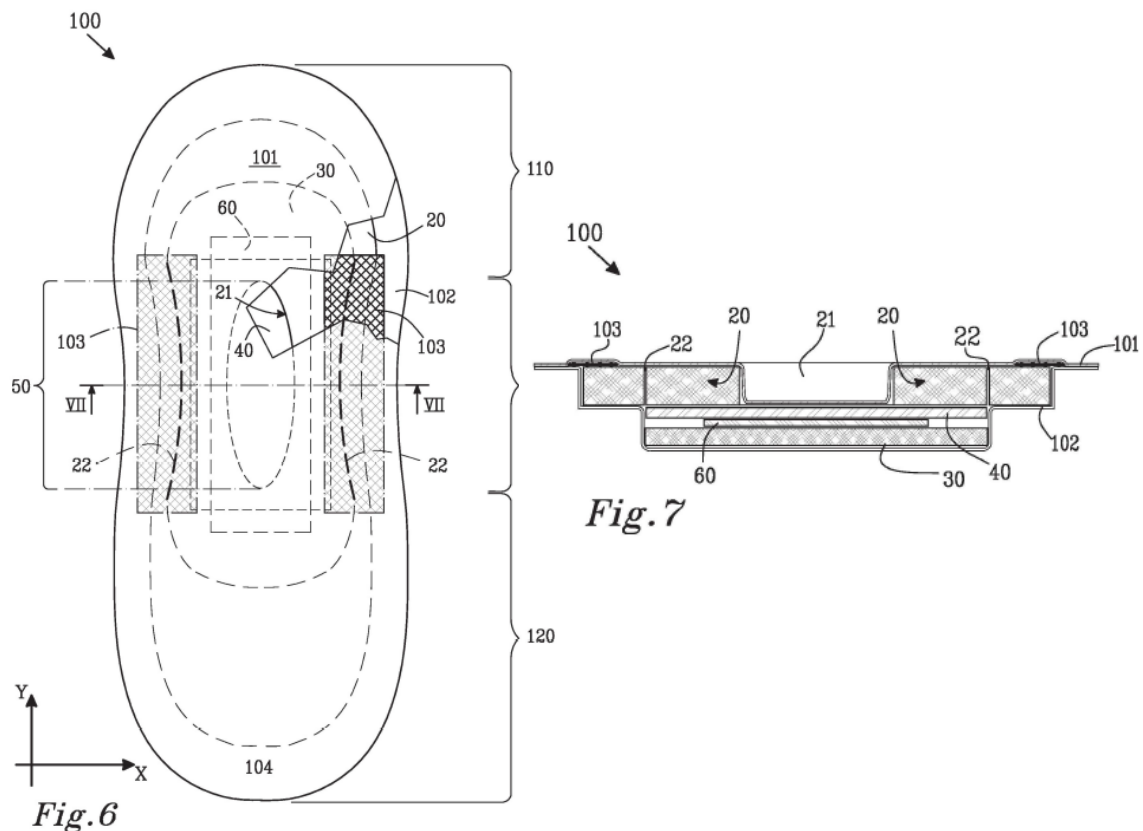
1. Overview of Bergstrom

Bergstrom is a PCT patent application publication, published May 28, 2009, disclosing an absorbent article having an absorbent core, comprising an upper absorbent core and a lower absorbent core, along with “an opening and fold indications” in the upper absorbent core. Ex. 1004, codes (43), (57). An acquisition layer is located between the upper and lower absorbent

cores. *Id.* There is no dispute that Bergstrom is prior art. *See generally* PO Resp.

Bergstrom explains the “need for improved absorbent articles which are designed to adopt a particular shape in use, said shape being able to receive, distribute and store large amounts of bodily waste rapidly and effectively” and that the “absorbent articles can be manufactured in a simple, adaptable, cost-effective way.” Ex. 1004, 2:3–6.

Figures 6 and 7 of Bergstrom, reproduced below, depict a plan view of an absorbent article having an absorbent core, and a cross-sectional view, respectively. Ex. 1004, 4:16–19.



Figures 6 and 7 above show absorbent article 100 having front portion 110, rear portion 120, and crotch portion 130 between front portion 110 and rear portion 120. *Id.* at 10:18–23. Figures 6 and 7 show absorbent article 100

comprises liquid-permeable topsheet 101, liquid-impermeable backsheet 102, upper absorbent core 20, lower absorbent core 30, and acquisition layer 40 between them. *Id.* at 5:13–6:21, 10:6–12, 10:25–29. Topsheet 101 and backsheet 102 “are joined to one another around the periphery of the absorbent core 10, so that the core 10 is enclosed.” *Id.* at 11:23–25. Absorbent core 10 is labeled in Figure 4. *Id.* at 5:14–15. 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.” *Id.* at 6:17–20. Upper absorbent core 20 comprises opening 21 that extends from one face to the other. *Id.* at 6:33–35. Resilient forming element 60 is “preferably located between the acquisition layer 40 and the lower absorbent core 30” to “provide a better forming effect.” *Id.* at 8:29–35. “As forming element 60 is typically liquid-impermeable, such an arrangement makes liquid flow around the edges of the forming element 60 in the width (X) direction, which makes best use of the upper and lower absorbent cores 20, 30 by distributing liquid at least in the width (X) direction.” *Id.* at 9:24–27. “[S]uitable materials for the forming element 60 are plastic films, perforated plastic films and reinforced tissue or reinforced nonwoven materials” and “[c]ombinations of such materials in laminate form are also possible.” *Id.* at 9:34–10:4.

2. *Claim 1*

Petitioner argues Bergstrom discloses every limitation of claim 1. Pet. 27–43. Petitioner argues Bergstrom discloses an absorbent article having a fluid permeable topsheet, a fluid impermeable backsheet, and an absorbent core enclosed between them. *Id.* at 27–32 (discussing [1pre]–[1c]). Petitioner also argues Bergstrom discloses a first absorbent layer

having an opening within the absorbent core and a second absorbent layer within the core and arranged above the fluid impermeable backsheet. *Id.* at 32–33, 36–37 (discussing [1d], [1f]). Petitioner further argues Bergstrom discloses that the opening in the first absorbent layer extends along a longitudinal center line of the absorbent article. *Id.* at 41–43 (discussing [1i]–[1j]).

Regarding limitation [1e] (“a fluid flow control structure”), Petitioner argues that Bergstrom discloses “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.” Pet. 34 (citing Ex. 1004, 6:17–20). Petitioner further argues that Bergstrom 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.* (citing Ex. 1004, 8:29–9:27).

Regarding limitation [1h], Petitioner argues that Bergstrom’s forming element 60 corresponds to “a first perforated polymeric layer.” Pet. 38–41. Petitioner relies on the following excerpt from Bergstrom: “[S]uitable materials for the forming element 60 are plastic films, perforated plastic films and reinforced tissue or reinforced nonwoven materials.” *Id.* at 39 (quoting Ex. 1004, 10:1–4).

The parties focus on certain disputed limitations of claim 1, namely, limitation [1h] and “a first perforated polymeric layer” and limitation [1e] and “a fluid flow control structure.” We focus our analysis accordingly.

Patent Owner responds that (a) Bergstrom's forming element 60 is not a "perforated polymeric layer" under Patent Owner's construction. PO Resp. 58–60. Patent Owner argues that (b) Bergstrom's description of "perforated plastic films" is not evidence that forming element 60 is a perforated polymeric layer. *Id.* at 60–63. Patent Owner also argues that Bergstrom does not teach limitation [1e], "a fluid flow control structure," and that the problem with Petitioner's argument for the fluid flow control structure element "is that it simply does not address" how Bergstrom's acquisition layer 40 and forming element 60 together form a structure. *Id.* at 63–68.

Petitioner replies that Patent Owner's challenges rely on (1) an improperly narrow claim construction of "perforated" and (2) the assertion that "perforated" in Bergstrom is not the plain meaning of "perforated" (i.e., pierced through with holes/ apertures). Pet. Reply 1. Petitioner argues that Bergstrom discloses limitation [1h] under either party's claim construction, and, thus, the sole dispute for this limitation is whether "perforated" in Bergstrom means "perforated" as claimed in the '138 patent; Petitioner argues that under the plain and ordinary meaning, it does. *Id.* at 3–4; *see also id.* at 5–7 (presenting five arguments as to why Bergstrom discloses a perforated plastic film). Petitioner also argues that Bergstrom discloses limitation [1e] and the "fluid flow control structure," reiterating that Bergstrom's "acquisition layer 40 and forming element 60 together are the claimed 'fluid flow control structure.'" *Id.* at 8–9 (presenting three arguments as to why Bergstrom discloses the fluid flow control structure).

Patent Owner responds, first, that element 60 is not a first perforated polymeric layer due based on Patent Owner's proposed claim construction.

PO Sur-Reply 5–9. More particularly, Patent Owner (1) relies on the word “typically”¹⁰ as used in Bergstrom; (2) relies on Bergstrom’s sentence order; (3) critiques Petitioner’s “*ipse dixit*” logic to equate ‘perforated’ with ‘liquid permeable’; (4) discusses the connection between “substantially unaffected by liquid” and “stiffness” and selection of materials in Bergstrom; and (5) critiques Petitioner’s attempt to distinguish “apertured” from “perforated” based on how materials are manufactured.” *Id.* at 6–9.

Patent Owner responds, second, that the problem with Petitioner’s “structure” argument is three-fold: (1) it assumes liquid permeability of forming element 60 without any express teaching; (2) forming element 60 is “no more part of a fluid flow control structure than a backsheet; and (3) there is no fluid flow in the Z-direction. *Id.* at 10–11.

3. *Analysis*¹¹

The parties focus first on whether Bergstrom discloses the “perforated polymeric layer” of limitation [1h]. On this record, and given our construction of the term “perforated polymeric layer” to mean “a polymeric

¹⁰ During the proceeding, we indicated that Patent Owner could not rely on certain evidence regarding Patent Owner’s interpretation of “typically.” Paper 40 (expunging Exhibit 2010; indicating that the Board would not consider any evidence or arguments therein exceeding the proper scope of a sur-reply under 37 C.F.R. § 42.23(b)).

¹¹ Patent Owner does not materially contest Petitioner’s specific arguments with respect to any limitations of claim 1 apart from the “fluid flow control structure” limitation [1e] and associated limitation [1h]. *See* Tr. :27:17–18:9 (Patent Owner agreeing that the focus of its claim 1 arguments is “the fluid flow control structure” and, apart from arguments directed to dependent claims, Patent Owner is “not arguing any of the other elements are not present in the prior art or wouldn’t have been”).

layer pierced through with holes or apertures,” we are persuaded that Petitioner meets its burden as to this limitation.

