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Paper No. 42
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREDMAN BROS. FURNITURE COMPANY, INC.,
Petitioner,

v.

BEDGEAR, LLC,
Patent Owner.

Case IPR2017-00352
Patent 8,646,134 B1

Before HYUN J. JUNG, BART A. GERSTENBLITH, and AMANDA F. WIEKER, *Administrative Patent Judges*.

JUNG, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that all challenged claims 1–6, 8–13, 15–18, and 20–24 of U.S. Patent No. 8,646,134 B1 are unpatentable.

A. Procedural History

Fredman Bros. Furniture Company, Inc. ("Petitioner") filed a Petition, requesting institution of an *inter partes* review of claims 1–6, 8–13, 15–18, and 20–24 of U.S. Patent No. 8,646,134 B1 (Ex. 1049, "the '134 patent"). Paper 1 ("Pet."). Bedgear, LLC ("Patent Owner") timely filed a Preliminary Response. Paper 7. Pursuant to 35 U.S.C. § 314(a), we instituted *inter partes* review of all challenged claims of the '134 patent. Paper 8 ("Dec. on Inst.").

After institution, Patent Owner filed a Response (Paper 14, "PO Resp."), to which Petitioner filed a Reply (Paper 21, "Pet. Reply"). Petitioner proffered a Declaration of Jennifer Frank Rhodes (Ex. 1060, "Rhodes Declaration" or "Rhodes Decl.") with its Petition, and a Declaration of Jennifer Frank Rhodes in Support of Petitioner's Reply (Ex. 1062, "Rhodes Reply Declaration"). Patent Owner proffered a Declaration of Dr. Radhakrishnaiah Parachuru in support of its Preliminary Response (Ex. 2001) and in support of its Response (Ex. 2004, "Parachuru Declaration" or "Parachuru Decl."). Deposition transcripts for Dr. Parachuru (Ex. 1061) and Ms. Rhodes (Exs. 2016, 2020) were filed.

Patent Owner filed Observations on Cross-Examination of Petitioner's Reply Witness Jennifer Frank Rhodes (Paper 27), to which Petitioner filed a

response (Paper 31). As authorized in our Order (Paper 29), Patent Owner filed a List of Improper Reply Arguments (Paper 32), to which Petitioner also filed a response (Paper 33).

An oral hearing in this proceeding and Cases IPR2017-00350, IPR2017-00351, and IPR2017-00524 was held on March 20, 2018; a transcript of the hearing is included in the record (Paper 37, "Tr.").

B. Grounds of Unpatentability at Issue

We instituted *inter partes* review on the grounds that

claims 1, 4, 5, 11, 17, and 22, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen[1],

claims 1, 4–6, 8, 11, 13, 17, 18, 22, and 23, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen, separately and independently of the ground above, based on an alternative interpretation of Rasmussen,

claims 2, 3, and 12, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Doak[2],

claims 9, 15, and 20, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Vuiton[3], and

claims 10, 16, 21, and 24, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Mason[4]. Dec. on Inst. 35.

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[1] WO 2010/075294 A1, published July 1, 2010 (Ex. 1006).
[2] US 3,109,182, issued Nov. 5, 1963 (Ex. 1008).
[3] EP 1 378 193 A1, published Jan. 7, 2004 (Ex. 1045). Petitioner cites to the English translation of Vuiton (Ex. 1044) and provides a declaration certifying the translation (Ex. 1046). In this Decision, we also cite to the English translation (Ex. 1044).
[4] US 2007/0246157 A1, published Oct. 25, 2007 (Ex. 1012).

In an Order following *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we modified our Decision on Institution to institute on all of the grounds presented in the Petition. Paper 38, 2; *see also* Dec. on Inst. 19–20, 24–30 (determining Petitioner had not demonstrated a reasonable likelihood of prevailing on certain grounds). In accordance with that same Order, the parties conferred and reached agreement to withdraw the grounds upon which we did not institute review. *See* Papers 38, 39. After receiving authorization (Paper 39), the parties filed a Joint Motion to Limit the Petition (Paper 40), which we granted (Paper 41). Thus, the review is limited to the grounds listed above, and this Decision addresses only those grounds.

C. Related Proceedings

The parties indicate that the '134 patent has been asserted in *Bedgear, LLC v. Fredman Bros. Furniture Co., Inc.*, Case No. 1:15-cv-6759 (E.D.N.Y.) and *Cabeau, Inc. v. Bedgear, LLC*, Case No. 2:16-cv-09238 (C.D. Ca.). Pet. 69; Paper 4, 2; Ex. 1052.

The '134 patent is also related to the patents that are challenged in Cases IPR2017-00350 and IPR2017-00351. *See* Exs. 1001, 1047.

D. The '134 Patent (Ex. 1049)

The '134 patent issued February 11, 2014, from an application filed June 22, 2012, and claims priority to a provisional application filed June 22, 2011. Ex. 1049, [22], [45], [60], 1:7–9.

The '134 patent relates to an "upper neck and head support in the form of a pillow for the human body." *Id.* at 1:14–15. Figure 1 of the '134 patent is reproduced below.

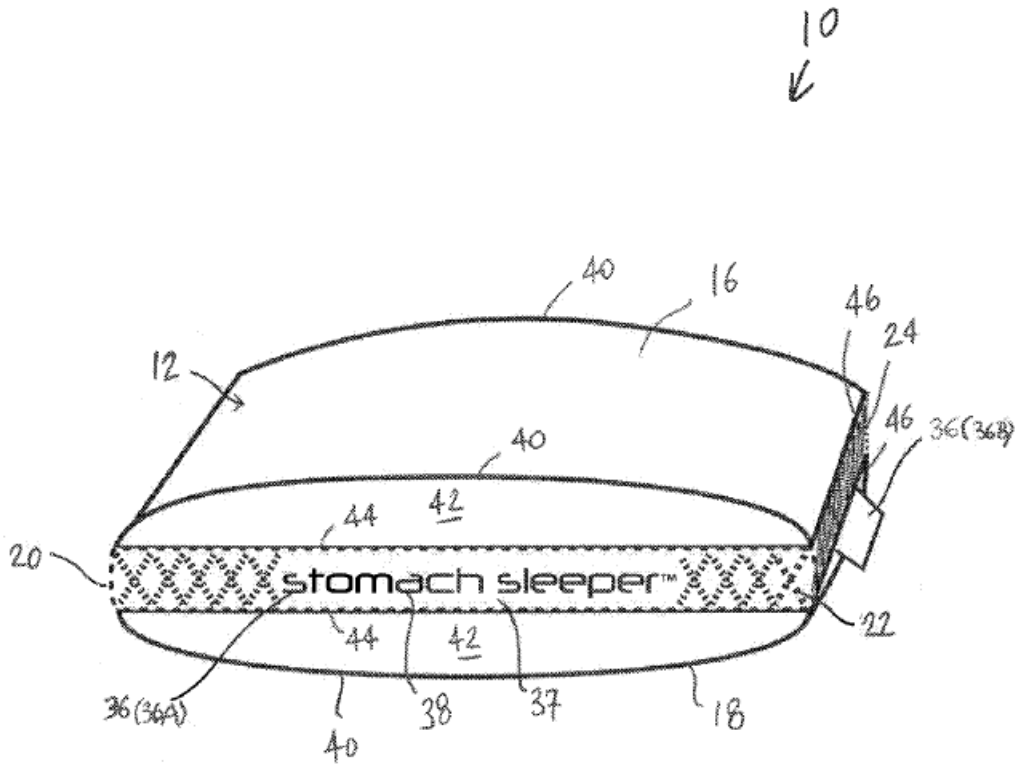


FIG. 1

Figure 1 shows a perspective view of a pillow of the ’134 patent. *Id.* at 1:47–48. Pillow 10 has cover 12, and cover 12 includes opposing first and second panels 16, 18 and gusset 20 that joins panels 16, 18. *Id.* at 1:60–64. Gusset 20 is formed of an open cell construction and has sufficient width to separate the panels 16, 18 so as to define an airflow channel through the panels. *Id.* at 1:64–2:4. The specification states that an “‘open cell construction’ as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity.” *Id.* at 1:37–40. Open cell construction is associated with venting, airflow, or air exchange. *See, e.g.*, *id.* at 2:4–10, 4:9–14, 4:27–29. The “open cell construction of the gusset 20 may be defined by various constructions.” *Id.* at 2:15–16.

In connection with Figure 3, the open cell construction of gusset 20 may be defined by a "plurality of interlaced or spaced-apart strands 26 arranged randomly or in various patterns, such as a 'x' pattern (FIG. 1) or a rectangular pattern." *Id.* at 2:16–20. Gusset 20 may be formed of base material 30 with apertures 32 defining open cells, and apertures 32 are larger than any pores that may be present inherently in base material 30. *Id.* at 2:32–37. In certain embodiments, such as the one depicted in Figure 4, apertures defining open cells may be formed in the base material during or after its manufacture. *Id.* at 2:32–42.

Gusset 20 may also be formed of base material 30 being inherently, significantly porous, such as 3D spacer fabric. *Id.* at 2:44–47. The porosity of base material 30 may be "substantially greater" than the porosity of first panel 16 or second panel 18. *Id.* at 2:51–54. "'Substantially greater' refers to being at least greater than, but preferably being at least twice greater than" the reference value. *Id.* at 2:54–56.

The '134 patent states that "with reference to FIG. 5, the gusset 20 may be formed with the base material 30 being inherently significantly porous" (*id.* at 2:43–45) and that the "porosity of the base material 30 may be substantially greater than the porosity of the material forming the first panel 16 and/or . . . the second panel 18" (*id.* at 2:51–54). "[G]usset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination." *Id.* at 2:61–63.

E. Challenged Independent Claims

The '134 patent has 24 claims, of which Petitioner challenges claims 1–6, 8–13, 15–18, and 20–24. Of the challenged claims, claims 1, 11, 17, and 22 are independent and reproduced below:

> 1. A pillow comprising:
>
> a cover having opposing first and second panels, and a gusset perimetrically bounding, and joining, said first and second panels, said gusset being formed of an open cell construction, said open cell construction is formed by interlaced or spaced-apart strands; and,
>
> compliant fill material disposed within said cover.
>
> 11. A pillow comprising:
>
> a cover having opposing first and second panels, and a gusset perimetrically bounding, and joining, said first and second panels, said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material; and
>
> compliant fill material disposed within said cover.
>
> 17. A pillow comprising:
>
> a cover having opposing first and second panels, and a gusset perimetrically bounding, and joining, said first and second panels, said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel; and
>
> compliant fill material disposed within said cover.
>
> 22. A pillow comprising:
>
> a cover having opposing first and second panels, and a gusset perimetrically bounding, and joining, said first and second

panels, said gusset being formed of an open cell construction, said gusset including 3D spacer material; and

compliant fill material disposed within said cover.

Ex. 1049, 5:19–25, 5:50–6:3, 6:19–28, 6:42–48.

II. CLAIM INTERPRETATION

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).

A. "open cell construction" (claims 1, 11, 17, and 22)

Petitioner contends that "'open cell construction' need not be construed or given independent patentable weight beyond the specific structure recited in the claims" and that an interpretation would "not impact the prior art analysis herein." Pet. 20 (citing Ex. 1060 ¶¶ 81–82). In the Decision on Institution, we did not interpret "open cell construction" expressly. Dec. on Inst. 7.

Patent Owner states that "[b]oth parties agree that the express definition for the term 'open cell construction' . . . should be adopted, namely a 'construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity.'" PO Resp. 41 (citing Pet. 19). Petitioner also states that the parties "agree that the specification expressly defines 'open cell construction' as 'a construction having overall porosity greater than the inherent porosity of the constituent

material or inherently having high porosity." Pet. Reply 2–3 (citing Pet. 19–20; PO Resp. 41; Ex. 1001,[5] 1:41–44).

The specification of the '134 patent states that an "'open cell construction' as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." Ex. 1049, 1:37–40. Based on the full record, we agree with parties that "open cell construction" is defined in the specification, and we interpret it in accordance with that definition to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) ("Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.").

B. "said open cell construction is formed by interlaced or spaced-apart strands" (claim 1);

Patent Owner contends that "distinct open cell claim phrases should be construed separately in order to address Petitioner's conflation of these different claims phrases, and give proper weight to the express limitations in each claim that require specific open cell configurations." PO Resp. 45. In support of its position, Patent Owner cites the claim language (*id.* at 42–43 (discussing claims 1, 11, 17, and 22)), the specification (*id.* at 41–42 (citing Ex. 1049, Figs. 3–5)), the prosecution history (*id.* at 43–44), and declarant

[5] The parties cite to the specification of related U.S. Patent No. 8,887,332 B2, which has substantially the same specification (Ex. 1001). *See also* Parachuru Decl. ¶ 3 ("I also understand that the '134, '332, and '883 Patents share substantially the same specification."). We cite to the corresponding portion of the specification of the '134 patent (Ex. 1049).

testimony (*id.* at 42–44 (citing Ex. 2001 ¶¶ 50, 55–56; Ex. 2004 ¶¶ 101, 115–119)). Patent Owner also refers to related district court litigation. *Id.* at 44 (citing Ex. 2017, 18).

Patent Owner proposes interpreting "said open cell construction is formed by interlaced or spaced-apart strands," as recited by claim 1, to mean "a construction in which open cells are defined by strands arranged in an [interlaced/spaced-apart] manner, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 45–46. Patent Owner cites the specification, prosecution history, and Dr. Parachuru's testimony. *Id.* (citing Ex. 1001, 2:20–35, Fig. 3; Ex. 1004, 45; Parachuru Decl. ¶¶ 120–125). Patent Owner also argues that the phrase at issue is "directed to the Arranging Strands Embodiment (FIG. 3)." *Id.* at 46.

The language of claim 1 does not include expressly "such that the overall porosity is greater than the porosity of the constituent material itself." Also, this portion of Patent Owner's proposed interpretation is substantially included in the parties' agreed-to interpretation of "open cell construction," which we adopted, as discussed above in Section II.A. *See* Ex. 1049, 1:37–40 ("'open cell construction' as used herein refers to a construction having *overall porosity greater than the inherent porosity of the constituent material*") (emphasis added).

We also find that the specification of the '134 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a constituent material (Ex. 1049, 1:37–40), and in certain embodiments, such as the one depicted in Figure 3, may be defined by interlaced or spaced-apart strands made of various materials and arranged randomly or in various patterns (*id.* at 2:15–31). The specification also associates open cell

construction with venting, airflow, or air exchange. *See, e.g.*, *id.* at 2:4–10, 4:9–14, 4:27–29. The specification expressly states that open cell construction can be the embodiment of Figure 3 combined with other configurations. *See id.* at 2:15–16 ("open cell construction of the gusset 20 may be defined by various constructions"), 2:61–63 ("gusset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination.").

The prosecution history of the '134 patent indicates that the claim was amended to include "said open cell construction is formed by interlaced or spaced-apart strands" in response to what the Examiner believed was allowable subject matter in the dependent claims. *See* Ex. 1003, 45 (Claim 1 was amended to include "said open cell construction is formed by interlaced or spaced-apart strands."), 49 ("By way of this amendment, Claim 1 has been amended to incorporate the allowable subject matter of Claim 2."). However, the prosecution history does not indicate that Applicant intended the amendment to result necessarily in Patent Owner's proposed interpretation. *See id.* In view of our determinations above, the claim language, specification, and prosecution history do not provide a sufficiently persuasive reason for further specifying "such that the overall porosity is greater than the porosity of the constituent material itself" for the interpretation of "said open cell construction is formed by interlaced or spaced-apart strands."

Thus, based on the full record, we interpret "said open cell construction is formed by interlaced or spaced-apart strands," as recited by claim 1, to mean that the open cell construction is formed by at least interlaced or spaced-apart strands.

C. "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material" (claim 11)

Patent Owner proposes interpreting "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material," as recited by claim 11, to mean "a construction in which open cells are defined by holes created in a constituent material that are larger than any pores naturally occurring in the material, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 47–48; *see also id.* at 42–45 (arguing that open cell claim phrases should be construed separately). Patent Owner cites the specification, the prosecution history, and Dr. Parachuru's testimony. *Id.* at 47–48 (citing Ex. 1001, 2:36–46, Fig. 4; Ex. 1003, 46; Parachuru Decl. ¶¶ 129–131). Patent Owner also argues that the claim language is "directed to the Creating Apertures Embodiment (FIG. 4)." *Id.* at 47.

For the same reasons discussed above in Section II.B., we determine that the language of claim 11 does not require expressly "such that the overall porosity is greater than the porosity of the constituent material itself," which is substantially included in our interpretation of "open cell construction." *See* Ex. 1049, 1:37–40. We also find that the specification of the '134 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a constituent material (*see id.*), and in certain embodiments, such as the one depicted in Figure 4, apertures defining open cells may be formed in the base material during or after its manufacture (*id.* at 2:32–42). The specification also associates open cell construction with venting, airflow, or air exchange. *See, e.g.*, *id.* at 2:4–10,

4:9–14, 4:27–29. The specification expressly states that open cell construction can be the embodiment of Figure 4 combined with other configurations. *See id.* at 2:15–16, 2:61–63.

Also, for the same reasons discussed above in Section II.B., we determine that the prosecution history does not indicate that Applicant intended the amendment to result necessarily in Patent Owner's proposed interpretation. *See* Ex. 1003, 45, 49. In view of our determinations above, the claim language, specification, and prosecution history, therefore, do not provide a sufficiently persuasive reason for further specifying that "apertures defined in the base material" are "holes created in a constituent material," that "pores inherently defined in said base material" are "pores naturally occurring in the material," and "that the overall porosity is greater than the porosity of the constituent material itself" for the interpretation of "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material."

Thus, based on the full record, we interpret "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material," as recited by claim 11, to mean that the open cell construction is formed by at least apertures defined in the base material and the apertures are larger than any pores inherently defined in the base material.

D. "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel" (claim 17)

Patent Owner proposes interpreting "said open cell construction is formed by porosity of said base material being substantially greater than

porosity of material forming said first panel and . . . said second panel," as recited by claim 17, to mean "a construction made up of a constituent material that, by itself, has substantially higher porosity than the material of the first and second panels" with cites to the specification, prosecution history, and Dr. Parachuru's testimony. PO Resp. 48–49 (citing Ex. 1001, 2:47–64, Fig. 5; Ex. 1003, 47; Parachuru Decl. ¶¶ 132–134); *see also id.* at 42–45 (arguing that open cell claim phrases should be construed separately). Patent Owner argues that the claim phrase is directed to the "Using High-Porosity Materials Embodiment (FIG. 5)." *Id.*

As for "substantially greater," Petitioner contends that the '134 patent "expressly defined this term to mean simply 'greater than.'" Pet. 20; Ex. 1049, 2:54–56. "Patent Owner agrees to adopt Petitioner's proposed construction solely for the purposes of this IPR." PO Resp. 49–50.

The specification states that "'[s]ubstantially greater' refers to being at least greater than, but preferably being at least twice greater than." Ex. 1049, 2:54–56. Based on the full record, we interpret "substantially greater" to mean "greater than." *See In re Paulsen*, 30 F.3d at 1480.

Also, the language of claim 17 does not require expressly that the constituent base material by itself has higher porosity than the material of the first and second panels. Patent Owner's proposed interpretation also narrows the interpretation of "open cell construction," that is analyzed above in Section II.A.

We find that the specification of the '134 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a constituent material. Ex. 1049, 1:37–40. We also find that the '134 patent states that "with reference to FIG. 5, the gusset 20 *may be formed* with the

base material 30 being inherently significantly porous" (*id.* at 2:43–45) (emphasis added) and that the "porosity of the base material 30 *may be substantially greater* than the porosity of the material forming the first panel 16 and/or . . . the second panel 18" (*id.* at 2:51–54) (emphasis added). We find that these portions of the '134 patent contemplate embodiments in addition to ones encompassed by Patent Owner's proposed interpretation. As discussed previously, the specification expressly states that open cell construction can be the embodiment of Figure 5 combined with other configurations. *See id.* at 2:15–16, 2:61–63.

For the same reasons discussed above in Section II.B., we determine that the prosecution history does not indicate that Applicant intended the amendment to result necessarily in Patent Owner's proposed interpretation. *See* Ex. 1003, 45, 49. In view of our determinations above, the claim language, specification, and prosecution history do not provide a sufficiently persuasive reason for further specifying that the constituent base material by itself has higher porosity than the material of the first and second panels.

Based on the full record, we interpret "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel," as recited by claim 17, to mean that the open cell construction is formed by at least the porosity of the base material being greater than the porosity of the material of the first and second panels.

E. Other Terms

Petitioner contends that "the broadest reasonable construction of 'gusset' is 'a generally vertically-oriented portion of a pillow between the top and bottom panels of a pillow to provide for enlargement or expansion of

the pillow.'" Pet. 19 (citing Rhodes Decl. ¶ 78). In our Decision on Institution, we agreed with Patent Owner that "nothing in the claim language requires that the gusset be 'generally vertically oriented' or that it must 'provide for enlargement or expansion of the pillow.'" Dec. on Inst. 6; *see also* PO Resp. 40 ("[T]he Board decided that 'gusset' did not require an express interpretation."); Pet. Reply 2 ("The Board determined no construction was necessary.").

Patent Owner responds that "that there is no need to construe the term" "[f]or purposes of this IPR proceeding." PO Resp. 40. "Petitioner also agrees express construction is unnecessary for this proceeding." Pet. Reply 2.