Petitioner argues that under our construction, Bergstrom’s express disclosure of forming element 60, and Bergstrom’s explanation of the properties of forming element 60, meets the claimed “perforated polymeric layer” limitation. Pet. 38–41 (citing Ex. 1002 ¶¶ 114–117). Even under Patent Owner’s proposed construction, Petitioner argues, forming element 60 would also allow free flow of liquid bodily waste. Pet. Reply 3–4 (citing Ex. 1021 ¶¶ 20–23). Importantly, Bergstrom expressly discloses: “suitable materials for the **forming element 60** are plastic films, **perforated** plastic films and reinforced tissue or reinforced nonwoven materials.” Ex. 1004, 10:1–4. This express disclosure is clear. Even though the forming element 60 in Bergstrom might be “typically” liquid-impermeable (Ex. 1004, 9:24–30), that does not preclude a layer that is perforated, particularly where Bergstrom expressly discloses a perforated plastic film as one of the possibilities for forming element 60. Ex. 1004, 10:1–4. Additionally, although Patent Owner focuses on Bergstrom’s disclosure that forming element 60 is “**typically** liquid-impermeable” (PO Resp. 58–60; Ex. 1004, 9:24–30), we do not view Bergstrom’s use of the word “typically” as mandating that the forming element always be liquid impermeable. We agree that the word “typically” does not mean “always” and that such a reading would render “typically” superfluous. Pet. Reply. 5.

We do not find any ambiguity in Bergstrom’s disclosure regarding possible use of perforated plastic films for its forming element 60; whether or not the forming element 60 provides other functions (like stiffness) does not dictate whether it may also be perforated, or be part of a fluid flow

control structure. On this point, we credit Petitioner's arguments and explanation, as supported by Dr. Pourdeyghi's testimony. Pet. Reply 6–7; Ex. 1021 ¶ 27–28 (“components of absorbent articles could be multifunctional”).

The parties focus next on whether Bergstrom's forming element 60 and acquisition layer 40 are a “fluid flow control structure.” Limitation [1e] introduces this term and merely requires “a fluid flow control structure.” Limitation [1h] states: the “fluid flow control structure being a layered structure comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer.” We agree with Petitioner that Bergstrom's elements 60 and 40 are located together as a layered structure, and perform fluid control functions, making them a fluid flow control structure. Pet. 38–39. Patent Owner's arguments appear to require more of the claim term “fluid flow control structure” than what the claim language requires. PO Resp. 63–68. The language of limitation [1h] is broad and not limited to a particular kind of structure or to any particular kind of control, such as a “highly porous internal structure” or, i.e., using “edges” as barriers. Under Patent Owner's interpretation, it would be nearly impossible to know whether a structure falls within the claim or not based on some implied but unclaimed structure, performance, or function metric. In light of the Specification and the plain and ordinary meaning of the claim terms, a structure that provides control over fluid flow falls within the scope of a “fluid flow control structure.” Whether or not Bergstrom expressly defines acquisition layer 40 and forming layer 60 as “a structure,” these two elements are positioned together, adjacent one another, inside the core of the article where one element is not perforated and absorbs and then distributes

liquid, and the other element provides structure to the system and allows liquid to pass over and around it and can be perforated; this controls fluid flow and distribution. We credit Dr. Pourdeyhimi's support of Petitioner's characterization of these two elements 60 and 40 as the claimed "fluid flow control structure," because it is a structure that controls, in some manner, the flow of fluid. Ex. 1021 ¶¶ 36–37, 41–43. We are unpersuaded by Patent Owner's declarant Mr. Sheldon's testimony on this point, because he fails to show sufficient support for Patent Owner's assertion that the fluid flow control structure must be construed to be "a cohesive arrangement of elements to accomplish a particular function." Ex. 2001 ¶¶ 120–121. Even under such a construction, the layers Petitioner relies on from Bergstrom (i.e., elements 60 and 40) are "a cohesive arrangement of elements to accomplish a particular function."

On the complete record now before us, we determine that Petitioner has sufficiently shown that Bergstrom discloses all the limitations of the claims challenged under Ground 1 (i.e., claims 1, 3, 21, 22, 24, and 25) and thus has established by a preponderance of the evidence that claims 1, 3, 21, 22, 24, and 25 are unpatentable as anticipated by Bergstrom.

E. Grounds 2 and 3: Alleged Obviousness Based on Nakazawa and Glaug (Ground 2) and Nakazawa, Glaug, and Cohen (Ground 3)

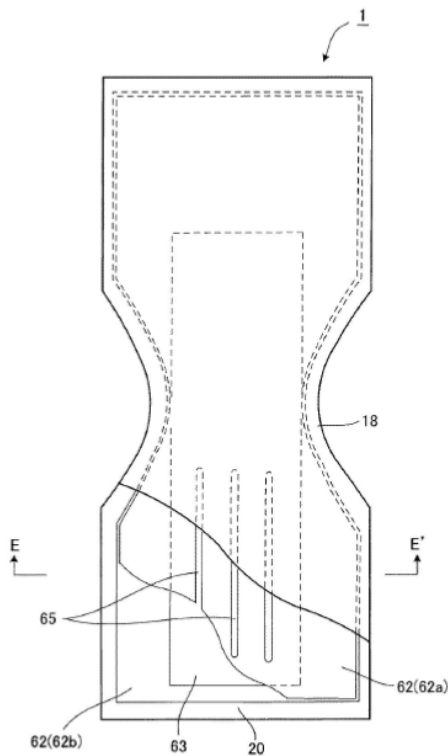
Petitioner contends claims 1, 3–5, 20–22, 24, and 25 would have been unpatentable as obvious in view of the combined teachings of Nakazawa and Glaug (Ground 2). Pet. 48–77. Petitioner further contends claim 7 would have been unpatentable as obvious in view of the combined teachings of Nakazawa, Glaug, and Cohen (Ground 3). *Id.* at 78–79.

1. Overview of Nakazawa

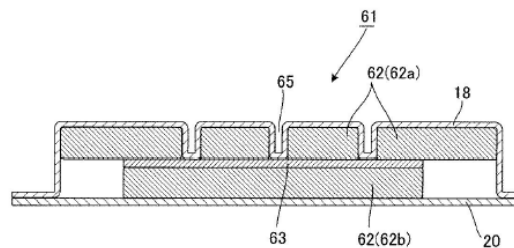
Nakazawa is the November 27, 2008, publication of a Japanese patent application, which discloses an absorbent article “with excellent excretory fluid absorbency” that includes a top sheet made at least partially of a liquid-permeable material, a back sheet made of a liquid-impermeable material, and an absorbent material therebetween, “wherein a hole portion that penetrates from the top surface to the back surface of the absorbent material is formed in the absorbent material.” Ex. 1008 ¶¶ 11, 13. There is no dispute that Nakazawa is prior art. *See generally* PO Resp.

Figures 11 and 14A of Nakazawa, reproduced below, depict a plan view and a cross-sectional view of an absorbent article, respectively. Ex. 1008, 45–46 (Brief Description of the Drawings).

[Fig. 11]



[Fig. 14A]



Figures 11 and 14A above show an absorbent article comprising top sheet 18, back sheet 20, and absorbent material 62 therebetween. *Id.* ¶¶ 30, 74, 76. In this embodiment,

the absorbent material 62 has a first absorbent material 62a and a second absorbent material 62b, 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, the top sheet 18 is disposed on the top surface of the first absorbent material 62a, and 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 so as to cover the region including the opening in the hole portion 65 in the first absorbent material 62a.

Id. ¶ 74. Nakazawa also discloses:

While 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.

Id. ¶ 82.

2. *Overview of Glaug*

Glaug, a U.S. patent issued on September 24, 2002, discloses an absorbent article with a fluid acquisition system that “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 the materials of the core can accommodate.” Ex. 1006, codes (45), (57). There is no dispute that Glaug is prior art. *See generally* PO Resp.

Figure 2 of Glaug, reproduced below, depicts a sectional view of an embodiment of the absorbent article. Ex. 1006, 4:16–17.

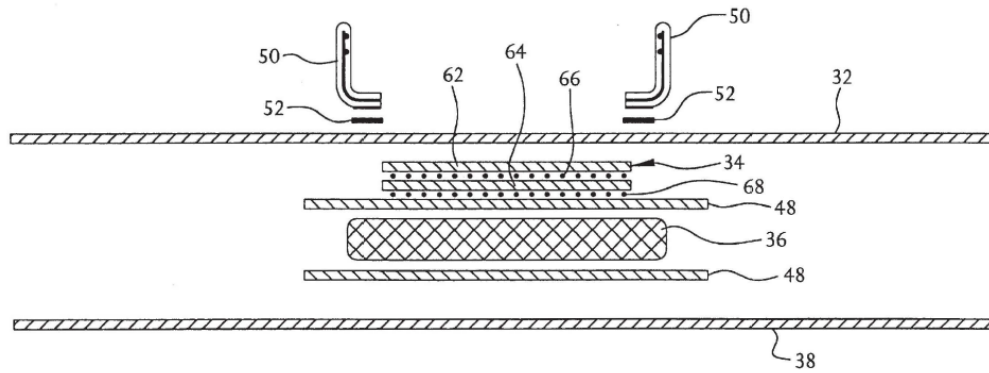


FIG. 2

Figure 2 above shows an absorbent article including top-sheet 32, back-sheet 38, fluid acquisition system 34, and liquid absorbent structure or core 36, located between fluid acquisition system 34 and back-sheet 38. *Id.* at 4:47–53. The absorbent core is preferably “formed of a mixture of pulp fluff and SAP [(super absorbent polymer)] wrapped in a liquid permeable tissue wrap 48.” *Id.* at 1:59–60, 6:43–51. The fluid acquisition system comprises apertured polymeric film 62 and lowermost layer 64 made of a fibrous material. *Id.* at 8:1–20.

3. Claim 1

a) Petitioner’s Arguments

Petitioner argues the combination of Nakazawa and Glaug discloses every limitation of claim 1. Pet. 48–68. Petitioner argues Nakazawa discloses an absorbent article having a fluid permeable topsheet, a fluid impermeable backsheet, and an absorbent core enclosed between them. *Id.* at 48–53 (discussing [1pre]–[1c]). Petitioner further argues Nakazawa discloses a first absorbent layer having an opening within the absorbent core, a second absorbent layer within the core and arranged above the fluid impermeable backsheet, and a diffusion sheet between the first and second

absorbent layers that is in contact with the topsheet via the opening in the first absorbent layer. *Id.* at 54–59 (discussing [1d]–[1g]). Petitioner further argues Nakazawa discloses that the opening in the first absorbent layer extends along a longitudinal center line of the absorbent article. *Id.* at 65–68 (discussing [1i]–[1j]).

Petitioner relies on Nakazawa and Glaug for teaching the subject matter of limitation [1h]. Pet. 59–65. Petitioner argues Glaug discloses an absorbent article having a layered fluid acquisition system comprising a non-perforated fibrous polymeric layer and a perforated polymeric layer. *Id.* at 60–61. Petitioner argues a person of ordinary skill in the art would have been motivated to modify Nakazawa by either replacing its diffusion sheet with Glaug’s acquisition system, or by adding Glaug’s lower non-perforated layer to Nakazawa’s diffusion sheet. *Id.* at 64. Petitioner argues a person of ordinary skill in the art would have been motivated to make this modification for several reasons: (1) fluid flow control structures were commonly used in absorbent articles before the ’138 patent; (2) Nakazawa and Glaug recognized the utility of an acquisition layer to channel fluid to an absorbent article further away from the user’s body and transfer the liquid more quickly; and (3) using Glaug’s fluid acquisition system or lower non-perforated layer in Nakazawa would have involved simple substitution of one known element for another to obtain predictable results, and would have involved use of a known technique to improve a similar device in the same way. *Id.* at 64–65. Petitioner argues a person of ordinary skill would have had a reasonable expectation of success in making the modification because both Nakazawa and Glaug teach similarly designed multi-layered absorbent articles, acquisition layers were predictable components for multi-layered

absorbent articles, and the modification would have required no more than a simple combination of known mechanical components to yield predictable results. *Id.* at 65.

Element [1pre]

Petitioner argues that, to the extent the preamble is limiting, Nakazawa discloses an absorbent article having a longitudinal direction and a transverse direction, side edges extending in the longitudinal direction and edges extending in the transverse direction. Pet. 49. In particular, Petitioner argues Nakazawa's absorbent article 1, as depicted in Figure 11, has side edges that extend along a longitudinal direction and edges that extend along a transverse direction. *Id.* (citing Ex. 1008 ¶ 76, code (57), claim 1, Fig. 11).¹²

Elements [1a]–[1c]

Petitioner argues Nakazawa discloses a fluid permeable topsheet, a fluid impermeable backsheet, and an absorbent core enclosed between the topsheet and backsheet. Pet. 51–53 (citing Ex. 1008 ¶¶ 74, 83, 84, 181, code (57), claims 1–3, Fig. 14A).

Elements [1d] and [1f]

Petitioner argues Nakazawa discloses an absorbent core comprising a first absorbent layer and a second absorbent layer having the features recited in claim elements [1d] and [1f]. Pet. 54–56, 57–58. Specifically, Petitioner argues Nakazawa discloses hole portion 65 that passes from the top surface to the back surface of first absorbent material 62a, and that topsheet 18 covers the inner surfaces of the hole portion. *Id.* at 54 (citing Ex. 1008

¹² In view of Petitioner's showing and our ultimate determination, we need not address whether the preamble is limiting.

¶¶ 74, 84, Figs. 14A, 14B, claims 1–7). Petitioner further argues Nakazawa’s second absorbent material 62b is arranged between diffusion sheet 63 and fluid impermeable backsheet 20. *Id.* at 57–58 (citing Ex. 1008 ¶¶ 74, 79, 81, Fig. 14A).

Elements [1e], [1g], and [1h]

Claim elements [1e], [1g], and [1h] recite a fluid flow control structure “arranged between said first absorbent layer and said backsheet” and “comprising a non-perforated fibrous polymeric layer and a first perforated polymeric layer.” Ex. 1001, 13:60–64.

Petitioner argues Nakazawa discloses diffusion sheet 63 arranged between first absorbent material 62a and second absorbent material 62b, and further discloses back sheet 20 disposed on the back surface of the absorbent material 62[b]. Pet. 58 (citing Ex. 1008 ¶¶ 74, 79, 81, claims 3–5). Petitioner also relies on the following portions of Nakazawa describing its diffusion sheet:

This 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.

When a porous plastic film is used as a diffusion sheet, the shape of the pores in the porous plastic film should be funnel-shaped This configuration allows excretory fluid to pass through the pores of the porous plastic film and reduces liquid backflow.

Pet. 60 (quoting Ex. 1008 ¶¶ 61, 68).

Petitioner argues Glaug discloses fluid acquisition system 34 with “at least two layers disposed over each other,” “the uppermost of the layers . . . comprises an apertured polymeric film 62” and “[t]he lowermost layer . . . is designated by the reference number 64 and can be any type of fibrous

material.” Pet. 60 (citing Ex. 1006, code (57), 4:1–4, 8:3–5, 8:18–29, 9:19–27).

As noted above, Petitioner argues a person of ordinary skill in the art would have been motivated to modify Nakazawa by either replacing its diffusion sheet with Glaug’s fluid acquisition system, or by adding Glaug’s lower non-perforated layer to Nakazawa’s diffusion sheet. Pet. 64.

Elements [1i] and [1j]

Petitioner argues that Nakazawa discloses that opening 65 extends along a longitudinal center line of the absorbent article, and topsheet 18 is in direct contact with diffusion sheet 63 via hole portions 65. Pet. 65–68 (citing Ex. 1008 ¶¶ 14, 16, 19, 84, 119, Figs. 11, 14A, claims 2, 4, 7).

b) Patent Owner’s Response

Patent Owner argues Nakazawa’s diffusion sheet 63 is not a fluid flow control structure. PO Resp. 25. Patent Owner faults Petitioner’s citation to “an unpictured hydrophilic sheet” in Nakazawa “that can wrap the back and sides of the absorbent core to ‘prevent leakage of the superabsorbent polymer and to prevent deformation of the absorbent material on the production line’” arguing that Nakazawa “teaches that this hydrophilic sheet would impede, not promote, fluid flow if interposed between Nakazawa’s absorbent cores at the hole portions of the upper absorbent core.” *Id.* (citing Ex. 1008 ¶ 85, Ex. 2001 ¶¶ 98–99, 140–141).

Patent Owner further argues Glaug’s fluid acquisition system is not a fluid flow control structure because the fluid acquisition system in Glaug is located on top of the core and under the top-sheet, rather than between the first absorbent layer and the backsheet, as required by claim 1. PO Resp. 26.

Patent Owner additionally argues that (a) a POSA would not be motivated to combine Nakazawa and Glaug and would not have had a reasonable expectation of success; (b) Nakazawa teaches away from, or at least disparages, Petitioner's proposed modifications and combination with Glaug; and (c) a POSA would not be motivated to add additional layers to an absorbent article due to cost and manufacturing complexity. PO Resp. 27–39. We summarize these arguments (a)–(c) below.

Regarding (a), Patent Owner argues that combining Nakazawa and Glaug “would change the basic principles for which each were designed to operate, defeating obviousness from the start.” PO Resp. 29. Patent Owner points to the Institution Decision's concern that “Patent Owner and Mr. Sheldon do not identify a disclosure in Nakazawa that requires promoting fluid flow in both Z-directions” arguing that “Nakazawa is replete with disclosures that the diffusion sheet must promote fluid flow in both Z-directions.” *Id.* at 30–31 (citing Dec. 26; Ex. 1008 ¶¶ 11, 12, 31, 73, 75). According to Patent Owner, the diffusion sheet in Nakazawa must “permit fluid flow both in the +Z-direction toward the body and the -Z-direction away from the body to function as intended, as shown by Fig. 14A, annotated below.” *Id.* at 31.

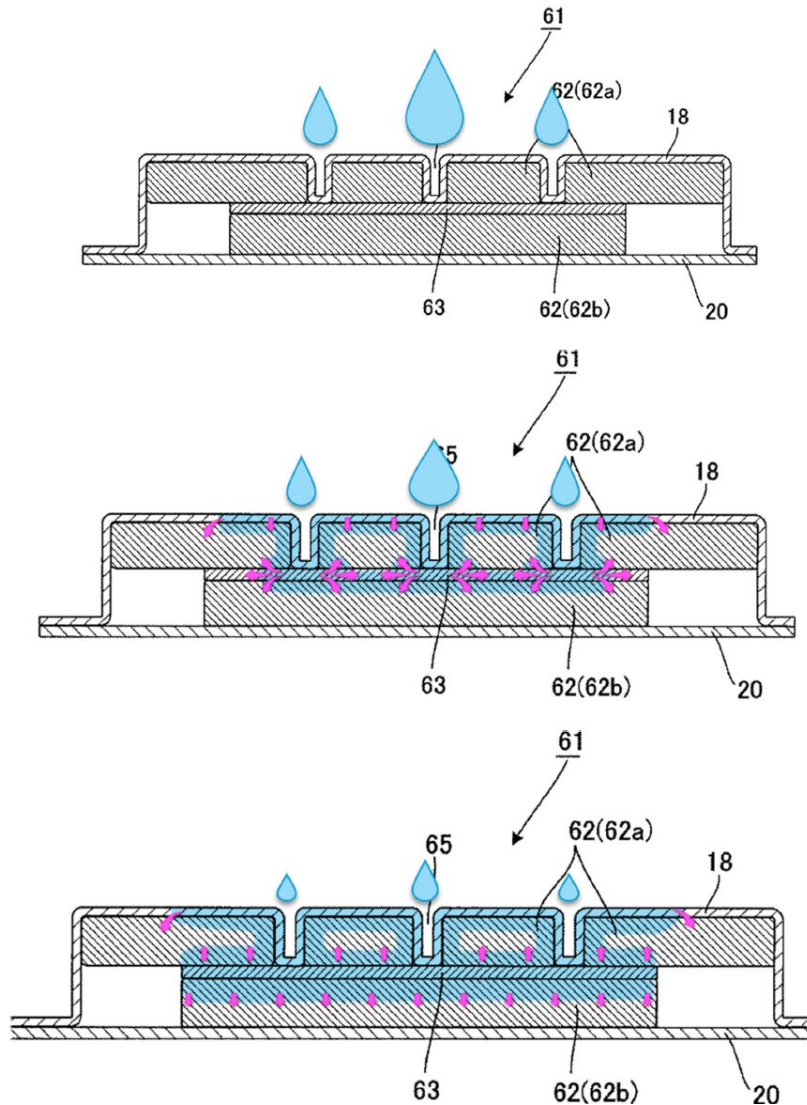


Figure 14A, reproduced above with Patent Owner’s annotations, shows fluid entering the top sheet and passing through holes 65 to diffusion sheet 63, where fluid is distributed in the X- and Y-directions laterally across diffusion sheet 63. *Id.* at 31. Patent Owner argues that because “diffusion sheet 63 is in contact with both the upper and lower absorbent cores 62a and 62b, fluid will flow up from diffusion sheet 63 into absorbent core 62a and down from diffusion sheet 63 into absorbent core 62b.” *Id.* In contrast, argues Patent Owner, Glaug’s “fluid-acquisition system is a unidirectional transport system down into the pad, in the -Z-direction away from the body.”

Id. at 33. In sum, Patent Owner argues that “using all or part of [Glaug’s] fluid-acquisition system in place of [Nakazawa’s] diffusion sheet would be antithetical to the teachings of both references.” *Id.* at 35.