Based on the full record, we concur with the parties that an express interpretation for "gusset" is not necessary for determining whether Petitioner has demonstrated by a preponderance of the evidence that the challenge claims are unpatentable. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (construing *explicitly* only those claim terms in controversy and only to the extent necessary to resolve the controversy). We also determine that express interpretation of any other claim term is not necessary. *See id.*

III. ANTICIPATION CHALLENGES

Petitioner contends that claims 1, 4–6, 8, 11, 13, 17, 18, 22, and 23 are anticipated by Rasmussen (Ex. 1006). Pet. 14, 21–38, 40–51; Pet. Reply 7–23. In support of these contentions, Petitioner cites to Rasmussen, the Rhodes Declaration, the Rhodes Reply Declaration, and deposition transcripts. *See* Pet. 21–38, 40–51. Patent Owner responds to the alleged

anticipation with citations to Rasmussen, the Parachuru Declaration, and other record evidence. PO Resp. 50–75.

To prevail in its anticipation challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). To anticipate a claim under 35 U.S.C. § 102, "a single prior art reference must expressly or inherently disclose each claim limitation." *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That "single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art." *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

Petitioner also argues that the claims of the '134 patent are not entitled to a priority date before June 22, 2012. Pet. 4–7, 21. Petitioner provides arguments that Rasmussen (Ex. 1006) is § 102(b) prior art, if the challenged claims are entitled only to a priority date of June 22, 2012. Petitioner alternatively argues that a provisional application (Ex. 1007, to which Rasmussen claims priority, *see* Ex. 1006(30)) is § 102(e) prior art, if the challenged claims are entitled to the earlier priority date of June 22, 2011. Pet. 21–22. Petitioner, thus, provides parallel citations to Rasmussen and the provisional application, which Petitioner asserts is identical to Rasmussen. Pet. 22 n.1; Ex. 1008 (comparison of Rasmussen and its provisional).

After reviewing the complete record, for the reasons discussed below, we conclude that Petitioner shows by a preponderance of the evidence that claims 1, 4–6, 8, 11, 13, 17, 18, 22, and 23 are anticipated by Rasmussen under 35 U.S.C. § 102(b) and § 102(e).

A. Rasmussen (Ex. 1006)

Rasmussen describes a "pillow assembly including a visco-elastic foam core and a cover having a top portion and a side portion that is more permeable than the top portion." Ex. 1006, [57]. Figure 1 of Rasmussen is reproduced below.

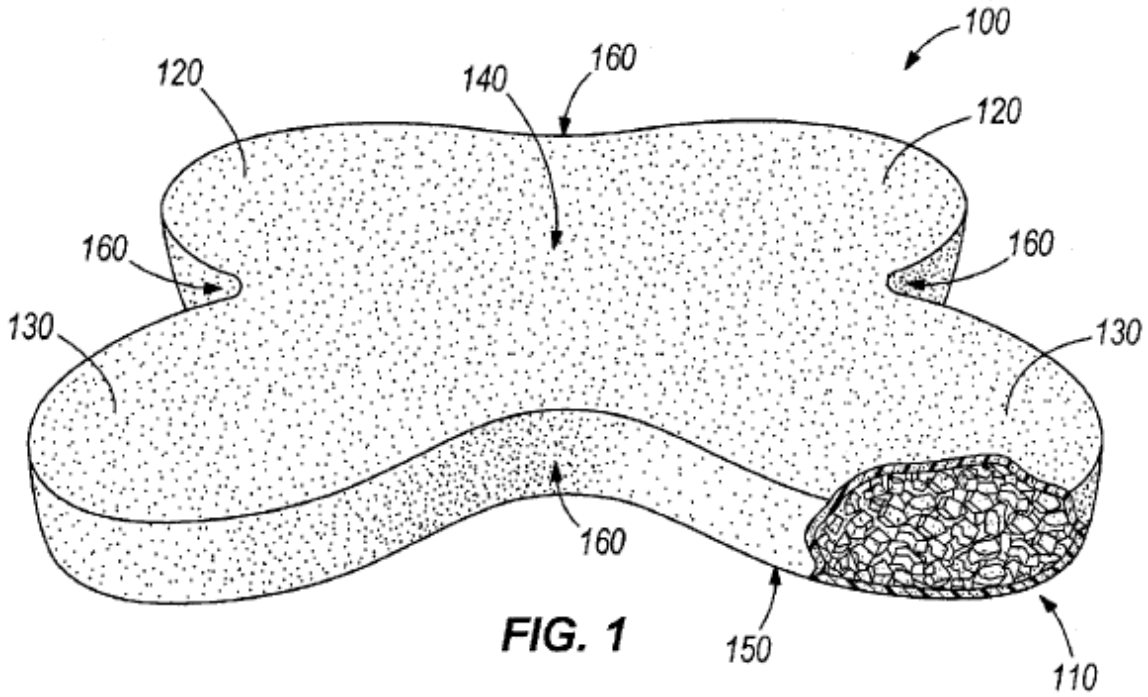


FIG. 1

Figure 1 shows a perspective view of a pillow with a portion of its cover removed to expose its core. Ex. 1006 ¶ 10. Pillow 100 includes core 110, and core 110 includes top layer 140, bottom layer 150, and sidewalls 160 connecting top layer 140 and bottom layer 150. *Id.* ¶¶ 14, 15.

Sidewalls 160 can be "highly porous, and therefore provide a significant degree of ventilation for the pillow," and "this capability is achieved through use of a 3D textile core sidewall 160." *Id.* ¶ 29. Top layer 140, bottom layer 150, and sidewalls 160 define cavity 170 that receives filler material 180. *Id.* ¶ 15, Fig. 2. "[F]iller material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam"

with "hardness . . . for desirable softness and body-conforming qualities." *Id.* ¶¶ 19, 30.

Pillow 100 can include a rib where top layer 140 and sidewall 160 "meet and are joined." *Id.* ¶ 15. According to Rasmussen,

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Id. ¶ 18.

The "core can be enclosed within a cover having highly porous sides." *Id.* ¶ 6. Cover 190 includes top portion 200, bottom portion 210, and side portions 220. *Id.* ¶ 48. Top portion 200 "can be less porous than the side portions 220 or the bottom portion 210 of the cover 190." *Id.* ¶ 50. Side portions 220 "can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material) . . . and covering the highly porous material of the core sidewalls 160." *Id.* ¶ 49. "[S]ide portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow." *Id.* "Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [and] a cotton/polyester blend." *Id.* ¶ 52. "[C]over 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." *Id.*

For embodiments "in which reticulated or non-reticulated visco-elastic foam is used to construct portions of the core (e.g., the top layer 140,

the bottom layer 150, and/or the filler material 180), the pillow 100 provides a soft and comfortable surface for a user's body" and "can also conform to a user's body, thereby distributing the force applied by the user's body upon the top layer 140." *Id.* ¶ 46. The "use of reticulated foam can also enhance the ability of the pillow 100 to wick moisture away from the user's body thereon." *Id.* ¶ 22.

B. Independent Claims 1, 11, 17, and 22

Petitioner states that "Rasmussen anticipates claim 1 both by virtue of: i) its 'core 110' structure, including top layer 140, bottom layer 150, and sidewalls 160, as well as, separately and independently, by virtue of ii) its pillow 'cover 190' structure, including top portion 200, bottom portion 210, and side portions 220." Pet. 27; *see also id.* at 22–27 (asserting what Rasmussen discloses).

1. Challenge Based on the Core of Rasmussen

In its description of Rasmussen, Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 24.

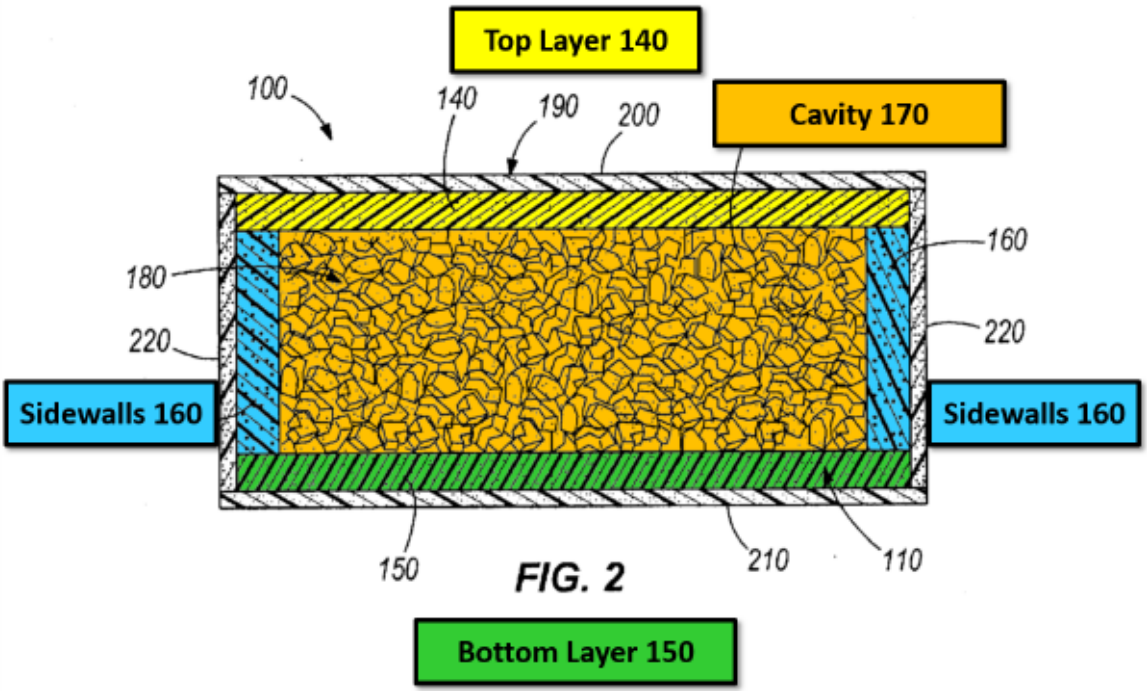


FIG. 2

The annotated Figure 2 from Rasmussen illustrates the components of core 110. *Id.* at 23–24.

a. Uncontested Limitations of Independent Claims 1, 11, 17, and 22

For claim 1, Petitioner argues that Rasmussen discloses a pillow comprising "a cover having opposing first and second panels" and "compliant fill material disposed within said cover." Pet. 27 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2), 36–37 (citing Ex. 1006 ¶¶ 15, 19, 30–45, Figs. 1, 2; Ex. 1007 ¶¶ 11, 15, 26–41, Figs. 1, 2; Rhodes Decl. ¶¶ 120–122). For independent claims 11, 17, and 22, which also include these identical limitations, Petitioner relies on its arguments for claim 1. *Id.* at 42–43, 45, 48. Patent Owner does not present arguments addressing these limitations of claims 1, 11, 17, and 22. *See* PO Resp. 53–74.

We find that the portions of Rasmussen cited by Petitioner disclose and depict that "pillow 100 includes a top layer 140" and "a bottom layer 150 opposite the top layer 140." Ex. 1006 ¶ 15, Figs. 1, 2. We also find that the cited portions of Rasmussen teach and depict that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2. We further find that the cited portions teach that "visco-elastic foam . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

We, thus, find that the core of Rasmussen discloses a pillow comprising "a cover having opposing first and second panels" and "compliant fill material disposed within said cover," as recited by claims 1, 11, 17, and 22.

b. "a gusset perimetrically bounding, and joining, said first and second panels" (claims 1, 11, 17, and 22)

Petitioner argues that Rasmussen discloses "a gusset perimetrically bounding, and joining, said first and second panels," as recited by independent claims 1, 11, 17, and 22. Pet. 27–30 (citing Ex. 1006 ¶¶ 15, Figs. 1, 2; Ex. 1007 ¶¶ 11, Figs. 1, 2; Rhodes Decl. ¶¶ 104–107), 42–43, 45, 48.

We find that Rasmussen discloses "sidewalls 160 connecting the top layer 140 and the bottom layer 150" and that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15; Ex. 1007 ¶ 18. We also find that Figures 1

and 2 show sidewall 160 of core 110 joined to top and bottom layers 140, 150. We also credit the testimony of Petitioner's declarant that "[a]lthough [Fig. 1] does not show the back side of the pillow, a person of ordinary skill in the art would understand from the figures and from the description of Rasmussen, that if the pillow were turned, one could see where the top edge of the sidewall 160 engages and joins the peripheral edge of the top layer 140" and "where the bottom edge of the sidewall 160 engages and joins the peripheral edge of the bottom layer 140." Rhodes Decl. ¶ 106; *see also id.* ¶ 107 ("Rasmussen's core anticipates the requirements of claim 1 of a gusset 'perimetrically bounding and joining said first and second panels,' a limitation also found in claims 11, 17, and 22."); Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow"). Moreover, in view of Rasmussen's disclosure that "granulated filler material 180 can be as short as 0.3 cm and as long as 4 cm" (Ex. 1006 ¶ 36), we find that Rasmussen discloses that its sidewall 160 "perimetrically bounding, and joining," its top and bottom layers so as to contain filler material as small as 0.3 cm.

Patent Owner responds that none of the cited portions of Rasmussen expressly discloses that its sidewalls perimetrically bound and join its top and bottom layers. PO Resp. 74 (addressing Pet. 27–32). Patent Owner also

argues that Petitioner ultimately asserts that the feature would have been obvious and Petitioner's declarant admitted that Rasmussen does not expressly disclose this feature. *Id.* (citing Pet. 32–33; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶ 15; Ex. 1007 ¶ 18; Rhodes Decl. ¶ 106) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen discloses "a gusset perimetrically bounding, and joining, said first and second panels," as recited by independent claims 1, 11, 17, and 22, based on descriptions related to the core.

c. "said gusset being formed of an open cell construction, said open cell construction is formed by interlaced or spaced-apart strands" (claim 1)

Petitioner contends that Rasmussen's description of "highly porous" and "3D textile materials" for sidewalls 160 of core 110 discloses "said gusset being formed of an open cell construction, said open cell construction is formed by interlaced or spaced-apart strands." Pet. 33–35 (citing Ex. 1006 ¶ 29; Ex. 1007 ¶ 25; Rhodes Decl. ¶¶ 111–117). Petitioner also argues that "3D textile material" is 3D spacer fabric. *Id.* at 34 (citing Rhodes Decl. ¶¶ 118, 135).

We find that the cited portion of Rasmussen discloses that "pillow 100 is provided with sidewalls 160 that are highly porous . . . achieved through use of a 3D textile core sidewall 160." Ex. 1006 ¶ 29; *see also* Ex. 1007 ¶ 25 (disclosing the same). In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high

porosity," as determined above in Section II.A., we determine that the "highly porous" sidewalls 160 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 1. Ex. 1006 ¶ 29; Ex. 1007 ¶ 25.

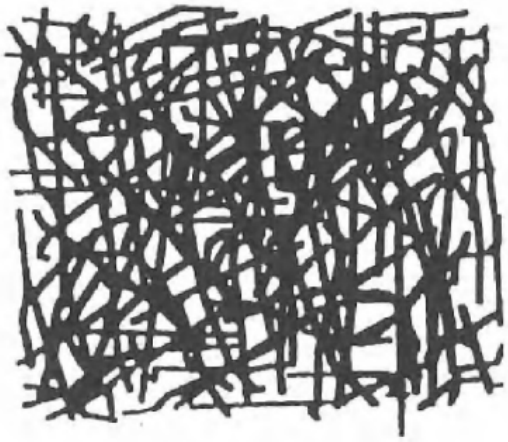
Also, as determined above in Section II.B., we interpret "said open cell construction is formed by interlaced or spaced-apart strands" to mean that the open cell construction is formed by at least interlaced or spaced-apart strands. Petitioner's declarant states that

> "highly porous" "3D textile material" used for the gusset of Rasmussen's core 110 and cover 190 has interlaced strands in that the fibers are interlaced to create the three dimensional textile structure of the material, and that the material has spaced apart strands in that the fibers have spacing sufficient to make the material "highly porous."

Rhodes Decl. ¶ 117.

Patent Owner states that the "building block of textiles is the fiber(s)" (PO Resp. 4), "fibers can then be 'spun' into yarn to create various textiles" (*id.*), "there are four primary techniques for constructing fabrics, namely: weaving, knitting, braiding, and nonwoven manufacturing" (*id.* at 12), "[s]tandard weaving used two perpendicular yarn sets" (*id.*), "knitting is characterized by rows and columns of interconnected yarn loops" (*id.*), "[b]raiding can use a single yarn set, wherein two oriented braiders are intertwined/interlaced with each other" (*id.*), and "non-wovens use fibers, rather than yarns" (*id.* at 13). Reproduced below is a figure of non-woven fabric that Patent Owner provides.

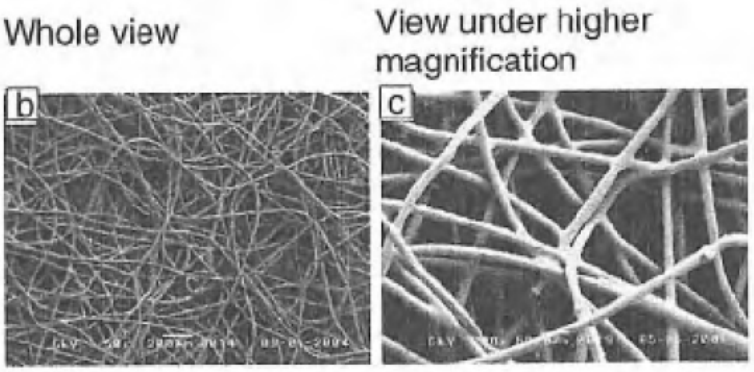
6 3-D fibrous assemblies



1.4 Basic non-woven fabric.

The figure shows "[b]asic non-woven fabric." PO Resp. 13 (citing Ex. 2007, 6). Thus, the parties agree that a fabric or textile material would include strands. *See also* Ex. 2016, 27:12–13 ("A fabric in its most generic description would be a textile."), 27:15–16, 18–19 (In response to "are there differences between a fabric and a textile," Petitioner's declarant answers "I would say that the terms are largely synonymous.").

Patent Owner also states that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity a wide array of different 3-D textiles can be created." PO Resp. 13. Patent Owner provides examples of 3D textiles, all of which include "interlaced strands or spaced-apart strands." *See* PO Resp. 14–27. For example, reproduced below is a figure of 3-D non-woven structures that Patent Owner provides.



1.22 Examples of 3-D non-woven structures.

The figures shows "[e]xamples of 3-D non-woven structures." PO Resp. 26 (citing Ex. 2007, 26).

Both parties also agree that highly porous textiles have spaced-apart strands. *Id.* at 28 ("The tightness of the 3D structure itself can also impact the overall porosity. Tighter structures tend to have lower porosity because there is less space between the yarns forming the structure."); Rhodes Decl. ¶ 117; Parachuru Decl. ¶ 93 ("Similarly, loose structures tend to have higher porosity due to the increased space between the yarns forming the structure.").

In view of the above, we find that Rasmussen's "highly porous" "3D textile material" discloses "said open cell construction being formed by interlaced or spaced-apart strands," as recited by claim 1.

Patent Owner responds that Rasmussen does not disclose expressly an open cell construction formed by "interlaced or spaced-apart strands," as required by claim 1. PO Resp. 52–53; *see also id.* at 53–54 (describing the disclosure of the '134 patent) (citing Ex. 1001, 2:21–24, 2:36–46; Ex. 2016, 19:2–11, 140:13–22). According to Patent Owner, Petitioner's declarant admitted that Rasmussen does not disclose the open cell construction of claim 1. *Id.* at 53 (citing Ex. 2016, 76:17–78:7). Patent Owner also argues

that Rasmussen's "3D textile material" or "highly porous 3D textiles" are broad terms that encompass many different types of material and fall short of demonstrating that Rasmussen discloses the specific claimed structures of the claims. *Id.* at 54–55.

Relying on its proposed interpretation of "open cell construction," Patent Owner argues that Rasmussen does not disclose open cells defined by "interlaced or spaced-apart strands," as required by claim 1. PO Resp. 65–66; *see also id.* at 66 (citing Parachuru Decl. ¶¶ 154–157). Patent Owner argues that "3D textile material" would not be understood to have such a structure, as asserted by Petitioner and Petitioner's declarant. *Id.* at 66–67 (citing Pet. 35; Rhodes Decl. ¶¶ 116–117). Patent Owner also argues that Petitioner does not indicate where Rasmussen teaches such open cell construction. *Id.* (citing Pet. 35). Patent Owner further argues that 3D textiles and highly porous textiles do not require interlaced or spaced-apart strands. *Id.* at 67–68 (citing Parachuru Decl. ¶¶ 158–162, 167–173). Patent Owner further contends that Petitioner's analysis renders claim limitations meaningless. *Id.* at 68; *see also id.* at 66 (citing Parachuru Decl. ¶ 161).

For the reasons discussed above, the evidence cited by the parties show that "highly porous" "3D textile" has "interlaced or spaced-apart strands."

Patent Owner also responds that "Petitioner never argues that the 'interlaced,' 'spaced-apart,' or 'apertures' are *inherent* from Rasmussen's disclosure of 3-D textiles." PO Resp. 55. Patent Owner states that "both parties' experts acknowledge that 3D textiles, as well as highly porous 3D textiles, can have multiple possible configurations other than the ones recited in the claims," and thus, Rasmussen does not disclose inherently the claimed

structures. *Id.* at 55–56 (citing Parachuru Decl. ¶¶ 67–73, 92–94, 158–164, 168–169; Ex. 2016, 15:23–16:7, 31:21–32:6, 36:3–7, 36:14–18, 37:7–21, 49:4–12, 50:15–51:12, 52:19–53:3, 123:7–23, 135:23–136:24).

Patent Owner further responds that Rasmussen's generic reference to 3D textiles does not disclose sufficiently the species set forth in the claims. PO Resp. 57. Patent Owner argues that both parties' experts agree that "3D textiles" is a broad genus that covers an exponential number of materials. *Id.* at 58–59 (citing Parachuru Decl. ¶¶ 91–94; Ex. 2016, 31:21–32:6, 37:7–21).

Patent Owner additionally responds that Rasmussen's generic disclosure does not enable the specific, claimed species, and thus, does not anticipate the challenged claims. PO Resp. 59–60, 68. Specifically, Patent Owner argues that Rasmussen discloses "3D textiles," which undisputedly encompasses an exponential number of materials and "is completely devoid of any discussion of any particular species within such a broad genus." *Id.* at 60–61. Patent Owner also argues that the claimed structures "result from . . . modifying or transforming a constituent base material," and Rasmussen provides no guidance regarding how to transform constituent materials to arrive at the claimed structures. *Id.* at 61 (citing Parachuru Decl. ¶ 153).

Patent Owner further argues that undue experimentation would be required to arrive at the claimed structure and one of ordinary skill in the art would not be motivated to try based on Rasmussen's generic disclosure. *Id.* at 61–62. Patent Owner contends that "Petitioner's conclusory assertion that one of skill in the art could arrive at Patent Owner's claimed invention without undue experimentation falls far short of meeting its burden." PO Resp. 59 (citing Pet. 35, 39). Patent Owner notes that Rasmussen never

issued as a patent in any country and is not entitled to a presumption of enablement. *Id.* at 62. Patent Owner contends that, even if presumed to be enabling, the presumption can be overcome when a patentee provides persuasive evidence of nonenablement, as in this proceeding. *Id.*

Based on the full record, Petitioner sufficiently shows that Rasmussen's "highly porous" "3D textile material" discloses the open cell construction of claim 1. Also, even if Rasmussen uses the "3D textile" broadly, the full record persuades us that Rasmussen discloses the limitations of claim 1. PO Resp. 4, 12–28; Rhodes Decl. ¶ 117; Ex. 1006 ¶ 29; Ex. 1007 ¶ 25; Parachuru Decl. ¶ 93. Also, our interpretation of the limitations of claim 1 does not require modifying or transforming a constituent base material.

Patent Owner also responds that "Petitioner never even argues that the 'interlaced,' 'spaced-apart,' or 'mesh' strand structures are *inherent* from Rasmussen's disclosure of 3-D textiles." PO Resp. 55. Patent Owner states that "both parties' experts acknowledge that 3D textiles, as well as highly porous 3D textiles, can have multiple possible configurations other than the ones recited in the claims," and thus, Rasmussen does not disclose inherently the claimed structures. *Id.* at 55–57 (citing Parachuru Decl. ¶¶ 67–73, 92–94, 158–160, 168–169; Ex. 2016, 15:23–16:7, 31:21–32:6, 36:3–7, 36:14–18, 37:7–21, 49:4–12, 50:15–51:12, 52:19–53:3, 123:7–23, 135:23–136:24). The record, however, indicates that "highly porous" "3D textile material" has "interlaced strands or spaced-apart strands," as argued by Petitioner and as required by claim 1.

For the above reasons, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its core.

> *d. "said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material" (claim 11)*

Independent claim 11 requires the gusset be formed of an open cell construction and a base material. *See* Ex. 1049, 5:50–6:3. It recites "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material," instead of reciting "said open cell construction is formed by interlaced or spaced-apart strands," as in claim 1. *Id.*

Petitioner states that its "analysis for claim 1 also applies to claim 11 and is incorporated herein by reference." Pet. 42–43 (citing also Rhodes Decl. ¶¶ 104–125, 138). Petitioner also argues that Rasmussen discloses that its "side layer is more permeable," that sidewalls 160 of core 110 are "highly porous," and that ventilation is "achieved through use of a 3D textile core sidewall 160." *Id.* at 43 (citing Ex. 1006 ¶¶ 8, 29; Ex. 1007 ¶ 25). Petitioner further argues that one of ordinary skill in the art would understand "Rasmussen's highly porous 3D textile would have 'apertures' larger than the pores inherently present in the base material from which the 3D textile is made." *Id.* at 44 (citing Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶¶ 126–127).

We find that the cited portions of Rasmussen disclose that "side layer is more permeable than the top layer and the bottom layer" and that

"pillow 100 is provided with sidewalls 160 that are highly porous . . . achieved through use of a 3D textile core sidewall 160." Ex. 1006 ¶¶ 8, 29; *see also* Ex. 1007 ¶¶ 25 (disclosing the same). In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.A., we determine that the "highly porous" sidewalls 160 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 11. Ex. 1006 ¶ 29; Ex. 1007 ¶ 25.

Also, as determined above in Section II.C., we interpret "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material" to mean that the open cell construction is formed by at least apertures defined in the base material and the apertures are larger than any pores inherently defined in the base material. Petitioner's declarant states that "'highly porous' 3D textile material" has apertures "significantly larger than the pores that would be inherently present in the base polyester or other fibers from which the 3D textile material is made," that the "apertures need not be formed by cutting or removing material," and that the "apertures could be created from the way in which the base material is formed." Rhodes Decl. ¶ 126.

As discussed above for claim 1, Patent Owner indicates that fibers form yarns that are then constructed into textile by weaving, knitting, braiding, and nonwoven manufacturing. *See* PO Resp. 4, 12–13. Patent Owner also indicates that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity

a wide array of different 3-D textiles can be created." *Id.* at 13. Both parties also agree that more space between yarns leads to higher porosity. PO Resp. 28; Rhodes Decl. ¶ 117; Parachuru Decl. ¶ 93.

Thus, we find that Rasmussen's "highly porous" "3D textile material" discloses an open cell construction that is formed by at least apertures (space between yarns made by weaving, knitting, braiding, or non-woven manufacture) defined in the base material (fiber) and the apertures are larger than any pores inherently defined in the base material (pores, if any, in the fiber), as argued by Petitioner and as recited by claim 11. Rhodes Decl. ¶ 126.

Patent Owner responds that Rasmussen does not disclose expressly an open cell construction formed by "apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material," as required by claim 11. PO Resp. 52–53; *see also id.* at 53–54 (describing the disclosure of the '134 patent) (citing Ex. 1001, 2:21–24, 2:36–46; Ex. 2016, 19:2–11, 140:13–22). According to Patent Owner, Petitioner's declarant admitted that Rasmussen does not disclose the open cell construction of claim 11. *Id.* at 53 (citing Ex. 2016, 76:17–78:7). Patent Owner also argues that Rasmussen's "3D textile material" or "highly porous 3D textiles" are broad terms that encompass many different types of material and fall short of demonstrating that Rasmussen discloses the specific claimed structures of the claims. *Id.* at 54–55. Patent Owner further contends that Rasmussen does not enable claim 11, for the same reasons summarized above for claim 1. *Id.* at 59–62.

Also, relying on its proposed interpretation of "open cell construction," Patent Owner argues that Rasmussen does not disclose open

cells defined by apertures, as required by independent claim 11. PO Resp. 69. Patent Owner argues that Petitioner does not indicate where Rasmussen teaches such open cell construction. *Id.* at 70 (citing Parachuru Decl. ¶¶ 165–167). According to Patent Owner, Petitioner argues that 3D textiles would have apertures larger than pores in the base material but also argues that a person of ordinary skill in the art would understand that pores result from apertures or macro-pores created during the manufacture of 3D textile, not the pores inherent in the base material. *Id.* (quoting Pet. 44). Patent Owner also argues that Petitioner's declarant does not provide examples of 3D textiles containing macro-pores, and her analysis parrots the Petition. *Id.* (discussing Rhodes Decl. ¶¶ 126–127). Patent Owner contends that many 3D textiles do not have macro-pores. *Id.* at 70 (citing Parachuru Decl. ¶ 168).

Patent Owner also contends that, in equating "macro-pores" with "open cells," Petitioner identifies polyester fibers as the base material and is relying on a combination of different embodiments. *Id.* at 70–71 (citing Pet. 44; Rhodes Decl. ¶ 126). Patent Owner argues that apertures can be created in fibers by pulling apart or separating such fibers. *Id.* at 71 (citing Parachuru Decl. ¶¶ 170–171, 173). Patent Owner asserts that apertures or pores would be defined between strands or fibers of the base material, not in the fibers themselves. *Id.* at 72 (citing Parachuru Decl. ¶¶ 172–174).

Patent Owner further contends that Petitioner improperly conflates the embodiments of claims 1 and 11. *Id.* at 71–72 (citing Rhodes Decl. ¶ 127). Patent Owner additionally asserts that Rasmussen's generic reference to 3D textiles is not enabling and cannot anticipate the claims. *Id.* at 72 (citing Rhodes Decl. ¶ 127).

Based on the full record, the evidence cited in the Petition sufficiently shows that Rasmussen's "highly porous" "3D textile material" discloses the open cell construction of claim 11. Also, even if Rasmussen uses the "3D textile" broadly, the full record persuades us that Rasmussen discloses the limitations of claim 11. PO Resp. 4, 12–28; Rhodes Decl. ¶ 117; Ex. 1006 ¶ 29; Ex. 1007 ¶ 25; Parachuru Decl. ¶ 93. Also, our interpretation of the limitations of claim 11 does not require modifying or transforming a constituent base material.

Thus, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 11 based on disclosures related to its core.

> *e. "said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel" (claim 17)*

Independent claim 17 recites, *inter alia*, "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel." Ex. 1049, 6:19–28. Petitioner incorporates its analysis regarding the anticipation of claim 1 for corresponding limitations found in claim 17. Pet. 45 (citing Rhodes Decl. ¶¶ 104–125, 138).

Petitioner asserts that, because sidewalls 160 of core 110 can be formed of "highly porous" "3D textile material" and be "more permeable than the top layer and the bottom layer," sidewalls 160 of Rasmussen disclose a gusset more porous than the first and second panels. *Id.* at 46–47

(citing Ex. 1006 ¶¶ 8, 29, 49; Ex. 1007 ¶¶ 25, 45, 46; Rhodes Decl. ¶¶ 130–132).

We find that Rasmussen discloses highly porous sidewall 160. Ex. 1006 ¶ 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through use of a 3D textile core sidewall 160"); *see also* Ex. 1007 ¶ 25 (disclosing the same).

Patent Owner responds Rasmussen does not disclose its limitation of an "open cell construction . . . formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel." PO Resp. 72. Patent Owner argues that, under either of Petitioner's interpretations of Rasmussen, it teaches at best that Petitioner's alleged gusset is more porous than the alleged panels, not that the base material of the alleged gusset is more porous than the materials of the alleged panels. *Id.* at 72–73 (citing Pet. 46; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). Patent Owner additionally asserts that Rasmussen's generic reference to 3D textiles is not enabling and cannot anticipate the claims. *Id.* at 74.

The portions of Rasmussen cited in the Petition, however, disclose that the "side layer is more permeable than the top layer and the bottom layer" and that "highly porous" sidewalls 160 allow air to enter and exit its sides "through use of a 3D textile core sidewall 160." Pet. 52–53 (citing Ex. 1006 ¶ 29; Ex. 1007 ¶ 25). In connection with "3D textile," Rasmussen states that the "sides of the core can be defined by highly porous material (such as a 3D textile material)." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We, therefore,

find that the portions of Rasmussen cited in the Petition discloses that the 3D textile making up sidewalls 160 has a greater porosity than the material forming its top and bottom layers 140, 150.

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates independent claim 17 based on disclosures related to its core.

f. "said gusset being formed of an open cell construction, said gusset including 3D spacer material" (claim 22)

Independent claim 22 recites, *inter alia*, "said gusset including 3D spacer material." Ex. 1049, 6:42–48. As with its arguments for the other independent claims, Petitioner incorporates its analysis regarding the anticipation of claim 1 for similar limitations found in claim 22. Pet. 45 (citing Rhodes Decl. ¶¶ 104–125, 138). Petitioner also contends that Rasmussen's core 110 has highly porous sidewalls 160 formed of "3D textile" that "provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100." *Id.* at 48–49 (citing Ex. 1006 ¶ 29; Ex. 1007 ¶ 25; Rhodes Decl. ¶¶ 134–135).

As discussed above, we find that the cited portion of Rasmussen discloses that "pillow 100 is provided with sidewalls 160 that are highly porous . . . achieved through use of a 3D textile core sidewall 160." Ex. 1006 ¶ 29; Ex. 1007 ¶ 25. Thus, we determine that the "highly porous" sidewalls 160 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 22.

We also find that sidewalls 160 can be "highly porous, and therefore provide a significant degree of ventilation for the pillow," and "this

capability is achieved through use of a 3D textile core sidewall 160." Ex. 1006 ¶ 29; Ex. 1007 ¶ 25. The full record indicates that both parties' declarants agree that "spacer fabric" is also known as "3-dimensional fabric." Ex. 1009 ¶ 16 ("Spacer fabric, also known as double needle bar fabrics (typically knitted on a double needle bar machine) or 3-dimensional fabric, is typically made by knitting two fabric layers."); Rhodes Decl. ¶¶ 53 (citing Ex. 1009 ¶ 16), 59 (citing Ex. 1009 ¶ 16); Parachuru Decl. ¶ 83 (quoting Ex. 1009 ¶ 16); *see also* PO Resp. 22 (quoting the same).

Second, the full record indicates that both parties agree that 3D spacer material is "highly porous." Pet. 11–12 ("it was known to use spacer fabrics for breathability and cooling in bedding" and "were already being used for their 'airy' and 'mesh' construction to provide laterally ventilated side walls to 'optimize the sleeping climate' for mattresses"), 12 ("spacer fabric was known for use in pillows, including for pillow covers, and, as demonstrated by the Rasmussen reference discussed in detail below in Section IV., to provide a breathable gusset comprised of a highly porous 3D textile for lateral ventilation and cooling"); PO Resp. 21 ("The spacer fabric is highly porous because the sides of the fabrics between the top and bottom layers are only partially filled with spacer fibers."); Rhodes Decl. ¶ 53 ("3D spacer fabrics have been well known by skilled artisans before the '134 Patent to be 'highly breathable' based on their high air permeability, ability to transport water vapor, and thermal conductivity.") (citing Ex. 1009 ¶ 16; Ex. 1029, 1; Ex. 1030, 22–25); Parachuru Decl. ¶ 84 ("spacer fabric is highly porous").

Further, Rasmussen discloses

> a cover having highly porous sides (e.g., made of a 3D textile material or a velour or stretch velour material) corresponding to and covering the sides of the core and/or a highly porous bottom

> (e.g., again, made of a 3D textile material or a velour or a stretch velour material).

Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We find that Rasmussen's disclosure of "velour or a stretch velour material" as an alternative to "3D textile material" indicates that "3D textile material" has similar specificity as "velour or a stretch velour material." *See also* Ex. 2016, 36:14–17 (In response to "[c]an you give me some examples of 3D knitted textiles," Petitioner's declarant answering "[v]elour, you can knit Terry cloth as well, fleece, 3D spacer fabrics," thus indicating 3D spacer fabric and velour are in a same group). If "3D textile material" has less specificity, especially in the manner contended by Patent Owner, then the additional alternative of "velour or a stretch velour material" would be unnecessary. Thus, the record provides evidence that "3D textile material" is 3D spacer material and not materials that include 3D spacer material and "velour or stretch velour material."

In the context of Rasmussen's description of materials that are highly porous and applicable for its sidewalls and side portions of a pillow, we find that "3D textile" must mean something appropriate for a pillow, and therefore mean something more specific, like "velour or stretch velour material." Record evidence does not indicate which other material is highly porous, 3-dimensional, and appropriate for a ventilated pillow. *See* Tr. 16:15–17:21, 18:3–19:10. Finally, Patent Owner's declarant indicates that spacer fabric includes a mesh component. Parachuru Decl. ¶ 83 ("spacer fabric . . . is typically made by knitting two fabric layers" that "could be the same or different, i.e. mesh or solid").

In view of the above, we find that the highly porous "3D textile material" of Rasmussen is 3D spacer fabric, not a generic reference to any

3D fabric. Therefore, Petitioner persuades us by a preponderance of the evidence that Rasmussen's "highly porous" "3D textile material" is 3D spacer fabric and anticipates claim 22.

For independent claim 22, Patent Owner responds that Rasmussen does not disclose its limitation of a "gusset including 3D spacer material." PO Resp. 62–63. Patent Owner argues that Petitioner incorrectly equates 3D spacer material with "3D textile materials" and that 3D spacer material is one of many 3D textiles. *Id.* at 63 (citing Pet. 49). Patent Owner also argues that Petitioner's declarant admitted that Rasmussen does not use the term "3D spacer material," that the term "spacer fabrics" was well-known prior to Rasmussen but is not used in Rasmussen, and that 3D spacer material is not the only 3D textile that can be used in a pillow. *Id.* (citing Ex. 1006 ¶ 49; Ex. 2016, 34:7–13, 36:14–18, 47:24–48:12, 46:9–47:3, 137:2–17).

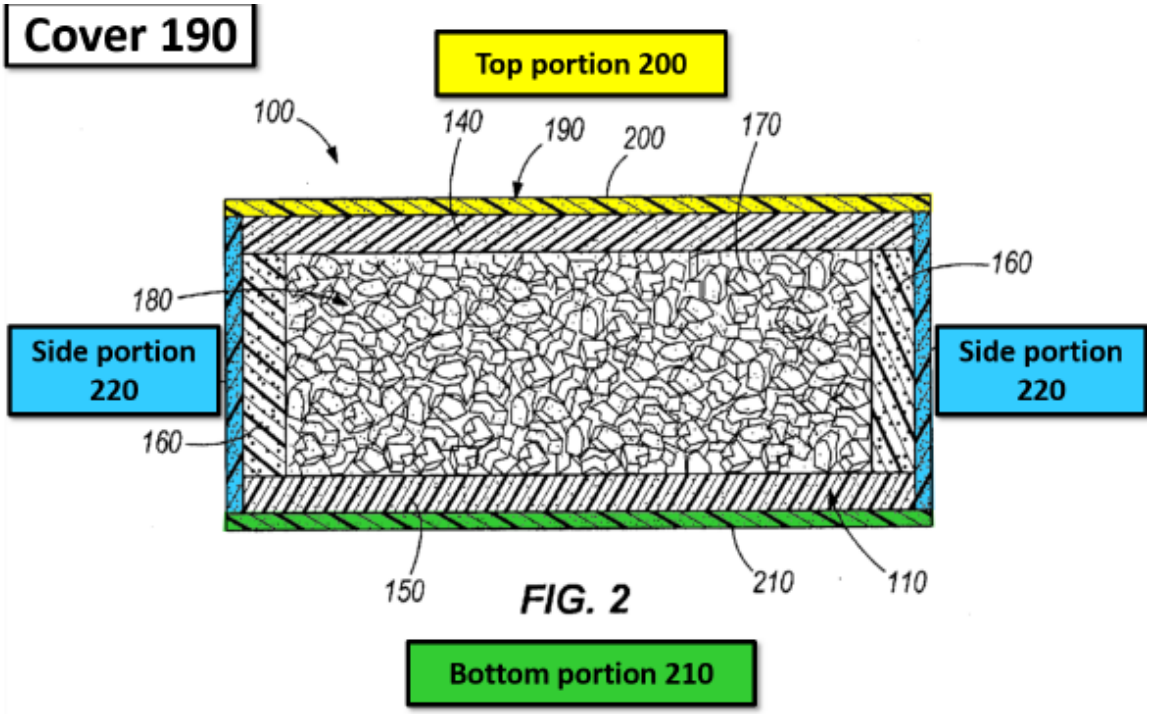
Patent Owner further argues that, to the extent Petitioner is arguing that 3D spacer material would be understood as a type of 3D textile, such argument is an obviousness challenge. *Id.* at 63–64. Patent Owner asserts that Petitioner's declarant opines that it would be obvious to choose 3D spacer fabric. *Id.* at 64 (citing Ex. 2016, 138:2–10). Patent Owner also asserts that Petitioner relies on knowledge of one of ordinary skill in the art, and thus, must go beyond Rasmussen's disclosure. *Id.* (citing Pet. 38, 39, 44, 48). Patent Owner argues that "Petitioner failed to demonstrate that the *four corners* of Rasmussen either *expressly* or *inherently* disclose the specific structures recited in claims 1, 11, and 22." *Id.* at 64–65.

For the reasons stated above, Petitioner persuades us that Rasmussen's "3D textile material" is 3D spacer fabric, used synonymously for 3D spacer fabric, and not a generic reference to 3D fabrics. Thus, based on the full

record, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 22 based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

Petitioner contends that Rasmussen's cover 190 with top portion 200, bottom portion 210, and side portions 220, separately and independently, discloses the limitations of claim 1. Pet. 27; *see also id.* at 22–27 (asserting what Rasmussen discloses). Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 25.



The annotated Figure 2 from Rasmussen illustrates components of cover 190. *Id.* at 25.

a. Uncontested Limitations of Independent Claims 1, 11, 17, and 22

For claim 1, Petitioner argues that Rasmussen discloses a pillow comprising "a cover having opposing first and second panels" and "compliant fill material disposed within said cover." Pet. 30–31 (citing Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2; Rhodes Decl. ¶ 108), 37–38 (citing Ex. 1006 ¶¶ 19, 22, 30, 31, 36, 48, Figs. 1, 2; Ex. 1007 ¶¶ 15, 18, 26, 27, 32, 44, Figs. 1, 2; Rhodes Decl. ¶¶ 122, 123, 124). For independent claims 11, 17, and 22, which also include these identical limitations, Petitioner relies on its arguments for claim 1. *Id.* at 42–43, 45, 48. Patent Owner does not present arguments addressing these limitations of claims 1, 11, 17, and 22. *See* PO Resp. 53–74.