Regarding (b), Patent Owner argues Nakazawa teaches away from, or at least disparages, Petitioner’s obviousness theory that centers on either substituting Glaug’s fluid acquisition system for Nakazawa’s diffusion sheet, or adding a layer of Glaug’s fluid acquisition to Nakazawa. PO Resp. 37. Specifically, Patent Owner argues Nakazawa’s Figure 15 embodiment “teaches that having two layers beneath hole portions 65 in the first absorbent material 62a would *impede*, not improve, the flow of excretory fluid” and that the proposed combination “would impede permeation of fluid rather than promote it, defeating any purported motivation to combine.” *Id.* at 38 (citing Ex. 1008 ¶ 85, Fig. 15). Patent Owner argues that even if Nakazawa’s diffusion sheet “reduces liquid backflow” using a porous plastic film, “there is still no motivation to add another layer between the diffusion sheet and lower absorbent core.” *Id.* at 38–39 (citing Ex. 2004 ¶ 35).

Regarding (c), Patent Owner argues that “adding layers and material to an absorbent article adds unnecessary manufacturing complexity and cost” in the amount of “hundreds of thousands or even millions of dollars” and also “increases downtime” and “decreases effectiveness.” PO Resp. 39.

c) Petitioner’s Reply

Petitioner replies that Nakazawa “discloses almost every limitation of claim 1” except the “second, non-perforated fibrous polymeric layer of the two-layer fluid flow control structure,” which is disclosed by Glaug. Pet. Reply 10. Petitioner further argues that Patent Owner’s arguments “ignore the purpose of the diffusion sheet in” Nakazawa and ignore the disclosure in

Nakazawa “that the diffusion sheet can be made from the same material as the upper layer of” the fluid acquisition system in Glaug. *Id.* (citing Ex. 1021 ¶¶ 45–47, 78).

More particularly, Petitioner replies that the combination of Nakazawa and Glaug teaches the claimed “fluid flow control structure,” and that motion to combine exists, because (1) Nakazawa does not require that the diffusion sheet must promote fluid flow in both Z-directions; (2) Nakazawa discloses using the same three-dimensional apertured film as disclosed in Glaug, namely, AqualDry™; (3) Dr. Pourdeyghi testifies merely that “fluid will flow from a diffusion sheet to an absorbent core that it is in contact with, whether that core is located above or below the diffusion sheet”; (4) Dr. Pourdeyghi’s testimony that “you don’t want fluid to go back to the top layer” was in reference to Glaug individually, not in combination with Nakazawa; (5) Glaug does teach a benefit of its fluid acquisition system over the prior art; and (6) Glaug’s fluid acquisition system does not “move fluid too quickly to operate effectively.” *Id.* at 10–16.

Petitioner also asserts that there is no teaching away, because (1) there is more than one relevant disclosure apart from Figure 15 in Nakazawa; (2) Nakazawa discloses embodiments where there are two layers under the hole portions in the first absorbent material; and (3) “a preferred embodiment does not teach away absent clear discouragement of that combination.” *Id.* at 16–17.

Finally, Petitioner asserts that asserted complexity and cost would not affect motivation to combine, alleging that Patent Owner’s expert failed to provide supporting evidence and calculations, and that his testimony

supports that manufacturing would be “straightforward” and would not increase costs much. *Id.* at 17–18.

d) Patent Owner’s Sur-Reply

Patent Owner responds that a POSA would not be motivated to combine Nakazawa and Glaug with a reasonable expectation of success, because (1) Petitioner ignores Nakazawa’s teachings requiring fluid to flow in both Z-directions; (2) Nakazawa uses either “diffusion sheet a” or “diffusion sheet b” as a single layer; (3) “Glaug expressly teaches a POSA that its fluid acquisition system only permits fluid to flow down, away from the wearer, and fluid is deterred from flowing up, towards the wearer”; (4) there is no motivation “to replace a single layer that ‘works well’” with a multi-layer system designed for rapid fluid acquisition only away from the wearer; (5) “Glaug’s sole focus on transporting fluid away from the body and minimizing or eliminating fluid movement towards the wearer” supports Patent Owner’s arguments; and (6) “a layer is a layer” is a flawed argument for reasonable expectation of success. PO Sur-Reply 12–16.

Patent Owner further argues that Nakazawa teaches away from the asserted combination with Glaug, because (1) the inventive concept of Nakazawa mandates only a single-layer diffusion sheet between absorbent cores; (2) in Nakazawa, “in every embodiment where the hydrophilic sheet is described or pictured in combination with the diffusion sheet and the hole portions, there *must* be a gap in the hydrophilic sheet beneath the opening”; and (3) “this gap in the hydrophilic sheet is not just the preferred embodiment, it is the only clearly disclosed embodiment.” *Id.* at 16–18.

e) Analysis

Regarding Patent Owner's argument that Nakazawa's diffusion sheet 63 is not a fluid flow control structure (PO Resp. 25), we find this inapposite because Petitioner does not rely on Nakazawa's diffusion sheet alone to satisfy the "fluid flow control structure" limitation. The Petition sufficiently explains that this challenge is based on modification of Nakazawa's diffusion sheet. Regarding Patent Owner's argument that Glaug's fluid acquisition system is not a fluid flow control structure (PO Resp. 26), we find this argument inapposite because the Petition does not rely on Glaug's fluid acquisition system alone, but rather explains that this challenge to claim 1 is based on replacing the diffusion sheet in Nakazawa's absorbent article with Glaug's fluid acquisition system, or by adding Glaug's non-perforated layer to Nakazawa's diffusion sheet. In both of these scenarios, Petitioner's asserted modification of Nakazawa would arrange the alleged fluid flow control structure between Nakazawa's first absorbent material and backsheet and would not change their locations. Regarding both Nakazawa and Glaug arguments above, we note that non-obviousness cannot be established by attacking references individually when an unpatentability challenge is based upon a combination of references. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Regarding Patent Owner's argument (a) that a POSA would not have been motivated to combine Nakazawa and Glaug and would not have had a reasonable expectation of success, we are not persuaded that one of ordinary skill in the art would not have been motivated to combine. Although Patent Owner argues that combining Nakazawa and Glaug "would change the basic principles for which each were designed to operate, defeating obviousness

from the start” (PO Resp. 29), and that “using all or part of [Glaug’s] fluid-acquisition system in place of [Nakazawa’s] diffusion sheet would be antithetical to the teachings of both references” (*id.* at 35), we agree that the proposed combination of Nakazawa’s structure with the layers of Glaug is sufficiently motivated and reasonably expected to result in a successful article, for the reasons articulated by Petitioner. *See, e.g.*, Pet. 59–65; Ex. 1002 ¶¶ 176–192. Namely, although fluid may flow in both Z directions in Nakazawa (PO Resp. 30), that does not foreclose the combination with Glaug in the manner proposed by Petitioner. *See generally* Ex. 1002 ¶¶ 176–192; *see id.* ¶ 184 (detailing the mechanics of the proposed combinations), ¶¶ 188–191 (discussing motivation to combine), ¶ 192 (discussing reasonable expectation of success). The combination can be achieved “either by adding the lower acquisition layer 64 [of Glaug] to diffusion sheet 63 [of Nakazawa], or by replacing diffusion sheet 63 [of Nakazawa] with the two-layer fluid acquisition system 34 [of Glaug],” and as persuasively explained by Dr. Pourdeyhimi, the arrangement constitutes a “fluid flow control structure.” *See* Ex. 1021 ¶¶ 45–47.

Additionally, the diffusion sheet in Nakazawa can be made from the same material as used in Glaug, namely, Aquidry™. *Id.* ¶¶ 53–55; *see also* Tr. 17:25–18:3 (“although Glaug does not specify the name Aquidry in its disclosure, Patent Owner’s expert testified that it’s his understanding that Glaug is discussing the Aquidry material, the same material that is in Nakazawa they disclose using the same material, and Nakazawa says this material work[s]”). When asked if Patent Owner’s expert had any concerns that Aquidry was not the same as between Nakazawa and Glaug, Patent Owner’s counsel replied “They are the same, Your Honor. And we

embrace that.” Tr. 46:8–12; *see also id.* at 58:19 (Petitioner’s counsel commenting about Patent Owner’s counsel: “they agree, Aquidry is used in both Nakazawa and Glaug”).

Thus, Patent Owner’s argument that Nakazawa’s diffusion sheet and Glaug’s fluid acquisition layer have different purposes because Nakazawa’s diffusion sheet allegedly must promote fluid flow in the Z-directions, both toward and away from the body (PO Resp. 29–37; Ex. 2004 ¶¶ 26–28, 30–35)) is not clearly supported by Nakazawa, and is also contravened by the shared disclosure of Nakazawa and Glaug as to the composition of the disputed layer. We have reviewed the complete record, including Patent Owner’s and Mr. Sheldon’s assertions that Nakazawa requires promoting fluid flow in both Z-directions (*see id.*), but find that Petitioner carries its burden to demonstrate that one of ordinary skill in the art would have been motivated to combine Nakazawa and Glaug with a reasonable expectation of success. On this complete record, Petitioner explains sufficiently why and how a person of ordinary skill would modify Nakazawa’s diffusion sheet, i.e., to use Glaug’s fluid acquisition system, or the lower non-perforated layer of its fluid acquisition system, in Nakazawa, and Petitioner provides well-supported reasons for doing so.

Regarding Patent Owner’s argument (b) that Nakazawa teaches away from, or at least disparages, Petitioner’s proposed modifications and combination with Glaug; we find that Nakazawa neither teaches away from nor disparages the combination. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the [inventor].” *In*

re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994). Although prior art may teach away if it criticizes, discredits, or otherwise discourages the solution claimed, we find that neither Nakazawa nor Glaug teach away from the combination proposed by Petitioner; Nakazawa teaches multiple embodiments besides the Figure 15 embodiment relied on by Patent Owner, and we are not persuasively directed to any disclosure in Nakazawa that discourages, discredits, or criticizes the proposed combination with Glaug. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). It is not a “teaching away” unless one of ordinary skill in the art would have understood that teaching as conveying that the method or structural configuration at issue reasonably cannot be expected to achieve what it is required to achieve according to the claimed invention. *See, e.g., Syntex (U.S.A) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005). The evidence of record does not support a conclusion that an ordinarily skilled artisan substituting Glaug’s layers into Nakazawa’s structure, as proposed by Petitioner, would have been discouraged from doing so based on the disclosures of Nakazawa. *See, e.g.,* Pet. Reply 16–17.

Regarding Patent Owner’s argument (c) that a POSA would not be motivated to add additional layers to an absorbent article due to cost and manufacturing complexity, we find Petitioner’s position persuasive. Mr. Sheldon explains the complexities of material selection and manufacturing of absorbent products (Ex. 2001 ¶¶ 62–72), but Petitioner’s asserted combination of Nakazawa and Glaug involves a simple substitution of a known element for another, and we agree with Petitioner that this asserted combination would have been within the level of ordinary skill in the art, and that manufacturing would be straightforward and not cost-

prohibitive. Pet. Reply 18. We are also mindful that tradeoffs do not necessarily undermine a combination of references that is supported by a sound rationale. *See Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.”). On this complete record, and even considering Patent Owner’s additional supporting evidence, Patent Owner’s argument does not undermine Petitioner’s showing.

Having considered the evidence and arguments presented by both parties, we determine Petitioner sufficiently explains why a person of ordinary skill in the art would have had reason to combine the disclosures of Nakazawa and Glaug to arrive at the claimed invention with a reasonable expectation of success. Thus, Petitioner demonstrates by a preponderance of the evidence that claim 1 would have been obvious over Nakazawa and Glaug.

4. *Claim 21*

Claim 21 depends from claim 1 and additionally recites “wherein the opening extends through an entire crotch portion of the absorbent article.” Ex. 1001, 15:13–15. Petitioner argues Nakazawa discloses this limitation. Pet. 73 (citing Ex. 1008 ¶ 89, Fig. 11). Petitioner’s annotated Figure 11 is reproduced below:

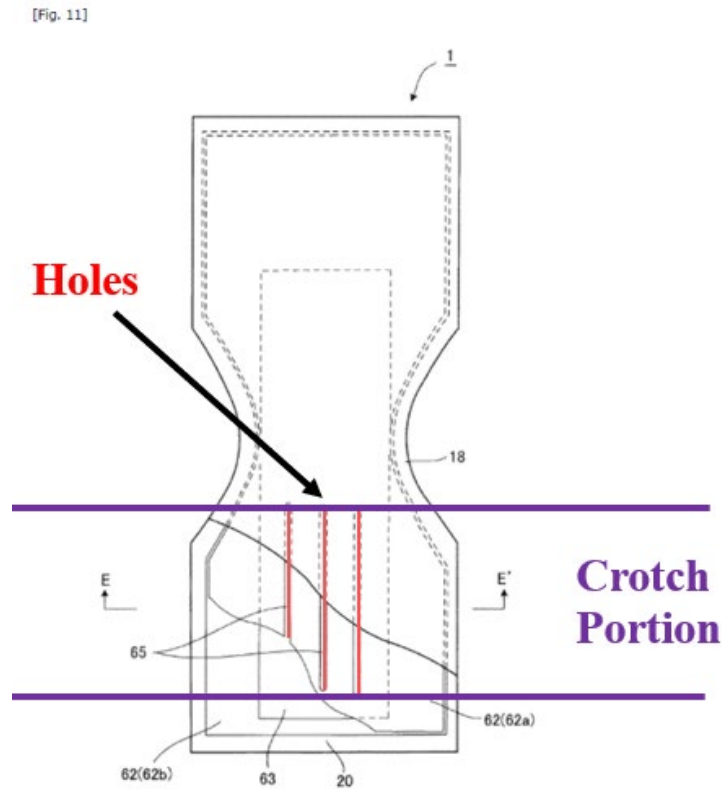
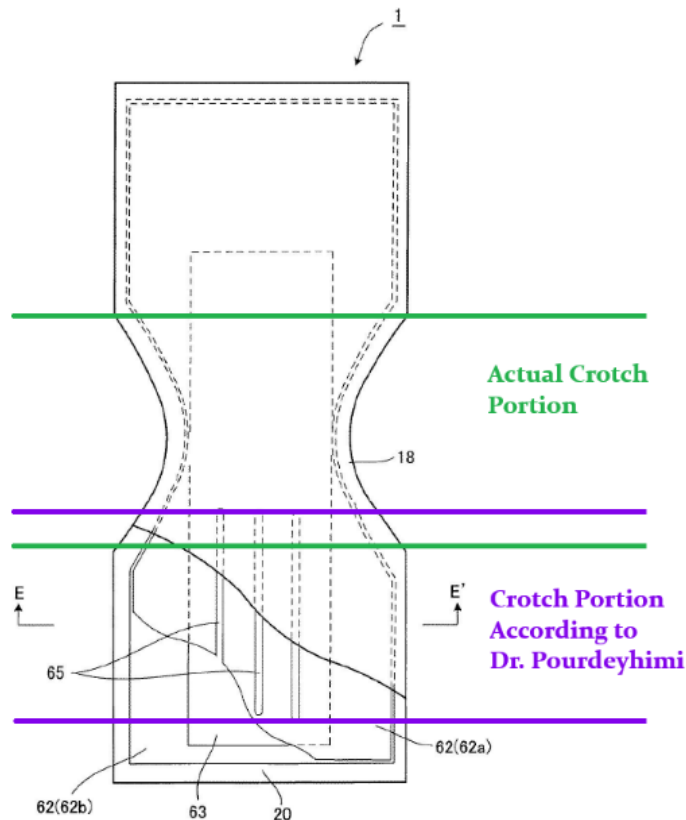


Figure 11, according to Petitioner, depicts an opening in the crotch portion of the absorbent article. *Id.*

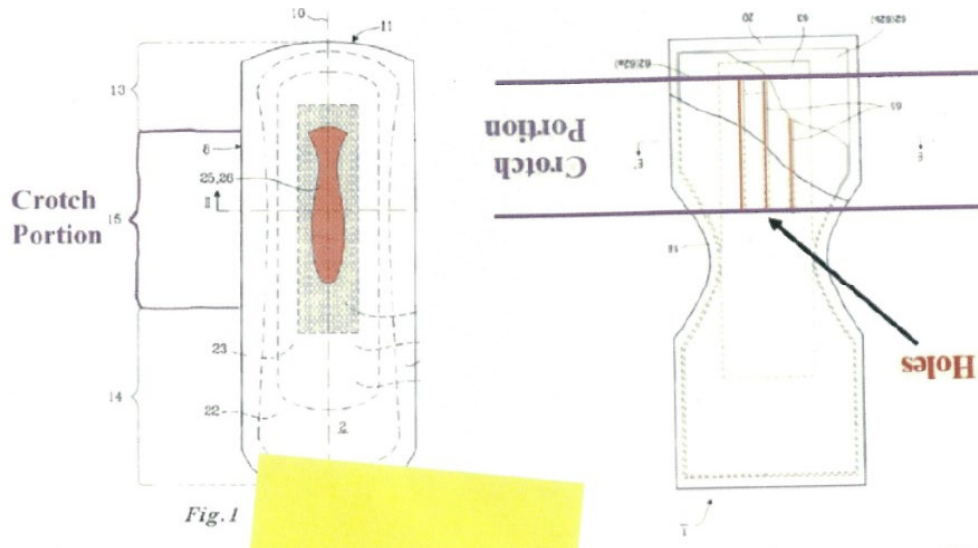
Patent Owner argues that Nakazawa's opening does not extend through the entire crotch portion of the absorbent article. *Id.* at 39–41 (citing Pet. 73–74; Ex. 1008, Fig. 11). Patent Owner argues hole portion 65 in Nakazawa's Figure 11 has “very little if any overlap” “with the actual crotch portion as defined in the '138 Patent.” *Id.* at 40 (citing Ex. 1001, 5:55–64). Patent Owner's arguments are represented in its annotated Figure 11, reproduced below.



Patent Owner’s annotated Figure 11 depicts the “Crotch Portion According to Dr. Pourdeyhimi” in purple and the alleged “Actual Crotch Portion” in green. *Id.* Patent Owner also asserts that putting opening 65 in the crotch portion of Nakazawa would cause side leakage. *Id.* at 41.

In reply to Patent Owner’s assertion that “Petitioner placed the crotch portion” “where hole portion 65 is, rather than where the actual crotch portion of the article is” as defined in the ’138 patent, Petitioner argues that both Nakazawa and the ’138 patent use “crotch portion” “to describe the wearer’s urination site.” Pet. Reply 18 (citing Ex. 1008 ¶ 32; Ex. 1001, 5:59–63). Petitioner asserts that Patent Owner’s comparison of the location of the crotch portion in both references “misleadingly arranges Nakazawa[] upside down.” *Id.* at 19 (referring to Ex. 2001 ¶ 154). When oriented correctly, Petitioner argues, the crotch portions of Nakazawa and the ’138

patent “are in similar locations—where urination occurs.” *Id.* at 19–20 (citing Ex. 1021 ¶¶ 75–76). Petitioner’s side by side comparison is reproduced below.



In Petitioner’s side by side comparison, Nakazawa’s Figure 1 is annotated with a crotch portion highlighted in tan, next to an upside-down rendering of the ’138 Patent’s Figure 11, in which the holes of the crotch portion are also highlighted in tan. *Id.* at 20. Petitioner also disputes that putting opening 65 in the crotch portion would cause side leakage, in view of Nakazawa’s teaching that holes extending through the entire crotch area are advantageous. *Id.* at 20.

Patent Owner responds that Petitioner’s rotated figure is a failed attempt to fit Nakazawa’s disclosure to the claims of the ’138 patent. PO Sur-Reply 19. According to Patent Owner, Nakazawa makes clear that the crotch portion is exactly where Patent Owner and Mr. Sheldon say it is: where the leg cutout indents are. *Id.* (citing Ex. 1008 ¶¶ 34, 129). Patent Owner also faults Petitioner for raising a “new argument” that Nakazawa “discloses a hole that can extend along the length of the entire article, undoubtedly including the entire crotch portion.” *Id.* at 20.

The '138 patent provides:

The crotch portion, as used herein, is the portion of the article that is designed to be placed in the crotch of a wearer and to be in contact with the pudendal area of the wearer. The crotch portion includes the wetting area of the article and can be asymmetrically placed in the longitudinal direction of the article.

Ex. 1001, 5:59–64. The depiction of crotch portion 15 in Figure 1 is “asymmetrically placed in the longitudinal direction of the article” as described in the text. *Id.*, Fig. 1. Although Dr. Sheldon, Patent Owner’s declarant, testifies that Petitioner’s identification of Nakazawa’s crotch portion and the holes extending therethrough are “incorrect, misleading, and conclusory,” (Ex. 2001 ¶ 153), Dr. Pourdeyhimi testifies that the annotations and meaning of “crotch portion” in Nakazawa (Ex. 1008 ¶ 32 (“the urination site (that is, in the crotch portion when worn)”) are consistent with the meaning of “crotch portion” in the '138 patent (Ex. 1001, 5:62–64 (“The crotch portion includes the wetting area of the article and can be asymmetrically placed in the longitudinal direction of the article.”))).