We find that the cited portions of Rasmussen disclose and depict that "pillow 100 can have a cover 190 substantially enclosing the pillow 100" and that "cover 190 can include a top portion 200, a bottom portion 210 opposite the top portion 200, and side portions 220 extending between the top portion 200 and the bottom portion 210." Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2. We also find that the cited portions of Rasmussen teach and depict that cover 190 encloses core 110 that has "a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

We further find that the cited portions teach that "visco-elastic foam . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

We, thus, find that the cover of Rasmussen discloses a pillow comprising "a cover having opposing first and second panels" and

"compliant fill material disposed within said cover," as recited by claims 1, 11, 17, and 22.

b. "a gusset perimetrically bounding, and joining, said first and second panels" (claims 1, 11, 17, and 22)

Petitioner argues that Rasmussen discloses "a gusset perimetrically bounding, and joining, said first and second panels," as recited by independent claims 1, 11, 17, and 22. Pet. 30–32 (citing Ex. 1006 ¶¶ 48, 52, Fig. 2; Ex. 1007 ¶¶ 44, 48, Fig. 2; Rhodes Decl. ¶¶ 105, 108).

We find that Figure 2 shows side portion 220 of cover 190 joined to top and bottom portions 200, 210. We also credit the testimony of Petitioner's declarant. Rhodes Decl. ¶ 108 ("Although the figures do not show all sides of the pillow, a person of ordinary skill in the art would understand from the figures and from the description of Rasmussen, that if the pillow were turned, one could see where the top edge of the side portion 220 engages and joins the peripheral edge of the top portion 200 and where the bottom edge of the side portion 220 engages and joins the peripheral edge of the bottom portion 210."); Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow").

Patent Owner responds that none of the cited portions of Rasmussen expressly disclose that its side portions perimetrically bound and join its top

and bottom portions. PO Resp. 74 (addressing Pet. 27–32). Patent Owner also argues that Petitioner ultimately asserts that the feature would have been obvious and Petitioner's declarant admitted that Rasmussen does not expressly disclose this feature. *Id.* (citing Pet. 32–33; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶¶ 48, 52, Fig. 2; Ex. 1007 ¶¶ 44, 48; Rhodes Decl. ¶ 108) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen discloses "a gusset perimetrically bounding, and joining, said first and second panels," as recited by independent claims 1, 11, 17, and 22, based on descriptions related to the cover.

c. "said gusset being formed of an open cell construction, said open cell construction is formed by interlaced or spaced-apart strands" (claim 1)

Petitioner contends that Rasmussen's description of "highly porous" and "3D textile materials" for side portions 220 of cover 190 discloses "said gusset being formed of an open cell construction, said open cell construction is formed by interlaced or spaced-apart strands." Pet. 33–35 (citing Ex. 1006 ¶¶ 49, 50, Fig. 2; Ex. 1007 ¶¶ 45, 46, Fig. 2; Rhodes Decl. ¶¶ 111–117).

We find that the cited portions of Rasmussen disclose that "side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material), corresponding to and covering the highly porous material of the core sidewalls 160" (Ex. 1006 ¶ 49) and "the top portion 200 and bottom portion 210 of the cover 190 are less porous than the side portions 220 of the cover 190" (*id.* ¶ 50). *See also*

Ex. 1007 ¶¶ 45, 46 (disclosing the same). In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.A., we determine that the "highly porous" side portions 220 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 1. Ex. 1006 ¶ 49; Ex. 1007 ¶ 45.

Also, as determined above in Section II.B., we interpret "said open cell construction is formed by interlaced or spaced-apart strands" to mean that the open cell construction is formed by at least interlaced or spaced-apart strands. Petitioner's declarant states that

> "highly porous" "3D textile material" used for the gusset of Rasmussen's core 110 and cover 190 has interlaced strands in that the fibers are interlaced to create the three dimensional textile structure of the material, and that the material has spaced apart strands in that the fibers have spacing sufficient to make the material "highly porous."

Rhodes Decl. ¶ 117.

Patent Owner also states that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity a wide array of different 3-D textiles can be created." PO Resp. 13. Patent Owner provides examples of 3D textiles, all of which include "interlaced strands or spaced-apart strands." *See* PO Resp. 14–27. Both parties also agree that highly porous textiles have space-apart strands. *Id.* at 28 ("The tightness of the 3D structure itself can also impact the overall porosity. Tighter structures tend to have lower porosity because there is less space between the yarns forming the structure."); Rhodes Decl. ¶ 117; Parachuru Decl. ¶ 93 ("Similarly, loose structures tend to have higher

porosity due to the increased space between the yarns forming the structure.").

In view of the above, we find that Rasmussen's "highly porous" "3D textile material" discloses "said open cell construction being formed by interlaced or spaced-apart strands," as recited by claim 1. Patent Owner asserts the same arguments that it asserted against Petitioner's anticipation challenge based on its core. *See* PO Resp. 52–62, 65–68. For the same reasons, the evidence relied on by both parties indicates that the highly porous 3D textile of Rasmussen is formed by interlaced or spaced-apart strands, as required by claim 1.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its cover.

> *d. "said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material" (claim 11)*

Petitioner states that its "analysis for claim 1 also applies to claim 11 and is incorporated herein by reference." Pet. 42–43 (citing also Rhodes Decl. ¶¶ 104–125, 138). Petitioner argues that side portions 220 of cover 190 are more porous. *Id.* at 43 (citing Ex. 1006 ¶¶ 49–50; Ex. 1007 ¶¶ 45–46). Petitioner further argues that one of ordinary skill in the art would understand "Rasmussen's highly porous 3D textile would have 'apertures' larger than the pores inherently present in the base material from which the 3D textile is made." *Id.* at 44 (citing Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶¶ 126–127).

We find that the cited portions of Rasmussen disclose highly porous side portions 220. Ex. 1006 ¶¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same). In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.A., we determine that the "highly porous" side portions 220 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 11. Ex. 1006 ¶ 29; Ex. 1007 ¶ 25.

Also, as determined above in Section II.C., we interpret "said open cell construction is formed by apertures defined in said base material, said apertures being larger than any pores inherently defined in said base material" to mean that the open cell construction is formed by at least apertures defined in the base material and the apertures are larger than any pores inherently defined in the base material. Petitioner's declarant states that "'highly porous' 3D textile material" has apertures "significantly larger than the pores that would be inherently present in the base polyester or other fibers from which the 3D textile material is made," that the "apertures need not be formed by cutting or removing material," and that the "apertures could be created from the way in which the base material is formed." Rhodes Decl. ¶ 126.

As discussed above for claim 1, Patent Owner indicates that fibers form yarns that are then constructed into textile by weaving, knitting, braiding, and nonwoven manufacturing. *See* PO Resp. 4, 12–13. Patent

Owner also indicates that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity a wide array of different 3-D textiles can be created." *Id.* at 13. Both parties also agree that more space between yarns lead to higher porosity. PO Resp. 28; Rhodes Decl. ¶ 117; Parachuru Decl. ¶ 93.

Thus, we find that Rasmussen's "highly porous" "3D textile material" discloses an open cell construction that is formed by at least apertures (space between yarns made by weaving, knitting, braiding, or non-woven manufacture) defined in the base material (fiber) and the apertures are larger than any pores inherently defined in the base material (pores, if any, in the fiber), as argued by Petitioner and as recited by claim 11. Rhodes Decl. ¶ 126. Patent Owner asserts the same arguments for Petitioner's anticipation challenge based on its core. *See* PO Resp. 52–62, 69–72.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 11 based on disclosures related to its cover.

> *e. "said gusset being formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel" (claim 17)*

Petitioner incorporates its analysis regarding the anticipation of claim 1 for corresponding limitations found in claim 17. Pet. 45 (citing Rhodes Decl. ¶¶ 104–125, 138).

Petitioner asserts that, because side portion 220 of cover 190 can be formed of "highly porous" "3D textile material" and "top portion 200 and bottom portion 210 of the cover 190 are less porous than the side

portions 220," side portion 220 of Rasmussen discloses a gusset more porous than first and second panels, as required by claim 17. Pet. 46–47 (citing Ex. 1006 ¶¶ 49, 50, Fig. 2, claims 11, 12; Ex, 1007 ¶¶ 45, 46, Fig. 2; Rhodes Decl. ¶¶ 130–132).

We find that Rasmussen discloses highly porous side portion 220. Ex. 1006 ¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same).

Patent Owner responds Rasmussen does not disclose the limitation of an "open cell construction . . . formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel." PO Resp. 72. Patent Owner argues that, under either of Petitioner's interpretations of Rasmussen, it teaches at best that Petitioner's alleged gusset "as a whole" is more porous than the alleged panels, not that the base material of the alleged gusset is more porous than the materials of the alleged panels. *Id.* at 72–73 (citing Pet. 46; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). According to Patent Owner, "even if the alleged gusset in Rasmussen is more porous than the first and second panels, it is not necessary (and thus not inherent) for the gusset base material to be of greater porosity than the material forming the first and second panels." *Id.* at 73. Patent Owner additionally asserts that Rasmussen's generic reference to 3D textiles is not enabling and cannot anticipate the claims. *Id.*

Petitioner shows sufficiently that Rasmussen discloses that the material of side portions 220 has a greater porosity than the material of top

and bottom portions 200, 210. *See also* Ex. 1006 ¶ 6; Ex. 1007 ¶ 5 (disclosing "highly porous material (such as a 3D textile material)").

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates independent claim 17 based on disclosures related to both its cover.

f. "said gusset being formed of an open cell construction, said gusset including 3D spacer material" (claim 22)

Petitioner incorporates its analysis regarding the anticipation of claim 1 for similar limitations found in claim 22. Pet. 45 (citing Rhodes Decl. ¶¶ 104–125, 138). Petitioner also contends that Rasmussen's cover 190 has highly porous side portions 220 made of "3D textile material" that "can permit significant ventilation into and out of the pillow." *Id.* at 49 (citing Ex. 1006 ¶ 49; Ex. 1007 ¶ 45; Rhodes Decl. ¶¶ 134–135).

We find that Rasmussen discloses that side portions 220 "can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material) . . . and covering the highly porous material of the core sidewalls 160." Ex. 1006 ¶ 49; Ex. 1007 ¶ 45. We, thus, determine that the "highly porous" side portions 220 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 22.

We also find that "side portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow." Ex. 1006 ¶ 49; Ex. 1007 ¶ 45. For the reasons discussed above, the full record persuades us that the highly porous 3D textile material of Rasmussen is 3D spacer fabric, not a generic reference to any 3D fabric. Therefore, Petitioner persuades us by a preponderance of the evidence that Rasmussen's "highly porous" "3D textile material" is 3D spacer fabric and anticipates claim 22. Pet. 11–12; PO

Resp. 21, 22; Tr. 16:15–17:21, 18:3–19:10; Ex. 1006 ¶ 49; Ex. 1007 ¶ 45; Ex. 1009 ¶ 16; Rhodes Decl. ¶¶ 53, 59; Parachuru Decl. ¶¶ 83, 84; Ex. 2016, 36:14–17.

Patent Owner responds that Rasmussen does not disclose a "gusset including 3D spacer material," for the same reasons asserted against Petitioner's anticipation challenge based on disclosures related to its core. PO Resp. 62–65. For the reasons discussed above in connection with Petitioner's challenge based on disclosures related to its core, Petitioner persuades us that Rasmussen's "3D textile material" is 3D spacer fabric, used synonymously for 3D spacer fabric, and not a generic reference to 3D fabrics.

Thus, based on the record after trial, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 22 based on disclosures related to its cover.

C. Dependent Claims 4–6, 8, 13, 18, and 23

1. Challenge Based on the Core of Rasmussen

Claims 4 and 5 depend from claim 1. Ex. 1049, 5:31–36. For the reasons discussed above in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that independent claim 1 is anticipated by Rasmussen based on disclosures related to its core.

Petitioner argues that Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 4. Pet. 40–41 (citing Ex. 1006 ¶¶ 22, 24; Ex. 1007 ¶¶ 18, 20; Rhodes Decl. ¶ 141). We find that a cited portion of Rasmussen teaches "advantages are achieved by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 of the pillow" and "use of reticulated foam can also enhance the

ability of the pillow 100 to wick moisture away from the user's body thereon." Ex. 1006 ¶ 22; Ex. 1007 ¶ 18.

Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as recited by claim 5. Pet. 41 (citing Ex. 1006 ¶ 18; Ex. 1007 ¶ 14; Rhodes Decl. ¶ 143). We find that the cited portion of Rasmussen teaches

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Ex. 1006 ¶ 18; Ex. 1007 ¶ 14.

Patent Owner responds that Rasmussen does not anticipate dependent claims 2–10, 12–16, 18–21, 23, and 24 because these claims include all the limitations of independent claims 1, 11, 17, and 22. PO Resp. 75; *see also* Pet. Reply 23 ("PO makes no separate arguments for the patentability of dependent claims 4–6, 8, 13, 18, and 23, which are, therefore, also anticipated by Rasmussen."). For the reasons stated in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that claims 1, 11, 17, and 22 are anticipated by Rasmussen based on disclosures related to its cover.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 4 and 5 are anticipated by Rasmussen based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

Claims 4–6 and 8 depend from claim 1. Ex. 1049, 5:31–39, 5:43–45. Claims 13, 18, and 23 depend from independent claims 11, 17, and 22, respectively. Ex. 1049, 5:37–39, 6:7–9, 6:29–31, 6:52–53. For the reasons discussed above in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that independent claims 1, 11, 17, and 22 are anticipated by Rasmussen based on disclosures related to its cover.

Petitioner argues that Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 4. Pet. 40 (citing Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶¶ 139–140). We find that the cited portions of Rasmussen teach "[a]lternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [or] a cotton/polyester blend," a moisture wicking material. Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶ 139.

Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as recited by claim 5. Pet. 42 (citing Ex. 1006 ¶¶ 52, 53; Ex. 1007 ¶¶ 48, 49; Rhodes Decl. ¶ 144). We find that Rasmussen teaches that "cover 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." Ex. 1006 ¶ 52; Ex. 1007 ¶ 48. We also find that Rasmussen teaches that "fasteners can be positioned to releasably secure at least one portion of a

cover 190 to another portion of the cover 190." Ex. 1006 ¶ 53; Ex. 1007 ¶ 49.

Each of dependent claims 6, 13, 18, and 23 recites "an inner cover disposed inside of said cover, at least a portion of said compliant material being disposed within said inner cover." Ex. 1049, 5:37–39, 6:7–9, 6:29–31, 6:52–53. Claim 8 recites "an inner cover disposed inside of said cover, said compliant fill material being disposed within said inner cover." Ex. 1049, 5:43–45.

Petitioner argues that cover 190 of Rasmussen discloses "said cover" and core 110 of Rasmussen discloses "an inner cover." Pet. 51 (citing Ex. 1006 ¶ 15, Fig. 2; Ex. 1007 ¶ 11, Fig. 2; Rhodes Decl. ¶¶ 146–147). We find that the cited portions of Rasmussen disclose and depict core 110 disposed inside of cover 190 and core 110 defines a cavity that contains filler material 180. Ex. 1006 ¶ 15 ("top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180"), Fig. 2; Ex. 1007 ¶ 11, Fig. 2.

Moreover, we find that Rasmussen discloses and depict that "pillow 100 can have a cover 190 substantially enclosing the pillow 100" and that "cover 190 can include a top portion 200, a bottom portion 210 opposite the top portion 200, and side portions 220 extending between the top portion 200 and the bottom portion 210." Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2.

Patent Owner responds that Rasmussen does not anticipate dependent claims 2–10, 12–16, 18–21, 23, and 24 because these claims include all the limitations of independent claims 1, 11, 17, and 22. PO Resp. 75; *see also* Pet. Reply 23 ("PO makes no separate arguments for the patentability of

dependent claims 4–6, 8, 13, 18, and 23, which are, therefore, also anticipated by Rasmussen."). For the reasons stated in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that claims 1, 11, 17, and 22 are anticipated by Rasmussen based on disclosures related to its cover.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 4–6, 8, 13, 18, and 23 are anticipated by Rasmussen based on disclosures related to its cover.

D. Conclusion as to the Anticipation Challenges

For the reasons above and based on our review of the full record, Petitioner persuades us by a preponderance of the record (1) that claims 1, 4, 5, 11, 17, and 22 are anticipated by Rasmussen based on disclosures related to its core and (2) that claims 1, 4–6, 8, 11, 13, 17, 18, 22 and 23 are anticipated by Rasmussen based on disclosures related to its cover.

IV. OBVIOUSNESS CHALLENGES

Petitioner contends that, under 35 U.S.C. § 103(a), (1) claims 2, 3, and 12 are unpatentable over Rasmussen and Doak, (2) claims 9, 15, and 20 are unpatentable over Rasmussen and Vuiton, and (3) claims 10, 16, 21, and 24 are unpatentable over Rasmussen and Mason. Pet. 56–68. Petitioner cites to the asserted references and the Rhodes Declaration. *See id.* Patent Owner disputes the alleged obviousness of these claims with citations to the references and its Parachuru Declaration. PO Resp. 75–81.

To prevail in its challenges, under 35 U.S.C. § 103(a), Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). 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 at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996).

As discussed below, the parties' disputes are related to the scope and content of the prior art, differences between claims 2, 3, 9, 10, 12, 15, 16, 20, 21, and 24 and the prior art, and the level of ordinary skill in the art. The parties do not dispute nor direct us to any objective evidence of nonobviousness.

After reviewing the complete record, we conclude that Petitioner has shown by a preponderance of the evidence that the asserted references teach or suggest each limitation of claims 2, 3, 9, 10, 12, 15, 16, 20, 21, and 24, that a person of ordinary skill in the art would have had a reason to combine the teachings of the asserted references, and that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of those references.

A. Level of Ordinary Skill

Petitioner asserts that a person of ordinary skill in the art, whether the priority date is June 2011 or June 2012, would have

> at least a bachelor's degree in textile design, textile science, textile engineering or a similar field and at least one year of experience in the design of pillows and other sleep-related textile products; or, alternatively, a person having at least three to five years of experience in the design of pillows and other sleep-related textile products.

Pet. 15–16 (citing Rhodes Decl. ¶¶ 68–70).

Patent Owner contends that a person of ordinary skill in the art would have

> at least a bachelor's degree in textile science, textile engineering or a similar field along with several years of industry experience in applying the moisture and heat transfer properties of materials which typically come into close direct or indirect contact with human skin. Additional graduate education in textile or material sciences might substitute for experience.

PO Resp. 29 (citing Parachuru Decl. ¶¶ 20–25). Patent Owner also argues that Petitioner's proposed level of ordinary skill

> fails to adequately reflect the relevant technical experience and knowledge that would have been necessary to understand and implement the technical aspects of the '134 Patent and asserted references, such as how the thermodynamic processes of conduction, convection, and radiation interact at the interface between humans and various fabrics as well as the moisture dispersing properties of fabrics as they relate to liquid and vapor forms of perspiration.

Id. (citing Parachuru Decl. ¶¶ 36–52). Petitioner replies that Patent Owner's declarant "conceded that the challenged patent is directed to 'pillow design' . . . and that it was 'desirable' for a [person of ordinary skill in the art] to have pillow design experience." Pet. Reply 7 (citing Ex. 1061, 26:16–19, 31:9–13).

Factual indicators of the level of ordinary skill in the art include "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *Jacobson Bros., Inc. v. U.S.*, 512 F.2d 1065, 1071 (Ct. Cl. 1975); *see also Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983) (quoting with approval *Jacobson Bros.*). We find, based on our review of the record before us, that Petitioner's stated level of ordinary skill in the art is reasonable because it is consistent with the record's indication of "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *See, e.g.*, Pet. 7–12 ("Technology Background"); PO Resp. 3–4 ("Background of the Relevant Technology at the Time of the '134 Patent"); Ex. 1006 ¶¶ 2–4; Ex. 1008; Ex. 1012 ¶¶ 3–6; Ex. 1044; Ex. 2001 ¶¶ 36–54.

We resolve any differences in favor of including "several years of industry experience in applying the moisture and heat transfer properties of materials" as part of "at least one year of experience in the design of pillows and other sleep-related textile products" of a person holding a "bachelor's degree in textile science, textile engineering, or a similar field." *See* Rhodes Decl. ¶ 5 ("I am also an adjunct professor . . . teaching . . . an entry level course for textile and fashion majors."), ¶ 6 ("I received a Bachelor of Science degree in Textile Design."), ¶ 70 ("I met at least these minimum qualifications to be a person having ordinary skill in the art at the time of the claimed invention."); Ex. 1062 ¶ 4 ("I teach concepts relating to moisture

and heat transfer in my textile curriculum in my academic role as a professor").

Therefore, we apply Petitioner's definition, quoted above, in our analysis of the challenges under 35 U.S.C. § 103(a). Pet. 15–16.

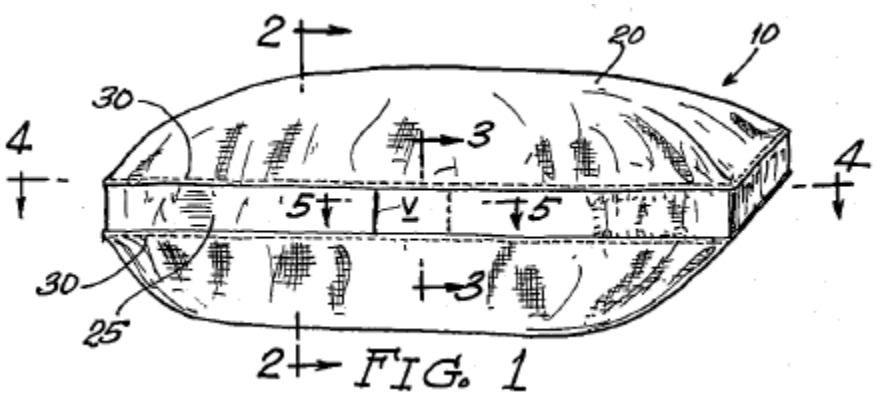
B. Challenge Based on Rasmussen and Doak

Petitioner contends that claims 2, 3, and 12 are unpatentable over Rasmussen and Doak. Pet. 56–60. Claims 2 and 3 depend from claim 1, and claim 12 depends from independent claim 11. Ex. 1049, 5:26–30, 6:4–6.