Ex. 1021 ¶ 74. In both references, the crotch portion may be “asymmetrically placed in the longitudinal direction of the article”; we are not directed to any portion of the references that mandates a more exact location of the “crotch portion” as Patent Owner argues, or that prohibits the orientation of the “crotch portion” as identified in Petitioner’s proposal. We are also persuaded by Petitioner’s argument regarding side leakage, namely, that Nakazawa’s holes extending through the entire crotch area are advantageous and improve both “the leakage prevention effect” and the fit at the urination site. Pet. Reply 20 (citing Ex. 1008 ¶ 47–49; Ex. 1021 ¶ 77).

On this complete record, we are persuaded by Petitioner's claim 21 arguments, and find that Petitioner has met its burden of demonstrating that the proposed combination of references discloses the limitations of claim 21.

5. Claims 3–5, 20, 22, 24, and 25

We have also reviewed Petitioner's contentions for all the limitations of dependent claims 3–5, 20, 22, 24, and 25, as well as the supporting evidence. Pet. 68–77 (citing Ex. 1002 ¶¶ 199–212, 218–224). Patent Owner does not present separate arguments in opposition to claims 3–5, 20, 22, 24, and 25. *See generally* PO Resp.

Based on the complete record before us, we are persuaded that Petitioner shows that the combination of Nakazawa and Glaug teaches all of the limitations of dependent claims 3–5, 20, 22, 24, and 25, and that one of ordinary skill in the art would have been motivated to make the combination with a reasonable expectation of success. Accordingly, we determine that Petitioner shows, by a preponderance of the evidence, that claims 3–5, 20, 22, 24, and 25 would have been obvious over the teachings of Nakazawa and Glaug.

6. Ground 3 – Alleged Obviousness of Claim 7 over Nakazawa, Glaug, and Cohen

Claim 7 depends from claim 4 and requires that the “average size of the apertures in the first perforated polymeric layer is 0.5-5 mm.” Ex. 1001, 14:24–26. Petitioner relies on Cohen for this limitation, arguing that a POSA would have been motivated to combine Cohen with Nakazawa and Glaug with a reasonable expectation of success because Cohen “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.” Pet. 78–79 (citing Ex. 1002 ¶¶ 230–231).

Patent Owner argues that the “Petition only references [Cohen] to further describe properties of the material allegedly used in [Glaug].” PO Resp. 27. Patent Owner also argues: “Claim 7 is not obvious for all the reasons set forth in [Patent Owner’s] response regarding claim 1, from which claim 7 depends, for Ground II above;” and “Petitioners’ proposed combination is simply arbitrary and done with hindsight.” *Id.* at 69.

After reviewing the parties’ arguments and evidence, we are persuaded that Petitioner shows that Cohen teaches “average size of the apertures in the first perforated polymeric layer is 0.5-5 mm” as in claim 7.

Glaug teaches 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,” but does not specify an aperture size. Ex. 1006, 8:7–12. Cohen teaches use of AquiDry™ film made by Tredegar for “first material 20 having an average pore size of 0.3-10 mm in diameter, ***preferably 0.5-5.0 mm***, and optimally 1.0-2.0 mm,” which is “sufficiently large to enable rapid liquid acquisition.” Ex. 1016 ¶¶ 32, 41, 24. We credit Petitioner’s argument and evidence that argues that one of ordinary skill in the art would have been motivated to use a three-dimensional perforated polymeric layer having apertures with an average size of 0.5-5.0 mm, as in Cohen, for Glaug’s perforated layer 62, and would have had a reasonable expectation of success in doing so. Pet. 78–79 (citing Ex. 1002 ¶¶ 230–231).

For these reasons, after considering the parties’ positions and supporting evidence, we are persuaded that Petitioner demonstrates that the combination of Nakazawa, Glaug, and Cohen teaches or suggests that

“average size of the apertures in the first perforated polymeric layer is 0.5-5 mm” as required by claim 7.

Having reviewed the parties’ arguments and evidence, we are persuaded that Petitioner shows by a preponderance of the evidence that claims 1, 3–5, 20–22, 24, and 25 would have been unpatentable as obvious in view of the combined teachings of Nakazawa and Glaug, and that claim 7 would have been unpatentable as obvious in view of the combined teachings of Nakazawa, Glaug, and Cohen.

F. Ground 4: Alleged Obviousness Based on Nakazawa and Ponomarenko

Petitioner contends the combination of Nakazawa and Ponomarenko renders claims 1–5, 7, 8, 21, 22, 24, and 25¹³ obvious. Pet. 8, 79–92.

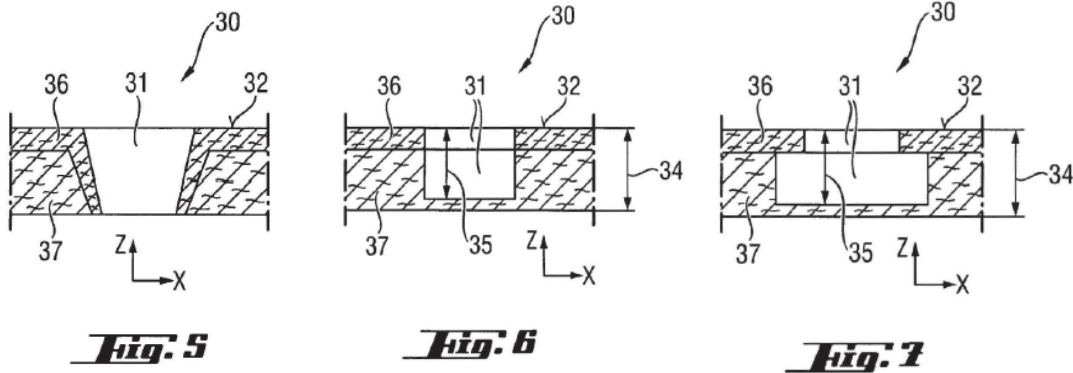
1. Overview of Ponomarenko

Ponomarenko, a U.S. patent issued on June 7, 2011, discloses an absorbent article comprising a topsheet, backsheet, absorbent core, and “a sublayer that includes at least one acquisition layer.” Ex. 1007, codes (45), (57). According to Ponomarenko, its “absorbent article may provide improved isolation of feces away from the skin of a wearer of the absorbent

¹³ We note that page 8 of the Petition lists claim 25 as included in this challenge, but page 79 of the Petition does not list claim 25 when discussing this challenge. The Petition expressly discusses limitation [1h] and claims 2–5, 7, and 8 (Pet. 80–92) and, for the remainder of the claims challenged under this ground, asserts: “Any limitation not specifically addressed below is disclosed by Nakazawa-’190 for the reasons provided in Ground II. EX1002-Decl., ¶232.” Pet. 79; *see also* Ex. 1002 ¶ 232 (including claim 25 in its listing). Thus, for claim 25 under this ground, Petitioner asserts that Nakazawa teaches its limitations and Patent Owner does not dispute Petitioner’s inclusion of claim 25 in this ground, so we understand this ground to include claim 25 despite the discrepancy in the headings.

article and/or improved immobilization of feces received by the absorbent article.” *Id.* There is no dispute that Ponomarenko is prior art. *See generally* PO Resp.

Figures 5–7 of Ponomarenko, reproduced below, depict three cross-sectional views of different embodiments of a sublayer. Ex. 1007, 2:17–24.



Figures 5–7 above show sublayer 30 having two acquisition layers with various configurations of holes 31 and depths 35. *Id.* at 6:36–54, 8:44–46. The acquisition layers include first layer 36 having surface 32 that faces a topsheet and second layer 37 that faces first layer 36. *Id.* at 6:54–58. Sublayer 30 also serves as an acquisition layer, by acquiring, temporarily holding, allowing to pass, or transporting liquid (urine) to the absorbent core underneath in the Z-direction; sublayer 30 also distributes the liquid in the X and Y direction. *Id.* at 7:8–13. Holes 31 having various configurations as shown in Figures 6 and 7 are capable of storing and immobilizing feces within the sublayer. *Id.* at 7:27–28.

2. Claim 1

a) Petitioner's Arguments

Similarly to its challenge based on the combination of Nakazawa and Glaug, Petitioner argues a person of ordinary skill in the art would have been motivated to modify Nakazawa by replacing its diffusion sheet with

Ponomarenko's sublayer 30. Pet. 79–84. Petitioner relies on the following portion of Ponomarenko describing sublayer 30:

In general, the sublayer (30) herein is (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 (in Z-direction), and optionally also distribute it in the X and Y direction of the sublayer (30).

Pet. 80 (quoting Ex. 1007, 7:8–19). Petitioner argues the benefit of Ponomarenko's sublayer in assisting with fluid acquisition and distribution would have motivated a person of ordinary skill in the art to modify Nakazawa, and the modification would have been obvious because it would have involved simple substitution of a known element for another to obtain predictable results. *Id.* at 83 (quoting Ex. 1007, 6:47–49 (sublayer design “ensures an excellent feces storage and isolation” “during the whole usage of the diaper, even when a user is moving or sitting on the diaper”)).

b) Patent Owner's Response

Initially, Patent Owner argues that Ponomarenko “is concerned with BM management and feces immobilization, not fluid flow control.” PO Resp. 26. Patent Owner also argues that “Ponomarenko only discloses a single absorbent core with sublayer 30 between the topsheet and absorbent core and thus does not teach any structure” corresponding to limitation [1g]. *Id.* at 27.

Patent Owner otherwise presents arguments against this challenge that are similar to those discussed above in connection with Ground 2 and Ground 3 based on Nakazawa. PO Resp. 42–48. More particularly, Patent Owner argues that: (a) a POSA would not be motivated to combine Nakazawa and Ponomarenko and would not have had a reasonable

expectation of success in doing so; (b) Nakazawa teaches away from, or at least disparages, Petitioner's proposed modifications and combination with Ponomarenko; and (c) a POSA would not be motivated to add additional layers to an absorbent article due to cost and manufacturing complexity. *Id.* at 43–48. We summarize these arguments (a)–(c) below.

Regarding (a), Patent Owner argues that combining Nakazawa and Ponomarenko “would change the basic principles for which each were designed to operate, leading away from obviousness.” PO Resp. 43. Patent Owner states that there is no disclosure in Ponomarenko “that sublayer 30 promotes fluid flow in the +Z-direction,” that Ponomarenko's minimal discussion of fluid flow is limited, and that Petitioner ignores the primary teaching of Ponomarenko. *Id.* at 43–44. Patent Owner further argues (1), (2) if the sublayer were disposed below the absorbent core, the arrangement would lead to “substantial wearer discomfort” and “additional pressure on the sublayer during manufacture and use”; and (3) Nakazawa is “intended to handle multiple insults of fluid” whereas Ponomarenko “is intended to handle only one BM” thereby defeating the motivation to combine. *Id.* at 44–47.

Regarding (b), Patent Owner argues Nakazawa teaches away from using Ponomarenko's multi-layer sublayer “as a fluid flow control structure for the same reasons set forth in Section VI.A.1.b.” *Id.* at 47.

Regarding (c), Patent Owner refers to “Sections II.B.1 and VI.A.1.c.” to argue that “adding layers to an absorbent article increases manufacturing complexity, cost, and machine downtime, and can make a marginally profitable product unprofitable.” *Id.* at 48.

c) Petitioner's Reply

Petitioner replies that (1) Patent Owner's arguments about fluid movement in both Z-directions fail for the same reasons its obviousness arguments in Ground 2 fail; (2) Ponomarenko's sublayer 30 can "optionally also distribute [fluid] in the X and Y direction of the sublayer (30)"; (3) Patent Owner ignores that diapers ordinarily manage both fluid and feces; (4) Patent Owner's managing feces, unwanted pressure, and hindsight arguments are incorrect. Pet. Reply 20–23. Petitioner refers back to its Ground 2 teaching away arguments for this Ground 4. *Id.* at 24. Petitioner also refers back to Ground 2 cost/complexity arguments for this Ground 4, arguing that references are available for everything they teach. *Id.*

d) Patent Owner's Sur-Reply

Patent Owner responds that whether Ponomarenko's sublayer can distribute fluid in the X and Y direction is irrelevant to whether the sublayer "could achieve fluid flow in the +Z-direction toward the wearer as required by" Nakazawa. PO Sur-Reply 21. Patent Owner reiterates that Ponomarenko's focus on feces management undermines Petitioner's proposed combination, including placement of sublayer 30 between absorbent cores. *Id.* at 21–23.

e) Analysis

Regarding Patent Owner's argument that Ponomarenko "is concerned with BM management and feces immobilization, not fluid flow control" (PO Resp. 26), we find this argument inapposite. Ponomarenko does refer to fluid flow control, namely, urine transport and absorption. *See* Ex. 1007, 7:8–16 (sublayer 30 serves as an acquisition layer, by acquiring, temporarily holding, allowing to pass, or transporting liquid (urine) to the absorbent core

underneath in the Z-direction; sublayer 30 also distributes the liquid (urine) in the X and Y direction); *see also* Ex. 1007, 6:39–42 (sublayer 30 “can temporarily absorb fluids, like urine, and pass on or transport the fluid to the absorbent core”). Regarding Patent Owner’s argument that Ponomarenko does not teach “any structure ‘arranged between said first absorbent layer and said backsheet’” (i.e., limitation [1g]) (PO Resp. 26–27), we also find this argument inapposite, because Petitioner relies on the combination of Ponomarenko and Nakazawa to teach a fluid control structure and its arrangement. Pet. 80–81. Attacking references individually does not defeat an obviousness challenge based upon a combination of references. *In re Merck & Co.*, 800 F.2d at 1097.

Regarding Patent Owner’s argument (a) that a POSA would not be motivated to combine Nakazawa and Ponomarenko and would not have had a reasonable expectation of success, we are not persuaded that one of ordinary skill in the art would not have been motivated. Patent Owner argues that combining Nakazawa and Ponomarenko “would change the basic principles for which each were designed to operate, leading away from obviousness” (PO Resp. 43). Having reviewed the complete record, however, we agree that the proposed combination of Nakazawa’s structure with the layer of Ponomarenko is sufficiently well-motivated and can reasonably be expected to result in a successful article, for the reasons articulated by Petitioner. *See, e.g.*, Pet. 79–84; Ex. 1002 ¶¶ 232–246.

Namely, although fluid may flow in both Z directions in Nakazawa, that does not foreclose the combination with Ponomarenko in the manner proposed by Petitioner. *See* Pet. Reply 21 (citing Ex. 1021 ¶¶ 79, 81, 93). In Ponomarenko, sublayer 30 can “optionally also distribute [fluid] in the X

and Y direction of the sublayer.” *Id.* (citing Ex. 1007, 7:12–13). As for Patent Owner’s argument that Ponomarenko is focused on feces management, as explained by Dr. Pourdeyhim, “diapers ordinarily manage fluid and feces,” as does Ponomarenko. *See* Ex. 1021 ¶¶ 82–83, 95. A reference must be considered for all it discloses; if “a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417.

Petitioner also relies on the premise that “diapers ordinarily manage both feces and fluids” to counter Patent Owner’s arguments that the proposed combination would not work due to alleged wearer discomfort and pressure. Pet. Reply 22. We agree with Petitioner that Ponomarenko’s sublayer is “pressure resistant even after wetting” with its response to pressure changing preferably “less than 10%” after wetting, (Pet. Reply 23 (citing Ex. 1007, 1:65–2:3; 8:63–9:1)), and that Patent Owner’s declarant provided insufficient analysis or calculations to support Patent Owner’s pressure-based positions. Pet. Reply 23. We additionally agree that, because both references are directed to diapers, which manage both feces and urine, one of ordinary skill in the art would have understood the need for a diaper to address both, and Patent Owner’s “improper hindsight” concerns are allayed. *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the

claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper."').

Regarding Patent Owner's argument (b) that Nakazawa teaches away from using Ponomarenko as a fluid flow control structure (PO Resp. 47), we note this single-sentence section refers back to Patent Owner's earlier argument that Nakazawa teaches away from using Glaug. For the same reasons discussed above, we find that neither Nakazawa nor Ponomarenko teach away from the combination proposed by Petitioner; Nakazawa teaches multiple embodiments besides the Figure 15 embodiment relied on by Patent Owner, and we are not persuasively directed to any disclosure in Nakazawa that discourages, discredits, or criticizes the proposed combination with Ponomarenko. *See In re Fulton*, 391 F.3d at 1201.

Regarding Patent Owner's argument (c) that a POSA would not be motivated to add additional layers to an absorbent article due to cost and manufacturing complexity, which refers back to earlier sections making largely the same arguments (PO Resp. 48), we find Petitioner's position persuasive for largely the same reasons given above. Regarding Patent Owner's additional argument that Ponomarenko's feces management properties would complicate the combination (*id.* (citing Ex. 2001 ¶¶ 183–184)), we disagree that the substitution is as complex as Patent Owner argues, given Petitioner's proposed simple substitution of Nakazawa's diffusion sheet with Ponomarenko's sublayer. *See* Ex. 1021 ¶¶ 91–92, 94; *see also Winner Int'l Royalty Corp.*, 202 F.3d at 1349 n.8. On this complete record, and considering Patent Owner's additional supporting evidence, Patent Owner's argument does not undermine Petitioner's showing.

Having considered the evidence and arguments presented by both parties, we determine Petitioner sufficiently explains why a person of ordinary skill in the art would have had reason to combine the disclosures of Nakazawa and Ponomarenko to arrive at the claimed invention with a reasonable expectation of success. Thus, Petitioner demonstrates by a preponderance of the evidence that claim 1 would have been obvious over Nakazawa and Ponomarenko.

3. *Claim 2*

Claim 2 depends from claim 1 and adds that the “first perforated polymeric layer has a basis weight from 60 g/m² to 100 g/m².” Ex. 1001, 14:4–6. Petitioner contends that the combination of Nakazawa and Ponomarenko teaches or suggests all of the limitations of claim 2. Pet. 84–85. Petitioner relies on Ponomarenko’s disclosure 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.’” *Id.* (citing Ex. 1007, 10:4–17). Petitioner argues that because Ponomarenko “teaches that a high basis weight was preferable, a [POSA] would have been motivated to use the high basis weight sublayer” of Ponomarenko in place of the diffusion sheet of Nakazawa “to obtain the same advantages as disclosed in Ponomarenko.” *Id.* at 48 (citing Ex. 1002 ¶ 250).

Patent Owner argues that Nakazawa’s diffusion sheet “has a basis weight of 19.5 g/m² (bulky air-porous nonwoven fabric) or 36.3 g/m² (porous film).” PO Resp. 49. According to Patent Owner, “Ponomarenko provides no explanation why high basis weight should be chosen for this additional nonwoven layer of sublayer 30.” *Id.*

Petitioner replies that one of ordinary skill in the art “would have understood a perforated layer of the high-basis weight cellulose fibers disclosed by Ponomarenko” is more fluid-permeable than Ponomarenko’s or Nakazawa’s absorbent cores, and would have understood the benefits. Pet. Reply 24–25 (citing Ex. 1021 ¶ 97). Petitioner argues that Patent Owner acknowledges Ponomarenko’s disclosure of a high basis weight of “preferably even 60 gsm” for sublayer 30, but dismisses this disclosure because Ponomarenko allegedly “does not provide a specific reason for using a high-basis weight material,” but this “does not mean a POSA would not have recognized the benefits.” *Id.* at 25.

For the reasons given by Petitioner, we are persuaded that the basis weight disclosed by Ponomarenko meets the limitation of claim 2, and that one of ordinary skill in the art would have been motivated to make the combination with Nakazawa, for, *inter alia*, increased fluid permeability reasons. *See, e.g.*, Ex. 1021 ¶ 97. Thus, Petitioner demonstrates by a preponderance of the evidence that claim 2 would have been obvious over the teachings of Nakazawa and Ponomarenko.

4. *Claims 3–5, 7, 8, 21, 22, 24, and 25*

We have reviewed Petitioner’s contentions for all the elements of claims 3–5, 7, 8, 21, 22, 24, and 25, as well as the supporting evidence. Pet. 85–92 (citing Ex. 1002 ¶¶ 251–273). Patent Owner does not address Petitioner’s specific contentions with respect to the limitations of dependent claims 3–5, 7, 8, 21, 22, 24, and 25. *See generally* PO Resp.

Based on the complete record before us, we are persuaded that Petitioner’s discussion of the particular structures in Nakazawa and Ponomarenko, and the explanations in the Declarations, show that the

combination of Nakazawa and Ponomarenko teaches all of the limitations of dependent claims 3–5, 7, 8, 21, 22, 24, and 25, and that one of ordinary skill in the art would have been motivated to make the combination with a reasonable expectation of success. Accordingly, we determine that Petitioner shows, by a preponderance of the evidence, that claims 3–5, 7, 8, 21, 22, 24, and 25 would have been obvious over the teachings of Nakazawa and Ponomarenko.

G. Ground 5: Alleged Anticipation Based on Nakazawa

Petitioner contends Nakazawa anticipates claims 1, 3–5, 21, 22, 24, and 25. Pet. 92–96. We focus our analysis on the disputed limitation at issue in this challenge, namely, limitation [1h].