Claim 2 recites "wherein said first and second panels each define a generally rectangular footprint common with said gusset." *Id.* at 5:26–28. Claim 3 recites "wherein said first and second panels are arcuately bowed out in opposing directions." *Id.* at 5:29–30. Claim 12 recites "wherein said first and second panels each define a generally rectangular footprint common with said gusset." *Id.* at 6:4–6.

1. Doak (Ex. 1008)

Doak relates to "pillows . . . or the like." Ex. 1008, 1:9–10. Figures 1 and 4 of Doak are reproduced below.



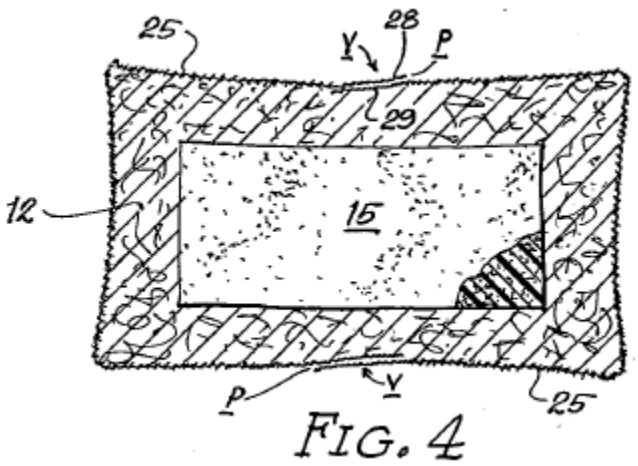


FIG. 4

Figure 1 shows pillow 10, and Figure 4 is a sectional view taken along line 4–4 of Figure 1. *Id.* at 1:51–52, 1:58–59. Pillow 10 has filling 12 enclosed in cover 20. *Id.* at 1:63–67, 2:12–15. Cover 20 comprises web portion 25, "which extends around the perimeter of the pillow and may be of substantial width." *Id.* at 2:15–17.

2. Claims 2, 3, and 12

Petitioner argues that Rasmussen teaches the limitations of independent claims 1 and 11, from which claims 2, 3, and 12 depend. Pet. 57. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claims 1 and 11.

Petitioner also argues that Doak teaches first and second panels that each define a generally rectangular footprint common with a gusset, as required by claims 2 and 12, and that are arcuately bowed in opposing directions, as required by claim 3. Pet. 59 (citing Ex. 1008, Figs. 1, 4; Rhodes Decl. ¶¶ 163–164). We find that Petitioner's citations to Figures 1 and 4 of Doak teach the limitations of claims 2, 3, and 12.

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Doak to "satisfy known consumer

expectations for a conventionally shaped pillow." Pet. 60; Rhodes Decl. ¶ 165 ("A person of ordinary skill in the art would have had a credible reason to combine Rasmussen with Doak to use the shape of Doak to satisfy consumer expectations for a conventionally shaped pillow."); *see also KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.").

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Doak in the manner asserted by Petitioner. Rhodes Decl. ¶ 165 ("The use of arcuately bowed out opposing top and bottom panels joined by a perimetric gusset that shares a rectangular footprint with the top and bottom panels is a basic pillow design that has been commonplace . . . as Doak itself demonstrates.") ("[M]odifying the pillow of Rasmussen to have the shape characteristics of the pillow of Doak would have been a simple combination for a POSITA that would have yielded predictable results without requiring undue experimentation.").

Patent Owner responds that Rasmussen does not anticipate claims 1 and 11, from which claims 2, 3, and 12 depend. PO Resp. 75. Patent Owner also argues that Petitioner does not rely on Doak for features of claims 1 and 11 that are missing in Rasmussen. *Id.* For the reasons discussed above in Section III.B., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 1 and 11.

Patent Owner further responds for claims 2 and 12 that one of ordinary skill in the art would not have been motivated to modify Rasmussen to have a rectangular shape because "such a modification would

undermine the fundamental principles of Rasmussen's design, which relies on a pillow having a plurality of lobes," a feature that Patent Owner contends is critical and provides benefits. *Id.* at 75–76 (citing Ex. 1006 ¶ 14, Fig. 1; Parachuru Decl. ¶¶ 179–180). Patent Owner additionally argues that Petitioner provides no evidence why one of ordinary skill in the art would make the modification and forego the associated benefits and that Rasmussen does not indicate a rectangular shape would be appropriate. *Id.* at 76. Patent Owner contends that Petitioner's declarant admitted to not understanding Rasmussen's lobes. *Id.* (citing Ex. 2016, 58:13–22). Petitioner replies that Rasmussen does not teach that "its lobes are 'fundamental' or 'critical'" and "merely teaches various embodiments having lobes." Pet. Reply 23–24 (citing Ex. 1006 ¶¶ 6, 14, claims 1–20; Ex. 1062 ¶¶ 35–37).

Patent Owner points us to paragraph 14 of Rasmussen, and in that paragraph, we find that Rasmussen teaches that "in other embodiments, . . . the lobes 120, 130 can have different sizes" and "[a]ny combination of lobes having the same size or different sizes is possible." *See* PO Resp. 75. This paragraph does not address whether these embodiments of Rasmussen "define a generally rectangular footprint common with said gusset," as recited by claims 2 and 12. Second, it does not indicate that a rectangular lobed pillow would fail to provide the benefits of a lobed pillow, thereby undermining the asserted fundamental principles of Rasmussen's design. *See* Ex. 1006 ¶ 14 ("The lobed shape of the pillow 100 provides a number of support surfaces for a user," "can enhance breathing of a user resting his or her head against the pillow 100," and "can also provide support for the

shoulder and/or neck of the user when the user is sleeping on his or her side or back.").

Further, we find that Rasmussen teaches that the same listed benefits can be provided by a rectangular pillow. *See* Ex. 1006 ¶ 2 ("Conventional pillows can be found in a wide variety of shapes and sizes, and are often adapted for supporting one or more body parts of a user."). Even if the lobes of Rasmussen are critical, as contended by Patent Owner, Rasmussen does not indicate having a rectangular shape would somehow be incompatible with having lobes, as argued by Patent Owner. *See id.* ¶¶ 2, 14.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 2, 3, and 12 would have been obvious over Rasmussen and Doak.

C. Challenge Based on Rasmussen and Vuiton

Petitioner contends that claims 9, 15, and 20 are unpatentable over Rasmussen and Vuiton. Pet. 61–65. Claim 9 depends from claim 8, which depends from claim 1. Ex. 1049, 5:46–47. It recites "wherein said inner cover is formed of one or more layers of nonwoven material." *Id.*

Claims 15 and 20 depend from claim 13, which depends from independent claim 11. *Id.* at 6:12–16, 6:35–39. Claims 15 and 20 recite "wherein said inner cover is formed by one or more layers of a material selected from the group consisting of a non-woven . . . materials and combinations thereof such that said inner cover is relatively resistant to air flow therethrough." *Id.*

1. Vuiton (Ex. 1044)

Vuiton relates to an "article of bedding such as a pillow." Ex. 1044 ¶¶ 1, 3, 7. Figure 1 of Vuiton is reproduced below.

FIG. 1

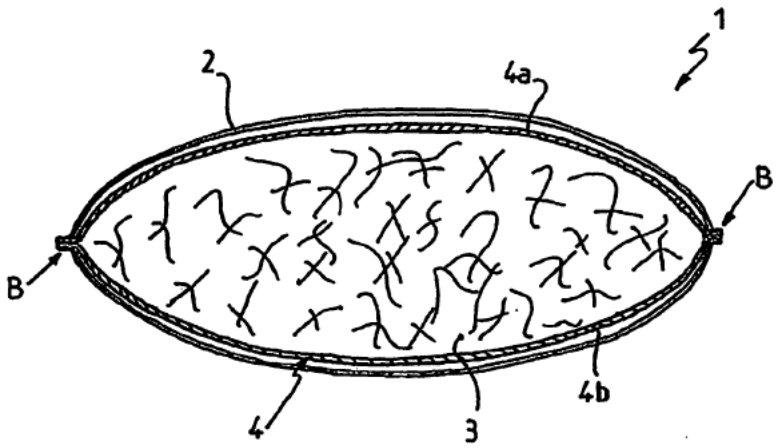


Figure 1 is a sectional view of a pillow. *Id.* ¶ 11. Pillow 1 includes cover 2, inner filling 3, and inner casing 4 that encloses inner filling 3. *Id.* ¶¶ 12, 13. Inner casing 4 consists of panels 4a, 4b made from a non-woven fabric, "thereby providing a barrier against the migration of bacteria towards the inside of the pillow." *Id.* ¶ 13. In medical applications, the panels of the inner casing may be coated with a plastic layer on its outer surface. *Id.* ¶ 23.

2. Claims 9, 15, and 20

Petitioner argues that the cover of Rasmussen teaches the limitations of claim 8, from which claim 9 depends. Pet. 62. As discussed above, Petitioner contends that claim 1, from which claim 8 depends, is anticipated by Rasmussen based on disclosures related to its cover. Petitioner also argues that the cover of Rasmussen teaches the limitations of claims 11 and 13, from which claims 15 and 20 depend. *Id.* at 63–64.

For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of independent claims 1 and 11 based on disclosures regarding its cover. For the reasons discussed above in Section III.C.2., we determine that

Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 8 and 13.

Petitioner contends that Vuiton teaches a pillow with an inner cover made from a non-woven fabric, as required by claims 9, 15, and 20. Pet. 61–62 (citing Ex. 1044 ¶¶ 7, 12, 13, Fig. 1; Rhodes Decl. ¶¶ 167–169), 64 (citing Ex. 1044 ¶¶ 13, 23, Fig. 1; Rhodes Decl. ¶¶ 169, 171). We find that the cited portions of Vuiton teach the limitations of claims 9, 15, and 20. Ex. 1044 ¶¶ 7 ("the present invention relates to an article of bedding such as pillow . . . consisting of a cover or outer casing . . . stuffed with an inner filling, characterized in that the inner filling is enclosed in an inner casing consisting of at least two panels made of a non-woven fabric"), 12 ("pillow 1 consisting of a cover 2 . . . with an inner filling 3"), 13 ("inner filling 3 is enclosed in an inner casing 4 consisting of two panels 4a, 4b made from a non-woven fabric").

We also determine that one of ordinary skill in the art would have modified Rasmussen with the teachings of Vuiton "to impart anti-microbial and flame retardance properties." Pet. 62; Rhodes Decl. ¶ 169. Petitioner's reason for combining Rasmussen and Vuiton also finds support in Vuiton. *See* Ex. 1044 ¶ 13 ("two panels 4a, 4b made from a non-woven fabric . . . thereby providing a barrier against the migration of bacteria towards the inside of the pillow"). We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Vuiton in the manner asserted by Petitioner. Rhodes Decl. ¶ 169 ("A well-known way

to provide [microbial and flame retardance] properties is through using a non-woven material to form the inner cover.").

Patent Owner responds that Rasmussen does not anticipate the independent claims, from which claims 9, 15, and 20 ultimately depend. PO Resp. 76–77 (citing Pet. 61–64). Patent Owner also argues that Petitioner does not rely on Vuiton for features of the independent claims that are missing in Rasmussen. *Id.* at 77. For the reasons discussed above in Section III.B., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates independent claims 1 and 11, and for the reasons discussed above in Section III.C., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 8 and 13.

Patent Owner also responds that Petitioner does not "adequately set forth how Vuiton's alleged non-woven cover is being incorporated into Rasmussen's design." PO Resp. 77 (citing Pet. 62). Patent Owner is unclear "whether Vuiton's inner cover is replacing Rasmussen's alleged inner cover or is being added as an additional inner cover." *Id.* Patent Owner contends that "Petitioner merely provides an equivocal statement as to the intended combination but never provides any specificity." *Id.* (quoting Pet. 62–63). However, Petitioner cites to its declarant testimony, which states that a "well-known way to provide [microbial and flame retardance] properties is through *using a non-woven material to form the inner cover*." Rhodes Decl. ¶ 169 (emphasis added); *see also* Pet. 62 (citing *id.*).

For claims 15 and 20, Patent Owner further responds that Petitioner relies on Vuiton's description of a plastic layer for the recited "inner cover is relatively resistant to air flow therethrough," but Vuiton never describes its

plastic layer as altering air flow through its inner casing. PO Resp. 77–78 (citing Pet. 63). Petitioner, however, cites to its declarant testimony. Pet. 63 (arguing one of ordinary skill in the art would "understand that Vuiton teaches embodiments in which its non-woven inner cover can be coated with plastic and can thus be 'relatively resistant to air flow therethrough,' as required by claims 15 and 20") (citing Rhodes Decl. ¶ 170).

Patent Owner also argues that Vuiton teaches its connection between inner and outer casings prevents bacterial migration, not its inner layer coated with a plastic layer, as argued by Petitioner. PO Resp. 78 (citing Pet. 62; Ex. 1044 ¶ 13, Fig. 1; Parachuru Decl. ¶ 181–182). Petitioner, however, argues that one of ordinary skill would understand that a non-woven inner cover coated with plastic would help prevent bacterial migration. *See* Pet. 64; Rhodes Decl. ¶ 170.

Patent Owner further argues that one of ordinary skill in the art would have understood Vuiton's plastic layer does not teach the subject matter of claims 15 and 20 because (1) its plastic layer would render the inner case impermeable to air, (2) claims 15 and 20 require the inner cover to be "relatively resistant to air flow therethrough," and (3) a plastic layer is not a non-woven, knit, or woven material. *Id.* at 78–80 (citing Ex. 1044 ¶ 23; Ex. 2004 ¶¶ 183–187; Ex. 2014, 118; Ex. 2015 ¶ 10; Ex. 2016, 110:8–19). Patent Owner additionally argues that Petitioner does not address how Vuiton's plastic layer would affect Rasmussen's use of porosity to increase ventilation and heat transport, thus undermining Petitioner's proposed combination. *Id.* at 80 (citing Ex. 1006 ¶¶ 24, 29, 30; Parachuru Decl. ¶¶ 188–189; Ex. 2016, 75:12–18). As discussed above, Petitioner proposes to modify the alleged inner cover of Rasmussen to be non-woven and plastic

coated in view of Vuiton's teachings. Petitioner is not proposing to coat the alleged inner cover of Rasmussen so as to be impermeable to air, as argued by Patent Owner. *See* Pet. 64 ("it would be desirable to use a non-woven inner cover that is relatively resistant to airflow therethrough to provide anti-microbial properties"); Rhodes Decl. ¶ 170 ("having read Vuiton, it would be obvious to one of ordinary skill that the plastic-coated non-woven inner cover embodiment of Vuiton would naturally be relatively resistant to air flow and that this would help prevent bacterial migration").

For the reasons above, the record after trial persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 9, 15, and 20 would have been obvious over Rasmussen and Vuiton.

D. Challenge Based on Rasmussen and Mason

Petitioner contends that claims 10, 16, 21, and 24 are unpatentable over Rasmussen and Mason. Pet. 65–68. Claims 10, 16, 21, and 24 depend from claims 1, 11, 17, and 22, respectively. Ex. 1049, 5:48–49, 6:17–18, 6:40–41, 6:52–53. Each of claims 10, 16, 21, and 24 recites "wherein the compliant fill material includes gel." *Id.*

1. Mason (Ex. 1012)

Mason "is directed to methods of preparing apparatuses comprising a gel layer and an additional layer, such as a foam layer." Ex. 1012 ¶ 2. The apparatus according to Mason "generally comprises a gel layer" and "can also comprise a covering overlaying the gel layer." *Id.* ¶¶ 8, 13. "Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows." *Id.* ¶ 14; *see also id.* ¶¶ 57, 58, 64 (listing pillows as an embodiment).

According to Mason, "while the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user" and the "heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow." *Id.* ¶¶ 41, 43. Mason states that "[i]n light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase." *Id.* ¶ 6. The gel layer can be combined with a foam layer, a cover layer, or optional further layers. *Id.* ¶¶ 8, 84, 85, 94, 95.

2. Claims 10, 16, 21, and 24

Petitioner argues that Rasmussen teaches the limitations of independent claims 1, 11, 17, and 22, from which claims 10, 16, 21, and 24 depend. Pet. 65, 67. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claims 1, 11, 17, and 22.

Petitioner also argues that Mason teaches "wherein the compliant fill material includes gel," as required by dependent claims 10, 16, 21, and 24. Pet. 65 (citing Ex. 1012 ¶¶ 8, 13, 14, 43, 57, 58, 64, 80–85, 94, 95; Rhodes Decl. ¶¶ 172–173), 67. We find that Petitioner's citations to Mason teach the limitations of these claims. Ex. 1012 ¶¶ 8 ("The apparatus prepared according to the invention generally comprises a gel layer."), 13 ("[T]he apparatus can also comprise a covering overlaying the gel layer."), 14 ("Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows."), 57, 58, 64.

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Mason because the "addition of 'gel' can be used to provide a cooling effect to address the known problem of heat buildup in foam," "can 'contribute[] to the "good" feel users desire in a support apparatus,'" and addresses "increased demand, known ability to address heat buildup in foam with gel, and Rasmussen's stated desire to enhance cooling," as argued by Petitioner. Ex. 1012 ¶¶ 6 ("In light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase."), 41 ("[W]hile the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user."), 42, 43 ("The heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow."); Rhodes Decl. ¶¶ 174, 175; *see also* Pet. 66 (citing Ex. 1012 ¶¶ 6, 41–43; Rhodes Decl. ¶¶ 174, 175), 68.

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Mason in the manner asserted by Petitioner. Rhodes Decl. ¶¶ 174 ("[U]se [of gel] was increasingly common prior to the alleged invention."), 175 ("Use of fill material comprising gel in the pillow taught by Rasmussen would have yielded predictable results with little or no experimentation.").

Patent Owner responds that Petitioner "does not rely on disclosure in Mason with respect to the open cell constructions that are entirely missing from Rasmussen's disclosure" and thus, "Rasmussen in view of Mason fails to render obvious claims 10, 16, 21 and 24." PO Resp. 81; *see also* Pet. Reply 27 ("PO does not independently address the obviousness of claims 10,

16, 21, and 24 based on Rasmussen in view of Mason, except for relying on arguments it raised for independent claims from which these claims depend."). For the reasons discussed above in Section III.B., we determine that Rasmussen anticipates the challenged independent claims.

For the reasons above, the record after trial persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 10, 16, 21, and 24 would have been obvious over Rasmussen and Mason.

V. IMPROPER REPLY ARGUMENTS

Patent Owner filed a List of Improper Reply Arguments (Paper 32), to which Petitioner also filed a response (Paper 33). Patent Owner asserts that, in its Reply, Petitioner argues for the first time that "material" and "base material" of claims 11 and 17 can be fibers, that Vuiton's inner cover non-woven cover is relatively resistant to air flow, and that Rasmussen's design can be modified to have lobes and a rectangular shape. Paper 31, 1–2 (citing Pet. Reply 17, 21, 24, 26). The parties also filed a Joint Notice of Unresolved Demonstrative Objections (Paper 35), in which Patent Owner alleges that slides 13, 26, 29, 31, and 32 contain new arguments as discussed above and Petitioner alleges that slide 47 contains a new argument from Patent Owner's Observations (Paper 31).

We do not rely on any of the portions of the Petitioner's Reply that argue that "material" and "base material" of claims 11 and 17 can be fibers and that Vuiton's inner cover non-woven cover is relatively resistant to air flow. We also do not rely on the demonstratives.

We cite and analyze the arguments from the Petition for the challenge of claims 11 and 17 and the challenges based on Rasmussen combined with Vuiton or Doak. Further, because Petitioner initially argued that one of ordinary skill in the art would "modify the shape of the pillows taught by Rasmussen to utilize the shape taught by Doak, including . . . its rectangular shape" (Pet. 63), Petitioner's argument in its Reply—that "four subtle lobes at the corners could even be maintained, if desired, and still yield a 'generally rectangular' pillow" (Pet. Reply 25)—is not a new argument, as contended by Patent Owner. A lobed and generally rectangular pillow would be the result of Petitioner's proposed modification and would still "satisfy known consumer expectations for a conventionally shaped pillow," discussed above in Section IV.C.2.

VI. CONCLUSION

For the foregoing reasons, based on the full record before us, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–6, 8–13, 15–18, and 20–24 of the '134 patent are unpatentable.

VII. ORDER

Accordingly, it is:

ORDERED that claims 1–6, 8–13, 15–18, and 20–24 of U.S. Patent No. 8,646,134 B1 have been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the 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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Paper No. 41
Entered: June 12, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREDMAN BROS. FURNITURE COMPANY, INC.,
Petitioner,

v.

BEDGEAR, LLC,
Patent Owner.

Case IPR2017-00351
Patent 9,015,883 B2

Before HYUN J. JUNG, BART A. GERSTENBLITH, and AMANDA F. WIEKER, *Administrative Patent Judges.*

JUNG, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that all challenged claims 1–10, 12–15, and 17–20 of U.S. Patent No. 9,015,883 B2 are unpatentable.

A. Procedural History

Fredman Bros. Furniture Company, Inc. ("Petitioner") filed a Petition, requesting institution of an *inter partes* review of claims 1–10, 12–15, and 17–20 of U.S. Patent No. 9,015,883 B2 (Ex. 1047, "the '883 patent"). Paper 1 ("Pet."). Bedgear, LLC ("Patent Owner") timely filed a Preliminary Response. Paper 7. Pursuant to 35 U.S.C. § 314(a), we instituted *inter partes* review of all challenged claims of the '883 patent. Paper 8 ("Dec. on Inst.").

After institution, Patent Owner filed a Response (Paper 14, "PO Resp."), to which Petitioner filed a Reply (Paper 21, "Pet. Reply"). Petitioner proffered a Declaration of Jennifer Frank Rhodes (Ex. 1059, "Rhodes Declaration" or "Rhodes Decl.") with its Petition, and a Declaration of Jennifer Frank Rhodes in Support of Petitioner's Reply (Ex. 1062). Patent Owner proffered Declarations of Dr. Radhakrishnaiah Parachuru in support of its Preliminary Response (Ex. 2001) and in support of its Response (Ex. 2004, "Parachuru Declaration" or "Parachuru Decl."). Deposition transcripts for Dr. Parachuru (Ex. 1061) and Ms. Rhodes (Exs. 2016, 2020) were filed.

Patent Owner filed Observations on Cross-Examination of Petitioner's Reply Witness Jennifer Frank Rhodes (Paper 27), to which Petitioner filed a

response (Paper 30). As authorized in our Order (Paper 29), Patent Owner filed a List of Improper Reply Arguments (Paper 31), to which Petitioner also filed a response (Paper 32).

An oral hearing in this proceeding and Cases IPR2017-00350, IPR2017-00352, and IPR2017-00524 was held on March 20, 2018; a transcript of the hearing is included in the record (Paper 36, "Tr.").

B. Grounds of Unpatentability at Issue

We instituted *inter partes* review on the grounds that

claims 1–4, 7–10, 14, 15, 18, and 20, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen[1],

claims 1–4, 7–10, 13–15, 17, 18, and 20, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen, separately and independently of the ground above, based on an alternative interpretation of Rasmussen,

claims 5, 6, and 19, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Doak[2],

claim 12, under 35 U.S.C. § 103(a), is unpatentable over Rasmussen and Mason[3], and

claim 19, under 35 U.S.C. § 103(a), is unpatentable over Rasmussen and Burton[4]. Dec. on Inst. 32.

In an Order following *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we modified our Decision on Institution to institute on all of the grounds presented in the Petition. Paper 37, 2; *see also* Dec. on Inst. 17–20,

[1] WO 2010/075294 A1, published July 1, 2010 (Ex. 1006).
[2] US 3,109,182, issued Nov. 5, 1963 (Ex. 1008).
[3] US 2007/0246157 A1, published Oct. 25, 2007 (Ex. 1012).
[4] US 6,760,935 B1, issued July 13, 2004 (Ex. 1013).

22, 25, 29–31 (determining Petitioner had not demonstrated a reasonable likelihood of prevailing on certain grounds). In accordance with that same Order, the parties conferred and reached agreement to withdraw the grounds upon which we did not institute review. *See* Papers 37, 38. After receiving authorization (Paper 38), the parties filed a Joint Motion to Limit the Petition (Paper 39), which we granted (Paper 40). Thus, the review is limited to the grounds listed above, and this Decision addresses only those grounds.

C. Related Proceedings

The parties indicate that the '883 patent has been asserted in *Bedgear, LLC v. Fredman Bros. Furniture Co., Inc.*, Case No. 1:15-cv-6759 (E.D.N.Y.) and *Cabeau, Inc. v. Bedgear, LLC*, Case No. 2:16-cv-09238 (C.D. Ca.). Pet. 74; Paper 4, 2; Ex. 1052.

The '883 patent issued from a continuation of an application that issued as the patent challenged in case IPR2017-00350 (Ex. 1001). The patent challenged in Case IPR2017-00350 issued from a continuation of an application that issued as U.S. Patent No. 8,646,134 B1 (Ex. 1049, "the '134 patent"), which is challenged in Case IPR2017-00352.

D. The '883 Patent (Ex. 1047)

The '883 patent issued April 28, 2015, from an application filed July 10, 2014, which is a continuation of an application filed December 16, 2013, and claims priority to another application filed June 22, 2012, and a provisional application filed June 22, 2011. Ex. 1047, [22], [45], [60], [63], 1:6–14.

The '883 patent relates to an "upper neck and head support in the form of a pillow for the human body." *Id.* at 1:22–23. Figure 1 of the '883 patent is reproduced below.

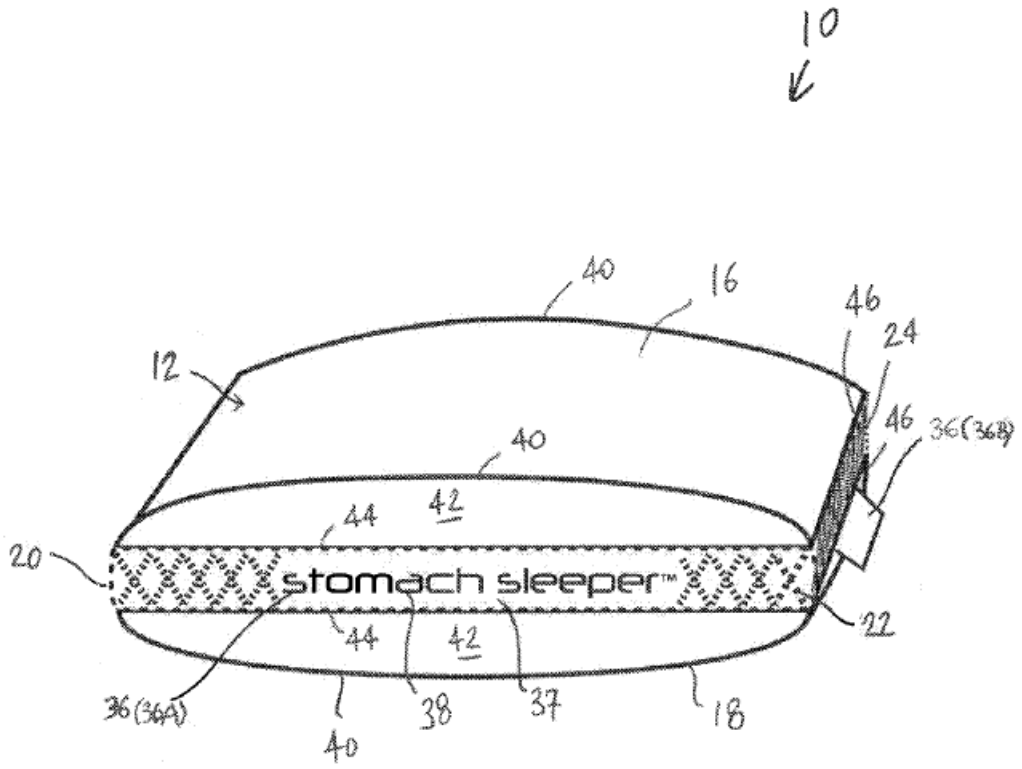


FIG. 1

Figure 1 shows a perspective view of a pillow of the ’883 patent. *Id.* at 1:53–54. Pillow 10 has cover 12, and cover 12 includes opposing first and second panels 16, 18 and gusset 20 that joins panels 16, 18. *Id.* at 1:66–2:4.

Gusset 20 is formed of an open cell construction and has sufficient width to separate the panels 16, 18 so as to define an airflow channel through the panels. *Id.* at 2:4–10. The specification states that an “‘open cell construction’ as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity.” *Id.* at 1:44–47. Open cell construction is associated with venting or air exchange. *See, e.g.*, *id.* at 2:14–15, 4:34–36.

The open cell construction of gusset 20 may be defined by a “plurality of interlaced or spaced-apart strands 26 arranged randomly or in various

patterns, such as a 'x' pattern (FIG. 1) or a rectangular pattern." *Id.* at 2:23–26. Gusset 20 may be formed of base material 30 and has apertures 32 defining open cells and being larger than any pores that may be present inherently in base material 30. *Id.* at 2:39–44.

Gusset 20 "may be formed with the base material 30 being inherently significantly porous" (*id.* at 2:50–52), and the "porosity of the base material 30 may be substantially greater than the porosity of the material forming the first panel 16 and/or . . . the second panel 18" (*id.* at 2:58–61). Base material 30 may be 3D spacer fabric. *Id.* at 2:53–54. "'Substantially greater' refers to being at least greater than, but preferably being at least twice greater than." *Id.* at 2:61–63.

The "open cell construction of the gusset 20 may be defined by various constructions" (*id.* at 2:22–23), and "gusset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination." (*id.* at 3:1–3).

E. Illustrative Claim

The '883 patent has 20 claims, of which Petitioner challenges claims 1–10, 12–15, and 17–20. Of the challenged claims, claim 1, reproduced below, is the sole independent claim.

> 1. A pillow comprising:
> a first panel having an edge defining a perimeter;
> a second panel having an edge defining a perimeter; and
> a gusset joining said first and second panels,
> wherein inner surfaces of said first panel, said second panel and said gusset define an inner cavity; and
> said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset.

Ex. 1047, 5:25–33.

II. CLAIM INTERPRETATION

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).

A. "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" (claim 1)

Patent Owner proposes interpreting "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," as recited by claim 1, to mean "the pillow is designed to have air which enters the pillow through the first or second panel then exit the pillow through the gusset." PO Resp. 46. In support, Patent Owner refers to the language of claim 1 (*id.* at 46–48), the specification (*id.* at 48–49 (citing Ex. 1001,[5] 1:37–40, 2:10–13, 4:19–36, 4:53–55)), and Dr. Parachuru's testimony (*id.* at 46–49 (citing Ex. 2004 ¶¶ 135–142)).

Patent Owner argues that "the claim language itself explicitly requires that the pillow be configured to have air enter through the first and second panels to then have this ***same*** air exit through the gusset" and "does not address (i.e., require or restrict) air entering through a structure other than a

[5] The parties cite to the specification of related U.S. Patent No. 8,887,332 B2, which has substantially the same specification (Ex. 1001). *See also* Parachuru Decl. ¶ 3 ("I also understand that the '134, '332, and '883 Patents share substantially the same specification."). We cite to the corresponding portion of the specification of the '883 patent (Ex. 1047).

panel (e.g., a gusset) nor does it address any such air exiting the pillow in a particular manner (e.g., through a panel, gusset, or other structure)." *Id.* at 46–47 (citing Parachuru Decl. ¶¶ 137, 138). Patent Owner also states that the "claim language is [] unambiguous on its face in requiring that at least some air which enters through the panels, must then exit through the gusset." *Id.* at 47.

Petitioner replies that the proposed interpretation rewrites the express claim language, is illogical, and is unsupported by the specification. Pet. Reply 7 (citing Ex. 1001, 2:10–13; Ex. 1061, 35:11–15, 61:17–62:12). Petitioner also contends that express construction is unnecessary because Patent Owner's proposed interpretation is disclosed by Rasmussen. *Id.* at 7.

We agree with Patent Owner's statement that the claim language "does not address (i.e., require or restrict) air entering through a structure other than a panel (e.g., a gusset) nor does it address any such air exiting the pillow in a particular manner (e.g., through a panel, gusset, or other structure)." *See* PO Resp. 47. The claim language requires "at least some air which enters through the panels" exits through the gusset alone or in combination with another structure. *See id.* The portions of the specification cited by Patent Owner support its above-quoted statement because the cited portions describe that the pillow allows lateral ventilation, gusset 20 provides venting, gusset 20 permits air exchange, and the panels can be made of open cell construction. *See* PO Resp. 48–49; Ex. 1047, 1:37–40, 2:12–15, 4:34–36, 4:56–58. Further interpretation is not required for determining whether Petitioner shows by a preponderance of the evidence the unpatentability of claim 1. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (construing *explicitly* only

those claim terms in controversy and only to the extent necessary to resolve the controversy).

B. "open cell construction" (claims 4, 14, 15, 18)

Petitioner argues that "'open cell construction' need not be construed or given independent patentable weight beyond the specific structure recited in the claims" and that "construction does not impact the prior art analysis herein." Pet. 23 (citing Rhodes Decl. ¶¶ 85–86). In the Decision on Institution, we did not interpret "open cell construction" expressly. Dec. on Inst. 7.

Patent Owner states that "[b]oth parties agree that the express definition for the term 'open cell construction' . . . should be adopted, namely a 'construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity.'" PO Resp. 38–39 (citing Pet. 23). Also, specifically for claim 4, Patent Owner states that it "does not expressly specify a structure for the 'open cell construction,'" "is not constrained to a specific type of open cell structure," and "covers the various embodiments disclosed." *Id.* at 45. Patent Owner contends it should be construed according to the definition in the specification. *Id.* at 45–46. Petitioner also states that the parties "agree that the specification expressly defines 'open cell construction' as 'a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." Pet. Reply 2–3 (citing Pet. 22–23; PO Resp. 38–39; Ex. 1001, 1:41–44).

The specification of the '883 patent states that an "'open cell construction' as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently

having high porosity." Ex. 1047, 1:44–47. Based on the full record, we agree with parties that "open cell construction" is defined in the specification, and we interpret it in accordance with that definition to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) ("Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.").

C. "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel" (claims 14, 15)

Patent Owner contends that "distinct 'open cell construction' phrases should be construed separately to properly account for the different structures expressly recited in these claims." PO Resp. 39. In support of its position, Patent Owner cites the claim language (*id.* at 40–41 (citing claims 14, 15, and 18)), the specification (*id.* at 39–40 (citing Ex. 1047, Figs. 3, 4)), the prosecution history of the related '134 patent (*id.* at 41), and Dr. Parachuru's testimony (*id.* at 39–41 (citing Ex. 2001 ¶¶ 50, 55–56; Ex. 2004 ¶¶ 101, 115–117, 119)). Patent Owner also refers to related district court litigation. *Id.* at 42 (citing Ex. 2017, 18).

Patent Owner proposes interpreting "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel" to mean "a construction made up of a constituent material that, by itself, has substantially higher porosity than the material of the first and second panels." PO Resp. 44, 45. In support, Patent Owner cites the claim language, the specification (Ex. 1047, 2:47–64, Fig. 5), the prosecution

history of the ’134 patent (Ex. 1003, 47), and Dr. Parachuru’s testimony (Ex. 2004 ¶¶ 132–134). *Id.* at 44–45. Patent Owner also argues that the phrase at issue is “directed to the Using High-Porosity Materials Embodiment (FIG. 5).” *Id.* at 44–45.

As for “substantially greater,” Petitioner contends that the ’883 patent “expressly defined this term to mean simply ‘greater than.’” Pet. 23; Ex. 1047, 2:61–63. “Patent Owner agrees to adopt Petitioner’s proposed construction solely for the purposes of this IPR.” PO Resp. 49–50.

The specification states that “‘[s]ubstantially greater’ refers to being at least greater than, but preferably being at least twice greater than.” Ex. 1047, 2:54–56. Based on the full record, we interpret “substantially greater” to mean “greater than” the reference value. *See Paulsen*, 30 F.3d at 1480.

The language of claims 14 and 15 does not require expressly that the constituent base material by itself has higher porosity than the material of the first and second panels. Patent Owner’s proposed interpretation also narrows the interpretation of “open cell construction,” that is analyzed above in Section II.B.

We find that the specification of the ’883 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a constituent material. Ex. 1047, 1:44–47. We also find that the ’883 patent states that “with reference to FIG. 5, the gusset 20 *may be formed* with the base material 30 being inherently significantly porous” (*id.* at 2:50–52) (emphasis added) and that the “porosity of the base material 30 *may be substantially greater* than the porosity of the material forming the first panel 16 and/or . . . the second panel 18” (*id.* at 2:58–61) (emphasis added).

We find that these portions of the ’883 patent contemplate embodiments in addition to ones encompassed by Patent Owner’s proposed interpretation. The specification also expressly states that open cell construction can be the embodiment of Figure 5 combined with other configurations. *See id.* at 2:22–23 (“open cell construction of the gusset 20 may be defined by various constructions”), 3:1–3 (“gusset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination”).

The prosecution history of the related ’134 patent indicates that a claim was amended to include “said open cell construction is formed by interlaced or spaced-apart strands” in response to what the Examiner believed was allowable subject matter in the dependent claims. *See* Ex. 1003, 45 (Claim 1 was amended to include “said open cell construction is formed by interlaced or spaced-apart strands.”), 49 (“By way of this amendment, Claim 1 has been amended to incorporate the allowable subject matter of Claim 2.”). However, the prosecution history does not indicate that Applicant intended the amendment to result necessarily in Patent Owner’s proposed interpretation for “said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel.” *See id.*

In view of our determinations above, the claim language, specification, and prosecution history do not provide a sufficiently persuasive reason for further specifying the “constituent material [], by itself, has substantially higher porosity than the material of the first and second panels” for the interpretation of “said open cell construction is

formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel."

Thus, based on the full record, we interpret "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel," as recited by claims 14 and 15, to mean that the open cell construction is formed by at least the porosity of the base material being greater than the porosity of the material of the first and second panels.

D. "said open cell construction being formed by strands defining a mesh configuration" (claim 18)

Patent Owner proposes interpreting "said open cell construction being formed by strands defining a mesh configuration" to mean "a construction in which open cells are defined by strands arranged in mesh configuration, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 43, 44; *see also id.* at 39–41 (arguing that open cell claim phrases should be construed separately). In support, Patent Owner cites the claim language, the specification (Ex. 1047, 2:20–35, Fig. 3), and declarant testimony (Ex. 2004 ¶¶ 126–128). *Id.* at 43. Patent Owner asserts that the "claim phrase is clearly directed to the Arranging Strands Embodiment (FIG. 3)." *Id.*

The language of claim 18 does not include expressly "such that the overall porosity is greater than the porosity of the constituent material itself." Also, this portion of Patent Owner's proposed interpretation is substantially included in the parties' agreed-to interpretation of "open cell construction," which we adopted, as discussed above in Section II.B. *See* Ex. 1047, 1:44–47 ("'open cell construction' as used herein refers to a

construction having *overall porosity greater than the inherent porosity of the constituent material*") (emphasis added).

We further find that the specification of the '883 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a constituent material (Ex. 1047, 1:44–47), and in certain embodiments, such as the one depicted in Figure 3, may be defined by interlaced or spaced-apart strands made of various materials and arranged randomly or in various patterns (*id.* at 2:15–31). The specification also associates open cell construction with venting or air exchange. *See, e.g.*, *id.* at 2:14–15, 4:34–36. The specification expressly states that open cell construction can be the embodiment of Figure 3 combined with other configurations. *See id.* at 2:22–23, 3:1–3.

Also, for the same reasons discussed above in Section II.C., we determine that the prosecution history of the related '134 patent does not indicate that Applicant intended the amendment to result necessarily in Patent Owner's proposed interpretation. *See* Ex. 1003, 45, 49. In view of our determinations above, the claim language, specification, and prosecution history of the related '134 patent do not provide a sufficiently persuasive reason for further specifying "such that the overall porosity is greater than the porosity of the constituent material itself" for the interpretation of "said open cell construction being formed by strands defining a mesh configuration."

Thus, based on the full record, we interpret "said open cell construction is formed by strands defining a mesh configuration," as recited by claim 18, to mean that the open cell construction is formed by at least strands defining a mesh configuration.

E. Other Terms

Petitioner proposes that the "broadest reasonable construction of 'gusset' is 'a generally vertically-oriented portion of a pillow between the top and bottom panels of a pillow to provide for enlargement or expansion of the pillow.'" Pet. 22 (citing Rhodes Decl. ¶ 82). In our Decision on Institution, we agreed with Patent Owner that claim 1 does not require the gusset to be "generally vertically-oriented" or that it "provide for enlargement or expansion." Dec. on Inst. 6; *see also* PO Resp. 37 ("[T]he Board decided that 'gusset' did not require an express interpretation."); Pet. Reply 2 ("The Board determined no construction was necessary.").

Patent Owner responds that "there is no need to construe the term" "[f]or purposes of this IPR proceeding." PO Resp. 37. "Petitioner also agrees express construction is unnecessary for this proceeding." Pet. Reply 2.

Based on the full record, we concur with the parties that an express interpretation for "gusset" is not necessary for determining whether Petitioner has demonstrated by a preponderance of the evidence that the challenge claims are unpatentable. *See Vivid Techs.*, 200 F.3d at 803. We also determine that express interpretation of any other claim term is not necessary. *See id.*

III. ANTICIPATION CHALLENGES

Petitioner contends that claims 1–4, 7–10, 13–15, 17, 18, and 20 are anticipated by Rasmussen (Ex. 1006) with citations to Rasmussen and the Rhodes Declaration. Pet. 17, 24–35, 37–50, 52–59. Patent Owner responds

to the alleged anticipation with citations to Rasmussen, the Parachuru Declaration, and other record evidence. PO Resp. 52–74.

To prevail in its anticipation challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). To anticipate a claim under 35 U.S.C. § 102, "a single prior art reference must expressly or inherently disclose each claim limitation." *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That "single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art." *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

Petitioner also argues that the claims of the '883 patent are not entitled to a priority date before June 22, 2012. Pet. 24. Petitioner argues that Rasmussen (Ex. 1006) is § 102(b) prior art, if the challenged claims are entitled only to a priority date of June 22, 2012. Petitioner alternatively argues that a provisional application (Ex. 1007, to which Rasmussen claims priority, *see* Ex. 1006, [30]) is § 102(e) prior art, if the challenged claims are entitled to the earlier priority date of June 22, 2011. Pet. 24. Petitioner, thus, provides parallel citations to Rasmussen and the provisional application, which Petitioner asserts is identical to Rasmussen. Pet. 24 n.1; Ex. 1057 (comparison of Rasmussen and its provisional).