1. Parties' Arguments

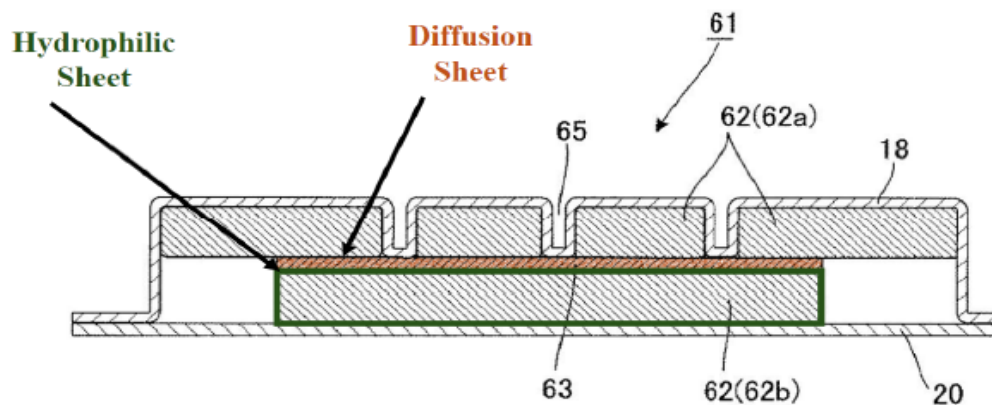
Petitioner contends that its anticipation challenge based on Nakazawa stems from Appendix A to Patent Owner's Complaint in the parallel district court litigation, which "identifies the 'core wrap' around the lower absorbent core in the accused product as being the non-perforated fibrous polymeric layer of the claimed 'fluid flow control structure.'" Pet. 92 (citing Ex. 1014, Appendix A). Petitioner explains that 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.'" *Id.* (citing Ex. 1015, 1:35–37).

Petitioner argues in this challenge that Nakazawa's hydrophilic sheet corresponds to the "non-perforated fibrous polymeric layer" of the fluid flow control structure recited in claim element [1h]. Pet. 93. Petitioner quotes the following excerpt from Nakazawa:

While 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.

Id. (quoting Ex. 1008 ¶ 82). Petitioner also relies on its annotated version of Nakazawa's Figure 14A, reproduced below:

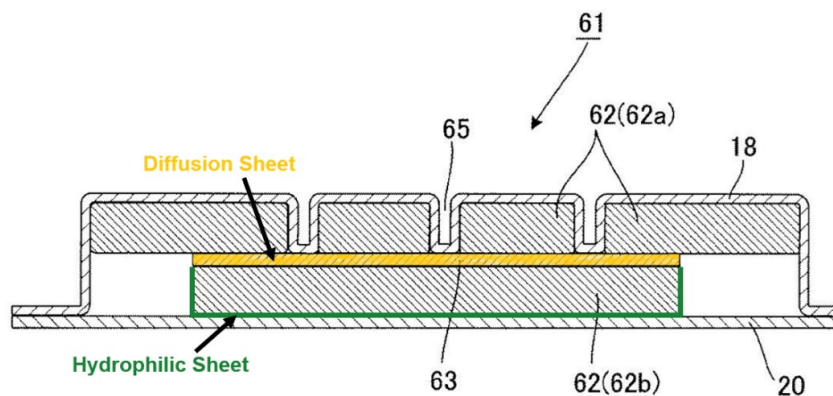


Pet. 94. Nakazawa Figure 14A, reproduced above (as annotated by Petitioner), depicts a cross-sectional view of an absorbent article having top sheet 18 covering the top surface of first absorbent material 62a and the inner surfaces of hole portions 65 in the first absorbent material, second absorbent material 62b, and diffusion sheet 63 located between the first and second absorbent material. *Id.* at 93–94 (citing Ex. 1008 ¶ 84). Petitioner's annotations to Figure 14A include the label “diffusion sheet” pointing to a brown horizontal line in the figure identified by reference numeral 63, and the label “hydrophilic sheet” pointing to a green line around the perimeter of the rectangle identified by reference numeral 62(62b). *Id.* at 94.

Patent Owner argues, with respect to limitation [1h], that Nakazawa does not anticipate any claim of the '138 patent, because “it does not disclose a ‘non-perforated fibrous polymeric layer’ [limitation [1h]] or a ‘fluid flow control structure’ [limitation [1e]] as claimed in the '138 Patent,” and because “[d]iffusion sheet 63 is not itself a fluid flow control structure.”

PO Resp. 51. Patent Owner points to the Institution Decision observation that “Petitioner does not identify disclosure relating to Nakazawa’s hydrophilic sheet that describes it as a fibrous polymeric layer, or as participating in fluid flow control.” *Id.* at 51–52 (citing Inst. Dec. 33). Patent Owner emphasizes that “the only disclosure Petitioners point to” i.e. that “the absorbent material is generally wrapped on the back surface and side surfaces with a hydrophilic sheet” (Pet. 93 (citing Ex. 1008 ¶ 82)), “explicitly requires that the hydrophilic sheet is *not* on the top surface of the absorbent material in contact with diffusion sheet 63.” PO Resp. 52. Patent Owner also takes issue with Petitioner’s annotated Figure 14A, arguing that an accurately annotated Figure 14A should only have the back and side surfaces wrapped with a hydrophilic sheet as described by Nakazawa. *Id.* at 52–24. Patent Owner’s annotated Figure 14A is reproduced below.

[Fig. 14A]



Id. at 53. Patent Owner’s annotated Figure 14A depicts a cross-sectional view of an absorbent article having top sheet 18 covering the top surface of first absorbent material 62a and the inner surfaces of hole portions 65 in the first absorbent material, second absorbent material 62b, and diffusion sheet 63 located between the first and second absorbent material. Patent Owner’s annotations to Figure 14A include the label “diffusion sheet”

pointing to a yellow line in the figure identified by reference numeral 63, and the label “hydrophilic sheet” pointing to a green line around the bottom and sides of the rectangle identified by reference numeral 62(62b). *Id.* Additionally, Patent Owner argues that “even if the absorbent core were wrapped with the hydrophilic sheet as Petitioners suggest, this does not convert the diffusion sheet and hydrophilic sheet into a fluid flow control structure as described and claimed in the ’138 Patent.” *Id.* at 54.

Petitioner replies that Patent Owner “cannot have it both ways: either a hydrophilic sheet wrapped around the absorbent material can be part of a ‘fluid flow control structure’ or it can’t.” Pet. Reply 25. Petitioner reiterates that the Petition “relies on the hydrophilic sheet as being the claimed non-perforated fibrous polymeric layer of the fluid flow control structure,” and that Patent Owner’s expert “admitted that the ‘hydrophilic treated nonwoven fabric’ taught in Nakazawa” is a “non-perforated fibrous polymeric layer.” *Id.* at 25–26 (citing Ex. 1022, 254:6–255:7). Accordingly, whether Nakazawa anticipates “comes down to whether a hydrophilic sheet (e.g., industry standard core wrap) wrapped around absorbent material can be one layer of the claimed ‘fluid flow control structure.’” *Id.* at 26.

Patent Owner responds that it never agreed with Petitioner’s characterization of Nakazawa’s hydrophilic sheet as a “core wrap.” PO Sur-Reply 24–25. Rather, Patent Owner argues, Nakazawa’s hydrophilic sheet is not part of the claimed fluid flow control structure. *Id.* at 25 (citing Ex. 1022, 266:5–12).

2. *Analysis*

As Petitioner characterizes it, the issue “comes down to whether a hydrophilic sheet (e.g., industry standard core wrap) wrapped around

absorbent material can be one layer of the claimed ‘fluid flow control structure.’” Pet. Reply 26. Curiously, Petitioner does not think that core wrap should be considered part of a fluid flow control structure, as Petitioner expressly states: “Petitioner agrees that industry standard core wrap should not be considered part of a fluid flow control structure as it does not manage or control fluid flow in an absorbent article. Petition, 92.” *Id.* at 27 n.8. In the Petition, Petitioner highlights that Ground 5 is based on Patent Owner’s “incorrect reading of the scope of the claimed ‘fluid flow control structure,’” without indicating clearly how Petitioner proposes interpreting that term. Pet. 92; *see* 37 C.F.R. § 42.22(a)(2) (the Petition is required to include a “full statement of the reasons for relief requested, including a detailed explanation of the significance of the evidence including material facts”); § 42.104(b)(3)–(4) (the Petition must include a statement of “[h]ow the challenged claim is to be construed” and “[h]ow the construed claim is unpatentable”). Nor does Petitioner indicate with particularity how Petitioner disagrees with Patent Owner’s interpretation of “fluid flow control structure” in making Petitioner’s own Ground V arguments; rather, Petitioner merely indicates that Patent Owner’s construction is an “incorrect reading of the scope” of this term but then appears to apply it. *See id.*

Fundamental to a successful anticipation case here is Petitioner carrying its burden of showing that Nakazawa discloses the “fluid flow control structure” of limitations [1e] and [1h]. If Petitioner, on this record, asserts that industry standard core wrap should not be considered part of a fluid flow control structure (Pet. Reply 27 n.8), it has not effectively made its case that the industry standard core wrap should be considered part of the fluid flow control structure here. *Dynamic Drinkware*, 800 F.3d at 1378–

1379 (“Failure to prove the matter as required ... means that the party with the burden of persuasion loses on that point—thus, if the fact trier of the issue is left uncertain, the party with the burden [the petitioner] loses.”). Due to the lack of clarity in Petitioner’s position, we are “left uncertain” by Petitioner’s attempt to prove its case and carry its burden regarding the “fluid flow control structure” in this anticipation ground. Accordingly, we find that Petitioner has not met its burden.

For these reasons, after considering Petitioner’s and Patent Owner’s positions, as well as the supporting evidence, we are not persuaded that Petitioner demonstrates that Nakazawa discloses the “fluid flow control structure” set forth in limitation [1h] (and [1e]). On the complete record now before us, we determine that Petitioner has not sufficiently shown that Nakazawa discloses all the limitations of the claims challenged under Ground 5 (i.e., claims 1, 3–5, 21, 22, 24, and 25) and thus has not established by a preponderance of the evidence that claims 1, 3–5, 21, 22, 24, and 25 are unpatentable as anticipated by Nakazawa.

III. CONCLUSION¹⁴

After reviewing the record and weighing the evidence offered by both parties, we determine that Petitioner shows, by a preponderance of the

¹⁴ Should Patent Owner wish to pursue amendment of the Challenged Claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

evidence, that claims 1–5, 7, 8, 20–22, 24, and 25 of the '138 patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 3, 21, 22, 24, 25	§ 102	Bergstrom	1, 3, 21, 22, 24, 25	
1, 3–5, 20–22, 24, 25	§ 103	Nakazawa, Glaug	1, 3–5, 20–22, 24, 25	
7	§ 103	Nakazawa, Glaug, Cohen	7	
1–5, 7, 8, 21, 22, 24, 25	§ 103	Nakazawa, Ponomarenko	1–5, 7, 8, 21, 22, 24, 25	
1, 3–5, 21, 22, 24, 25	§ 102	Nakazawa		1, 3–5, 21, 22, 24, 25
Overall Outcome			1–5, 7, 8, 20– 22, 24, 25	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has established by a preponderance of the evidence that claims 1–5, 7, 8, 20–22, 24, and 25 of the '138 patent are unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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