As discussed below, the full record persuades us that Petitioner has proven by a preponderance of the evidence that claims 1–4, 7–10, 13–15, 17, 18, and 20 are anticipated by Rasmussen under 35 U.S.C. § 102(b) or § 102(e).

A. Rasmussen (Ex. 1006)

Rasmussen describes a "pillow assembly including a visco-elastic foam core and a cover having a top portion and a side portion that is more permeable than the top portion." Ex. 1006, [57]. Figure 1 of Rasmussen is reproduced below.

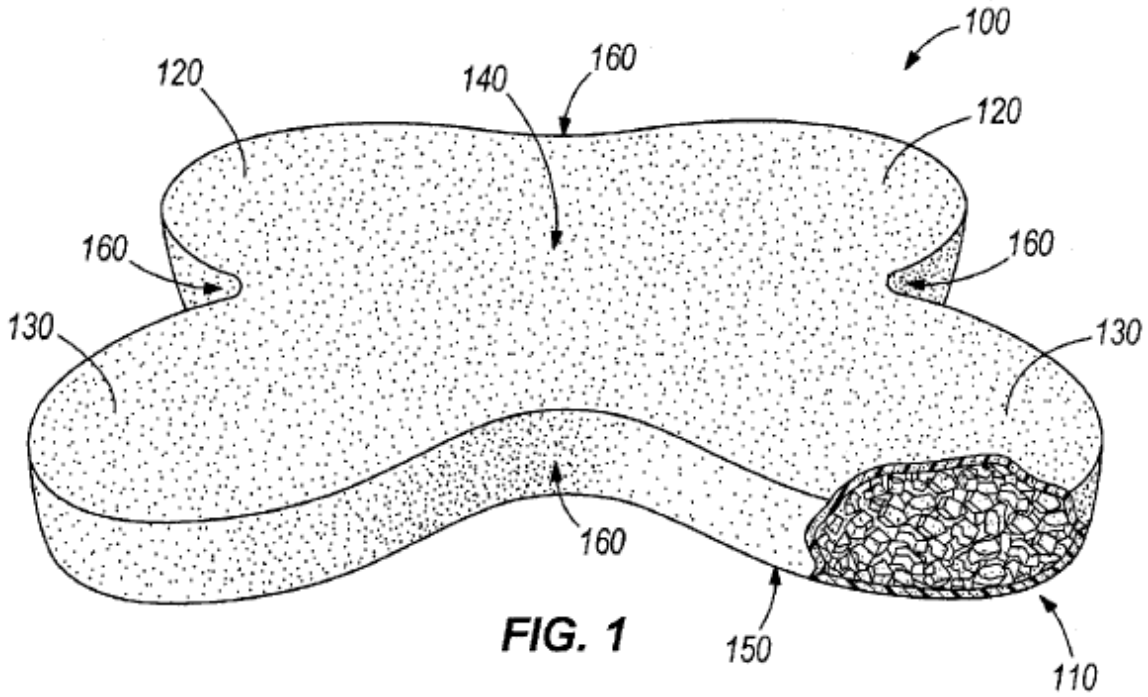


FIG. 1

Figure 1 shows a perspective view of a pillow with a portion of its cover removed to expose its core. Ex. 1006 ¶ 10. Pillow 100 includes core 110, and core 110 includes top layer 140, bottom layer 150, and sidewalls 160 connecting top layer 140 and bottom layer 150. *Id.* ¶¶ 14, 15.

Sidewalls 160 can be "highly porous, and therefore provide a significant degree of ventilation for the pillow," and "this capability is achieved through use of a 3D textile core sidewall 160." *Id.* ¶ 29. Top layer 140, bottom layer 150, and sidewalls 160 define cavity 170 that receives filler material 180. *Id.* ¶ 15, Fig. 2. "[F]iller material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam" with

"hardness . . . for desirable softness and body-conforming qualities." *Id.* ¶¶ 19, 30.

Pillow 100 can include a rib where top layer 140 and sidewall 160 "meet and are joined." *Id.* ¶ 15. According to Rasmussen,

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Id. ¶ 18.

The "core can be enclosed within a cover having highly porous sides." *Id.* ¶ 6. Cover 190 includes top portion 200, bottom portion 210, and side portions 220. *Id.* ¶ 48. Top portion 200 "can be less porous than the side portions 220 or the bottom portion 210 of the cover 190." *Id.* ¶ 50. Side portions 220 "can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material) . . . and covering the highly porous material of the core sidewalls 160." *Id.* ¶ 49. "[S]ide portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow." *Id.* "Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [and] a cotton/polyester blend." *Id.* ¶ 52.

"[C]over 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." *Id.*

For embodiments "in which reticulated or non-reticulated visco-elastic foam is used to construct portions of the core (e.g., the top layer 140, the bottom layer 150, and/or the filler material 180), the pillow 100 provides a soft and comfortable surface for a user's body" and "can also conform to a user's body, thereby distributing the force applied by the user's body upon the top layer 140." *Id.* ¶ 46. The "use of reticulated foam can also enhance the ability of the pillow 100 to wick moisture away from the user's body thereon." *Id.* ¶ 22.

B. Independent Claim 1

Petitioner states that "Rasmussen anticipates claim 1 both by virtue of: i) its 'core' structure, including top layer 140, bottom layer 150, and sidewalls 160, as well as, separately and independently, by virtue of ii) its pillow 'cover' structure, including top portion 200, bottom portion 210, and side portions 220." Pet. 29; *see also id.* at 25–29 (asserting what Rasmussen discloses).

1. Challenge Based on the Core of Rasmussen

In its description of Rasmussen, Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 26.

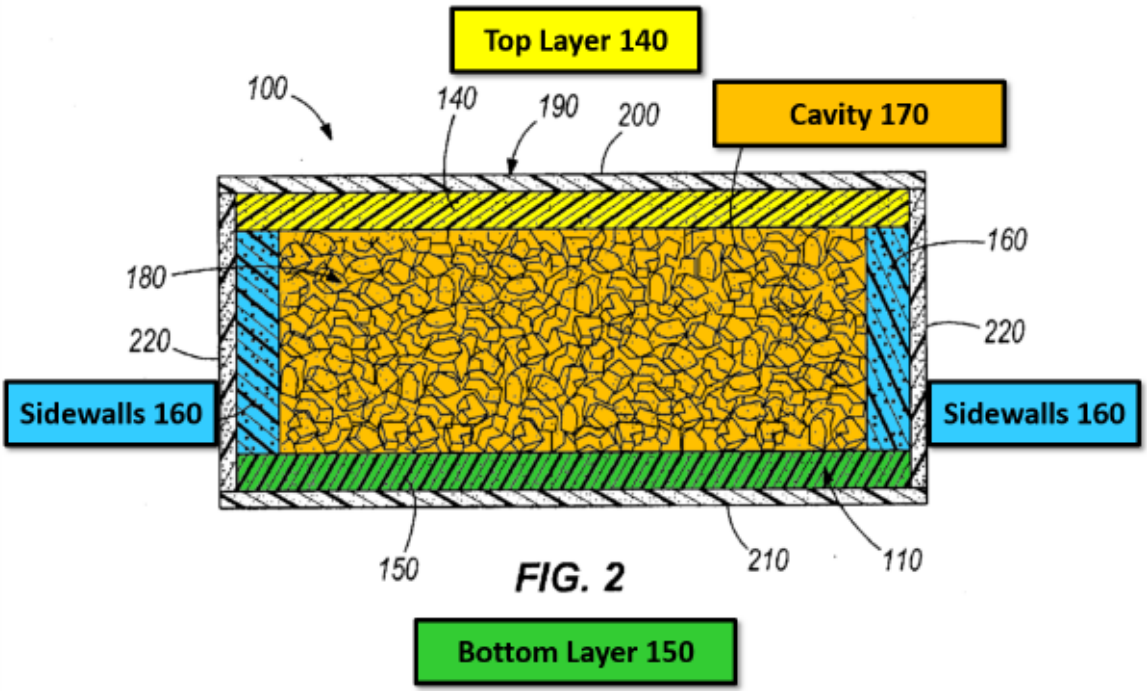


FIG. 2

The annotated Figure 2 from Rasmussen illustrates the components of core 110. *Id.*

a. Uncontested Limitations

Petitioner argues that Rasmussen discloses pillow 100 comprising "a first panel having an edge defining a perimeter," "a second panel having an edge defining a perimeter," and "a gusset joining said first and second panels." Pet. 29–30 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2; Rhodes Decl. ¶¶ 106–107). Patent Owner does not present arguments addressing these limitations of claim 1. *See* PO Resp. 50–74.

We find that the cited portions of Rasmussen disclose and depict that "core 110 of the illustrated pillow 100 includes a top layer 140, a bottom layer 150 opposite the top layer 140, and sidewalls 160 connecting the top layer 140 and the bottom layer 150." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2; *see also* Pet. 29–30 (citing *id.*). In particular, we find that

top layer 140 of Rasmussen discloses "a first panel having an edge defining a perimeter," bottom layer 150 of Rasmussen discloses "a second panel having an edge defining a perimeter," and Rasmussen's sidewall 160 connecting the top and bottom layers 140, 150 discloses "a gusset joining said first and second panels." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Petitioner argues that Rasmussen discloses "wherein inner surfaces of said first panel, said second panel and said gusset define an inner cavity." Pet. 32 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2). We find that Petitioner's citations to Rasmussen disclose and depict that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180" and thus disclose "wherein inner surfaces of said first panel, said second panel and said gusset define an inner cavity." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

b. "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset"

Petitioner argues that Rasmussen discloses "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset." Pet. 32–33 (citing Ex. 1006 ¶¶ 8, 15, 19–24, 29, Figs. 1, 2; Ex. 1007 ¶¶ 15–20, 25, Figs. 1, 2; Rhodes Decl. ¶¶ 108–109).

We find that Petitioner's citations to Rasmussen disclose that the "side layer is more permeable than the top layer and the bottom layer" (Ex. 1006 ¶ 8), "the top layer 140 and/or bottom layer 150 comprises visco-elastic foam (sometimes referred to as 'memory foam' or 'low resilience foam')" (Ex. 1006 ¶ 19; Ex. 1007 ¶ 15), "significant advantages are achieved by

utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150" (Ex. 1006 ¶ 22; Ex. 1007 ¶ 18), "reticulated foam can provide significantly increased ventilation for the top and/or bottom layer 140, 150" (Ex. 1006 ¶ 15; Ex. 1007 ¶ 18), and "the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" (Ex. 1006 ¶ 29; Ex. 1007 ¶ 25). We, thus, find that reticulated visco-elastic foam top and bottom layers 140, 150 that provide increased ventilation and highly porous sidewalls 160 that allow air to move through the sides of pillow 100 disclose "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset."

Patent Owner responds that Rasmussen does not disclose the limitation "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset." PO Resp. 68. Patent Owner argues that "[n]owhere does Petitioner point to any evidence to support that Rasmussen's pillow enables the air which enters the pillow through either panel to then exit through the gusset," "Petitioner erroneously asserts that the claim merely requires air to enter and exit through both the panels and the gusset," and Petitioner "never attempts to make any connection with respect to the direction of the airflow through the inner cavity (i.e., into one of the panels and out of the gusset)." *Id.* at 69 (citing Pet. 33; Parachuru Decl. ¶¶ 190–193).

Patent Owner also argues that, under Petitioner's anticipation challenge based on Rasmussen's core, the cited portions, at best, "teaches that air flows through Rasmussen's top and bottom layer (i.e., the asserted panels) – with no mention whatsoever of the side layer (i.e., the asserted gusset)" or "teaches airflow into, through, and out of Rasmussen's side layer (i.e., asserted gusset) – with no mention of Rasmussen's top or bottom layers (i.e., the asserted panels)." *Id.* at 69–70 (citing Pet. 32–34; Parachuru Decl. ¶¶ 194–195).

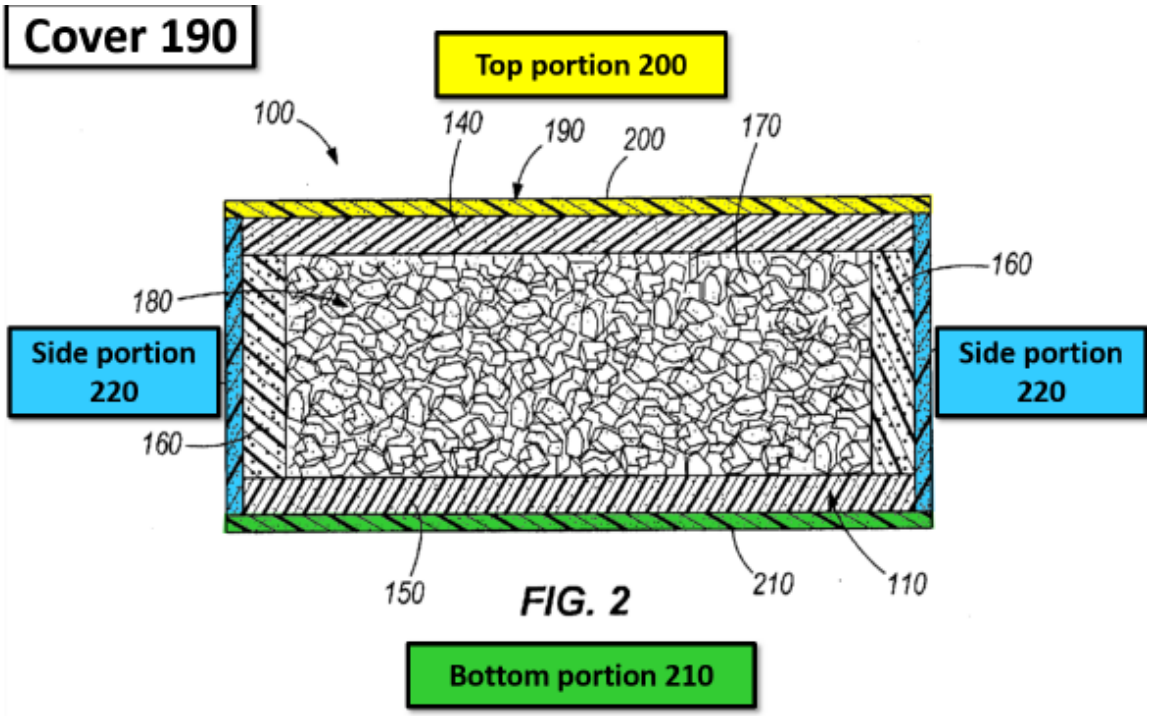
As discussed above, we find that Rasmussen discloses a pillow with top and bottom layers 140, 150 that provide increased ventilation and sidewalls 160 that allow air to enter and exit the pillow. Also, as discussed in Section II.A., we agreed with Patent Owner that "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" does not restrict air entering through another structure, such as the gusset, and does not address air exiting through other structures, such as the panel. *See* PO Resp. 47. We also determined that this limitation requires "at least some air which enters through the panels" exits through the gusset alone or in combination with another structure. In view of this interpretation of "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," we are persuaded that Petitioner sufficiently shows that Rasmussen discloses "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," as recited by claim 1. We also note that claim 1 is an apparatus claim, and Petitioner has

shown sufficiently that the structures disclosed by Rasmussen are so configured.

Thus, based on the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

Separate and independent of its arguments based on core 110, Petitioner also contends that Rasmussen's cover 190 with top portion 200, bottom portion 210, and side portions 220 discloses the limitations of claim 1. Pet. 29; *see also id.* at 25–29 (asserting what Rasmussen discloses). In its description of Rasmussen, Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 27.



The annotated Figure 2 from Rasmussen illustrates components of cover 190. *Id.* at 27.

a. Uncontested Limitations

Petitioner argues that Rasmussen discloses pillow 100 comprising "a first panel having an edge defining a perimeter," "a second panel having an edge defining a perimeter," and "a gusset joining said first and second panels." Pet. 30–31 (citing Ex. 1006 ¶¶ 48, 52, Figs. 1, 2; Ex. 1007 ¶¶ 44, 48, Figs. 1, 2; Rhodes Decl. ¶¶ 106–107). Patent Owner does not present arguments addressing these limitations of claim 1. *See* PO Resp. 50–74.

We find that the cited portions of Rasmussen disclose and depict that "pillow 100 can have a cover 190 substantially enclosing the pillow 100" and that "cover 190 can include a top portion 200, a bottom portion 210 opposite the top portion 200, and side portions 220 extending between the top portion 200 and the bottom portion 210." Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2; *see also* Pet. 30–31 (citing *id.*). In particular, we find that top portion 200 of Rasmussen discloses "a first panel having an edge defining a perimeter," bottom portion 210 of Rasmussen discloses "a second panel having an edge defining a perimeter," and Rasmussen's side portions 220 extending between top and bottom portions 200, 210 discloses "a gusset joining said first and second panels." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Petitioner argues that the inner surfaces of top portion 200, bottom portion 210, and side portions 220 define an inner cavity. Pet. 33–34 (citing Ex. 1006 ¶ 48, Fig. 2; Ex. 1007 ¶ 44, Fig. 2). We find that Petitioner's citations to Rasmussen disclose and depict "wherein inner surfaces of said

first panel, said second panel and said gusset define an inner cavity." Ex. 1006 ¶ 48, Fig. 2; Ex. 1007 ¶ 44, Fig. 2.

b. "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset"

Petitioner argues that Rasmussen discloses "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset." Pet. 34–35 (citing Ex. 1006 ¶¶ 6, 49, 50, Fig. 2, claims 11–12; Ex. 1007 ¶¶ 5, 45, 46, Fig. 2; Rhodes Decl. ¶¶ 111–112).

We find that Petitioner's citations to Rasmussen disclose that "the core can be enclosed within a cover having highly porous sides" (Ex. 1006 ¶ 6; Ex. 1007 ¶ 5), "the top of the cover can be less porous than the sides or bottom of the cover" (Ex. 1006 ¶ 6; Ex. 1007 ¶ 5), "the top and bottom of the cover are less porous than the sides of the cover" (Ex. 1006 ¶ 6; Ex. 1007 ¶ 5), "side portions 220 of the cover 190 can be highly porous" (Ex. 1006 ¶ 49; Ex. 1007 ¶ 45), "the bottom portion 210 of the cover 190 can also be highly porous" (Ex. 1006 ¶ 49; Ex. 1007 ¶ 45), and "the side portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow" (Ex. 1006 ¶ 49; Ex. 1007 ¶ 45). We, thus, find that less porous top and bottom portions 200, 210 and highly porous side portions 220 that permit significant ventilation of Rasmussen's pillow disclose "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset."

Patent Owner responds that Rasmussen does not disclose the limitation because "[n]owhere does Petitioner point to any evidence to support that Rasmussen's pillow enables the air which enters the pillow

through either panel to then exit through the gusset," "Petitioner erroneously asserts that the claim merely requires air to enter and exit through both the panels and the gusset," and Petitioner "never attempts to make any connection with respect to the direction of the airflow through the inner cavity (i.e., into one of the panels and out of the gusset)." PO Resp. 68–69 (citing Pet. 33; Parachuru Decl. ¶¶ 190–193).

Patent Owner also argues that, under Petitioner's anticipation challenge based on Rasmussen's cover, "the cited portions of Rasmussen only mention 'ventilation into and out of the pillow' through the side portions (i.e., the asserted gusset)" and "lack[] any discussion whatsoever with respect to any airflow into or out of the top or bottom portions (i.e., the asserted panels)." *Id.* at 70 (citing Pet. 32–36; Parachuru Decl. ¶¶ 196–197).

As discussed above, we find that Rasmussen discloses a pillow with less porous top and bottom portions 200, 210 and highly porous side portions 220 that permit significant ventilation. Also, as discussed in Section II.A., we agreed with Patent Owner that "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" does not restrict air entering through another structure, such as the gusset, and does not address air exiting through other structures, such as the panel. *See* PO Resp. 47. We also determined that this limitation requires "at least some air which enters through the panels" exits through the gusset alone or in combination with another structure. In view of this interpretation, we are persuaded that Petitioner sufficiently shows that Rasmussen discloses "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," as recited

by claim 1. We also note that claim 1 is an apparatus claim, and Petitioner has shown sufficiently that the structures disclosed by Rasmussen are so configured.

Thus, based on the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its cover.

C. Dependent Claims 2 and 3

Claims 2 and 3 depend from claim 1. Ex. 1047, 5:34–43. For the reasons discussed above in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its core and its cover.

Claim 2 recites:

> a first end of said gusset engages said edge of said first panel such that said gusset extends continuously about an entire portion of the perimeter of the first panel; and
>
> a second end of said gusset opposite said first end engages said edge of said second panel such that said gusset extends continuously about an entire portion of the perimeter of the second panel.

Ex. 1047, 5:34–41. Claim 3 recites "wherein said gusset permetrically bounds said first and second panels." *Id.* at 5:42–43.

Petitioner argues that the core of Rasmussen discloses claims 2 and 3. Pet. 37–39, 41 (citing Ex. 1006, Figs. 1, 2; Rhodes Decl. ¶¶ 114–118). Petitioner also argues that the cover of Rasmussen discloses claims 2 and 3. Pet. 39–41 (citing Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44; Rhodes Decl. ¶¶ 114–118).

We find that Figures 1 and 2 show sidewall 160 of core 110 joined to top and bottom layers 140, 150 and side portion 220 of cover 190 joined to top and bottom portions 200, 210. As discussed above in connection with claim 1, we find that Rasmussen discloses "sidewalls 160 connecting the top layer 140 and the bottom layer 150" and that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15; Ex. 1007 ¶ 18. We also find that "side portions 220 extend[] between the top portion 200 and the bottom portion 210" and that the inner surfaces of top portion 200, bottom portion 210, and side portions 220 define an inner cavity. Ex. 1006 ¶ 48; Ex. 1007 ¶ 44. We also credit the testimony of Petitioner's declarant that "Rasmussen teaches all of the limitations of claims 2–3." Rhodes Decl. ¶ 114; *see also* Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow").

Patent Owner responds, for claims 2 and 3, that Rasmussen does not disclose that "the sidewalls of Rasmussen's core or the side portions of Rasmussen's cover 'perimetrically bound' the corresponding top and bottom layers/portions." PO Resp. 72–73 (citing Pet. 37–41; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶¶ 15, 48; Ex. 1007 ¶¶ 18, 44; Rhodes Decl. ¶ 114) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 2 and 3 in its challenge based on the core and its challenge based on the cover.

D. Dependent Claims 14 and 15

Claim 14 depends from claim 1 and recites "wherein said gusset is formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel." Ex. 1047, 6:21–26.

Claim 15 depends from claim 1 and recites "wherein said gusset is formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel." *Id.* at 6:27–32; *see also* Pet. 51 ("Claims 14 and 15 are identical.").

Petitioner contends that Rasmussen describes sidewalls 160 and side portion 220 can be formed of a "highly porous" material, such as "3D textile material," which is 3D spacer fabric. Pet. 52–53 (citing Ex. 1006 ¶¶ 8, 29, 49, 50, Fig. 2, claims 11, 12; Ex. 1007 ¶¶ 25, 45, 46, Fig. 2; Rhodes Decl. ¶¶ 144–147). We find that Rasmussen discloses highly porous sidewall 160 and side portion 220. Ex. 1006 ¶¶ 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant

degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through use of a 3D textile core sidewall 160"), 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶¶ 25, 45, 46 (disclosing the same).

Patent Owner responds Rasmussen does not disclose the limitation of an "open cell construction . . . formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel." PO Resp. 66–67. Patent Owner argues that, under either of Petitioner's interpretations of Rasmussen, it teaches at best that Petitioner's alleged gusset "as a whole" is more porous than the alleged panels, not that the base material of the alleged gusset is more porous than the materials of the alleged panels. *Id.* at 67–68 (citing Pet. 46; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). According to Patent Owner, "even if the alleged gusset in Rasmussen is more porous than the first and second panels, it is not necessary (and thus not inherent) for the gusset base material to be of a greater porosity than the material forming the first and second panels." *Id.* at 68. Patent Owner additionally asserts that Rasmussen's generic reference to 3D textiles is not enabling and cannot anticipate the claims. *Id.*

The portions of Rasmussen cited in the Petition, however, disclose that the "side layer is more permeable than the top layer and the bottom layer" and that "highly porous" sidewalls 160 allow air to enter and exit its sides "achieved through use of a 3D textile core sidewall 160." Pet. 52–53

(citing Ex. 1006 ¶ 29; Ex. 1007 ¶ 25). In connection with "3D textile," Rasmussen states that the "sides of the core can be defined by highly porous material (such as a 3D textile material)." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We, therefore, find that Rasmussen discloses that the 3D textile making up its sidewalls 160 has a greater porosity than the material forming top and bottom layers 140, 150.

Petitioner also shows sufficiently that Rasmussen discloses that the material of the side portions 220 has a greater porosity than the material of its top and bottom portions 200, 210. *See also* Ex. 1006 ¶ 6; Ex. 1007 ¶ 5 (disclosing "highly porous material (such as a 3D textile material)").

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates claims 14 and 15 based on disclosures related to both its core and cover.

E. Dependent Claim 17

Claim 17 depends from claim 1 and recites "wherein at least one of said first panel and said second panel comprise a material selected from a group consisting of: a 100% polyester fabric, rayon, nylon, or a spandex-blend fabric. Ex. 1047, 6:36–39.

Petitioner argues that Rasmussen describes that its top and bottom portions of its cover 190 can comprise "polyester." Pet. 54–55 (citing Ex. 1006 ¶¶ 50–52; Ex. 1007 ¶¶ 46–48). As discussed above in Section III.B.2.b., we determine that Rasmussen's less porous top and bottom portions 200, 210 and highly porous side portions 220 that permit significant ventilation of its pillow disclose "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," as recited by

claim 1. We also find that Rasmussen discloses that at least one of the components of its cover 190 can be polyester. Ex. 1006 ¶ 52; Ex. 1007 ¶ 48 ("Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester, a cotton/polyester blend.").

Patent Owner responds that Petitioner relies on properties of Rasmussen's original materials for independent claim 1 but for claim 17, relies on an alternative to those materials. PO Resp. 71–72 (citing Pet. 32–36; Ex. 1006 ¶ 52). As described above in Section III.B.2.b., Petitioner does not rely on a particular material for claim 1 for its challenge based on the cover of Rasmussen.

Thus, in view of the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 17 based on disclosures related to its cover.

F. Dependent Claim 18

Claim 18 depends from claim 1 and recites "wherein said gusset is formed of an open cell construction, said open cell construction being formed by strands defining a mesh configuration." Ex. 1047, 6:40–42.

Petitioner contends that Rasmussen's description of "highly porous" and "3D textile materials" for sidewall 160 of core 110 and for side portions 220 of cover 190 discloses "strands defining a mesh configuration." Pet. 55–56 (citing Ex. 1041; Rhodes Decl. ¶¶ 155–156). Petitioner's declarant cites Rasmussen for support. Rhodes Decl. ¶ 155 (Ex. 1006 ¶¶ 29, 49, 50; Ex. 1007 ¶¶ 25, 45, 46).

We find that the cited portions of Rasmussen disclose that "pillow 100 is provided with sidewalls 160 that are highly porous . . . achieved through

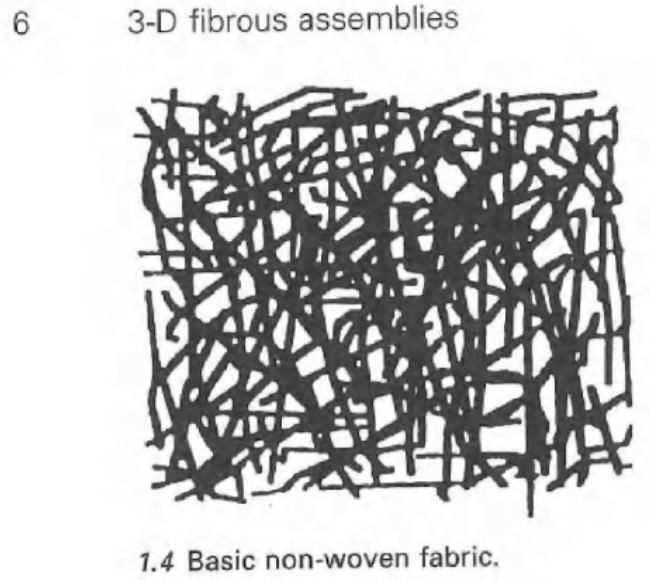
use of a 3D textile core sidewall 160" (Ex. 1006 ¶ 29), "side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material), corresponding to and covering the highly porous material of the core sidewalls 160" (*id.* ¶ 49), and "the top portion 200 and bottom portion 210 of the cover 190 are less porous than the side portions 220 of the cover 190" (*id.* ¶ 50). *See also* Ex. 1007 ¶¶ 25, 45, 46 (disclosing the same). Petitioner's declarant also states that "the term '3D spacer fabric' and simply 'spacer fabric' were often referred to and used interchangeably as '3D textile structure' and as '3-dimensional fabric.'" Rhodes Decl. ¶ 125; *see also id.* ¶ 155 (referring to ¶ 125).

In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.B., we determine that "highly porous" sidewalls 160 and side portions 220 of Rasmussen disclose "said gusset formed of an open cell construction," as recited by claim 18. Ex. 1006 ¶¶ 29, 49; Ex. 1007 ¶¶ 25, 45.

Also, as determined above in Section II.D., we interpret "said open cell construction is formed by strands defining a mesh configuration" to mean that the open cell construction is formed by at least strands defining a mesh configuration. For the reasons below, we determine that sidewalls 160 and side portions 220 made of "3D textile" disclose "said open cell construction being formed by strands defining a mesh configuration," as recited by claim 18. Ex. 1006 ¶¶ 29, 49; Ex. 1007 ¶¶ 25, 45.

Patent Owner states that the "building block of textiles is the fiber(s)" (PO Resp. 4), "fibers can then be 'spun' into yarn to create various textiles"

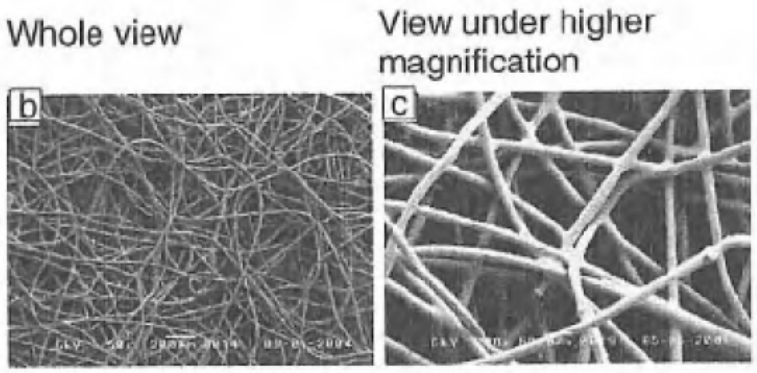
(*id.*), "there are four primary techniques for constructing fabrics, namely: weaving, knitting, braiding, and nonwoven manufacturing" (*id.* at 11), "[s]tandard weaving used two perpendicular yarn sets" (*id.*), "knitting is characterized by rows and columns of interconnected yarn loops" (*id.*), "[b]raiding can use a single yarn set, wherein two oriented braiders are intertwined/interlaced with each other" (*id.* at 11–12), and "non-wovens use fibers, rather than yarns" (*id.* at 12). Reproduced below is a figure of non-woven fabric that Patent Owner provides.



The figure shows "[b]asic non-woven fabric." PO Resp. 12 (citing Ex. 2007, 6). Thus, the parties agree that a fabric or textile material would include strands. *See also* Ex. 2016, 27:12–13 ("A fabric in its most generic description would be a textile."), 27:18–19 (In response to "are there differences between a fabric and a textile," Petitioner's declarant answers "I would say that the terms are largely synonymous.").

Patent Owner also states that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity a wide array of different 3-D textiles can be created." PO

Resp. 12. Patent Owner provides examples of 3D textiles, all of which include strands in a "mesh configuration." *See* PO Resp. 13–27; Parachuru Decl. ¶¶ 75–90. For example, reproduced below is a figure of 3-D non-woven structures that Patent Owner provides.



1.22 Examples of 3-D non-woven structures.

The figures shows "[e]xamples of 3-D non-woven structures." PO Resp. 24 (citing Ex. 2007, 26).

Both parties also agree that highly porous textiles have spaced-apart strands. PO Resp. 26 ("The tightness of the 3D structure itself can also impact the overall porosity. Tighter structures tend to have lower porosity because there is less space between the yarns forming the structure."); Rhodes Decl. ¶ 155 ("The pores between the network of interlaced strands in the 3D textile that make it highly porous would be understood to skilled artisans to provide a breathable/porous mesh configuration."); Parachuru Decl. ¶ 93 ("Similarly, loose structures tend to have higher porosity due to the increased space between the yarns forming the structure."). Thus, we find that Rasmussen's "highly porous" "3D textile material" discloses "said open cell construction being formed by strands defining a mesh configuration," as recited by claim 18.

Patent Owner responds that Rasmussen does not disclose expressly an open cell construction formed by "strands defining a mesh configuration," as recited by claim 18. PO Resp. 52–53; *see also id.* at 53–54 (describing the disclosure of the '883 patent) (citing Ex. 1001, 2:21–24). According to Patent Owner, Petitioner's declarant admitted that Rasmussen does not disclose the open cell construction of claim 18. *Id.* at 53 (citing Ex. 2016, 76:17–78:7). Patent Owner also argues that Rasmussen's "3D textile material" or "highly porous 3D textiles" are broad terms that encompass many different types of material and fall short of demonstrating that Rasmussen discloses the specific claimed structure of claim 18. *Id.* at 54. For the reasons stated above, we find that Rasmussen discloses "strands defining a mesh configuration."

Patent Owner also responds that "Petitioner never argues that 'mesh' strand structure are *inherent* from Rasmussen's disclosure of 3-D textiles." PO Resp. 54. Patent Owner states that "both parties' experts acknowledge that 3D textiles, as well as highly porous 3D textiles, can have multiple possible configurations other than the ones recited in the claims," and thus, Rasmussen does not disclose inherently the claimed structures. *Id.* at 55–56 (citing Parachuru Decl. ¶¶ 67–73, 92–94, 158–162; Ex. 2016, 15:23–16:7, 31:21–32:6, 36:3–7, 36:14–18, 37:7–21, 49:4–12, 50:15–51:12, 52:19–53:3, 123:7–23, 135:23–136:24). Based on both parties' evidence and arguments, we find that Rasmussen discloses "strands defining a mesh configuration."

Patent Owner further responds that Rasmussen's generic reference to 3D textiles does not disclose sufficiently the species set forth in claim 18. PO Resp. 56. Patent Owner argues that both parties' experts agree that "3D textiles" is a broad genus that covers an exponential number of materials.

Id. at 58–59 (citing Parachuru Decl. ¶¶ 91–94; Ex. 2016, 31:21–32:6, 37:7–21). The cited portions of the deposition of Ms. Rhodes relate to different techniques to make three dimensional textile (Ex. 2016, 31:21–32:6) and different types of 3D spacer fabrics (*id.* at 37:7–21). As discussed above, we find that the record indicates Rasmussen's "3D textile" anticipates claim 18.

Patent Owner also argues that the claimed structures "result from . . . modifying or transforming a constituent base material," and Rasmussen provides no guidance regarding how to transform constituent materials to arrive at the claimed structures. PO Resp. 60 (citing Parachuru Decl. ¶ 153). Our interpretation of the limitations of claim 18 does not require modifying or transforming a constituent base material.

Patent Owner additionally responds that Rasmussen's generic disclosure does not enable the specific, claimed species, and thus, does not anticipate claim 18. PO Resp. 59, 66. Specifically, Patent Owner argues that Rasmussen discloses "3D textiles," which undisputedly encompasses an exponential number of materials and "is completely devoid of any discussion of any particular species within such a broad genus." *Id.* at 59. Patent Owner further argues that undue experimentation would be required to arrive at the claimed structure and one of ordinary skill in the art would not be motivated to try based on Rasmussen's generic disclosure. *Id.* at 60–61. Patent Owner notes that Rasmussen never issued as a patent in any country and is not entitled to a presumption of enablement. *Id.* at 61. Patent Owner contends that, even if presumed to be enabling, the presumption can be overcome when a patentee provides persuasive evidence of nonenablement. *Id.* Patent Owner argues that "Petitioner's conclusory assertion that one of skill in the art could arrive at Patent Owner's claimed

invention without undue experimentation falls far short of meeting its burden." *Id.* at 70 (citing Pet. 36). For the reasons discussed above, we find that the record indicates "3D textile" is an "open cell construction being formed by strands defining a mesh configuration" and thus, enablement arguments are not persuasive.

Patent Owner contends that Rasmussen does not disclose 3D spacer fabric, which is disclosed in the '883 patent as a preferred type of gusset material. PO Resp. 61–63; Ex. 1047, 2:52–54. Patent Owner, however, responds to Petitioner's contention for claims 14 and 15, not claim 18. *See id.* at 61 (citing Pet. 53); Pet. 53 (arguing claims 14 and 15 are anticipated by Rasmussen).

In view of our determinations for claims 14 and 15 discussed above, considering these additional arguments for those claims does not affect our conclusion that claims 14 and 15 are anticipated by Rasmussen. Considering Patent Owner's arguments for claim 18, we find that, for the reasons stated above, Rasmussen's "3D textile" discloses an "open cell construction being formed by strands defining a mesh configuration."

Relying on its proposed interpretation of "said open cell construction being formed by strands defining a mesh configuration," Patent Owner argues that Rasmussen does not disclose open cells defined by "strands defining a mesh configuration," as required by claim 18. PO Resp. 63–64 (citing Parachuru Decl. ¶¶ 154–155). Patent Owner argues that "3D textile material" would not be understood to have such a structure, as asserted by Petitioner and Petitioner's declarant. *Id.* at 64 (citing Pet. 56; Rhodes Decl. ¶ 159). Patent Owner also argues that Petitioner does not indicate where Rasmussen teaches such open cell construction. *Id.* at 65–66 (citing Pet. 56;

Rhodes Decl. ¶¶ 155–156). Patent Owner further contends that Petitioner's analysis renders claim limitations meaningless. *Id.* at 66 (citing Parachuru Decl. ¶ 161). For the reasons stated above, we are persuaded that Petitioner sufficiently shows that Rasmussen discloses "strands defining a mesh configuration" and does not render the claim limitation meaningless.

G. Dependent Claim 20

Claim 20 depends from claim 1 and recites "wherein said inner cavity is filled with a fill material configured to facilitate support of said pillow in a specific position of sleep." Ex. 1047, 6:47–49.

Petitioner argues that "as long as the fill of the pillow is configured to provide support for *any* position of sleep, then claim 20 is satisfied." Pet. 57. Petitioner also refers to the lobed shape and portions made of foam. *Id.* at 57–58 (citing Ex. 1006 ¶¶ 14, 46, 47; Ex. 1007 ¶¶ 10, 42, 43; Rhodes Decl. ¶¶ 159, 160).

In our analysis of claim 1, we find that Rasmussen discloses that "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180" and "pillow 100 can have a cover 190 substantially enclosing the pillow 100." Ex. 1006 ¶¶ 15, 48, Figs. 1, 2; Ex. 1007 ¶¶ 10, 42, Figs. 1, 2. We also find that Rasmussen discloses that "in those embodiments . . . in which reticulated or non-reticulated visco-elastic foam is used to construct portions of the core (e.g., the top layer 140, the bottom layer 150, and/or the filler material 180), the pillow 100 provides a soft and comfortable surface for a user's body" and "can also conform to a user's body, thereby distributing the force applied by the user's body upon the top layer 140." Ex. 1006 ¶ 46; Ex. 1007 ¶ 43. We, therefore, find that

Rasmussen discloses "wherein said inner cavity is filled with a fill material configured to facilitate support of said pillow in a specific position of sleep."

In particular, for "fill material configured to facilitate support of said pillow in a specific position of sleep," we find that Rasmussen discloses "in those embodiments . . . in which reticulated or non-reticulated visco-elastic foam is used to construct portions of the core (e.g., . . . the filler material 180), the pillow 100 provides a soft and comfortable surface for a user's body" and "can also conform to a user's body." Ex. 1006 ¶ 46; Ex. 1007 ¶ 43

Patent Owner responds that "Rasmussen at best describes shaping or molding the entire pillow to support a sleep position," "does not teach configuring the fill material to facilitate support of said pillow in a specific position of sleep," and "discloses shaping the exterior of the pillow, rather than the fill." PO Resp. 73–74 (citing Parachuru Decl. ¶¶ 198–199). In view of our findings above, Petitioner persuades us by a preponderance of the evidence that the fill material of Rasmussen by providing a soft surface for and conforming to a user's body is configured to facilitate support of its pillow in a specific position of sleep.

Accordingly, we determine that Petitioner carries its burden of showing by a preponderance of the evidence that claim 20 is anticipated by Rasmussen based on its disclosures related to its core and cover.

H. Dependent Claims 4, 7–10, and 13

1. Challenge Based on the Core of Rasmussen

Claims 4, 7, and 8 depend from claim 1. Ex. 1047, 5:44–45, 6:1–5. For the reasons discussed above in Section III.B.1., the record persuades us

that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its core.

Petitioner argues that Rasmussen discloses "wherein said gusset is formed of an open cell construction," as recited by claim 4. Pet. 41–42 (citing Ex. 1006 ¶¶ 29, 49; Ex. 1007 ¶¶ 25, 45; Rhodes Decl. ¶¶ 121–123). We find that a cited portion of Rasmussen teaches "pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through use of a 3D textile core sidewall 160." Ex. 1006 ¶ 29; Ex. 1007 ¶ 25. In view of our interpretation of "open cell construction" as "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," we find that Rasmussen's highly porous sidewalls 160 disclose claim 4.

Petitioner argues that Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 7. Pet. 44–45 (citing Ex. 1006 ¶¶ 22, 24; Ex. 1007 ¶¶ 18, 20; Rhodes Decl. ¶ 130). We find that a cited portion of Rasmussen teaches "advantages are achieved by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 of the pillow" and "use of reticulated foam can also enhance the ability of the pillow 100 to wick moisture away from the user's body thereon." Ex. 1006 ¶ 22; Ex. 1007 ¶ 18.

Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover," as recited by claim 8. Pet. 45–46 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2;

Rhodes Decl. ¶ 133). We find that the cited portions of Rasmussen teach and depict that "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Claims 9 and 10 depend from claim 8. Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as recited by claim 9. Pet. 48 (citing Ex. 1006 ¶ 18; Ex. 1007 ¶ 14; Rhodes Decl. ¶ 139). We find that the cited portion of Rasmussen teaches

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Ex. 1006 ¶ 18; Ex. 1007 ¶ 14.

Petitioner argues that Rasmussen discloses "wherein said fill material comprises a compliant material," as recited by claim 10. Pet. 46 (citing Ex. 1006 ¶¶ 19, 30–45; Ex. 1007 ¶¶ 15, 26–41; Rhodes Decl. ¶¶ 134–135). We find that the cited portions teach that "visco-elastic foam . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

Patent Owner responds that, "[b]ecause dependent claims 2–20 include all the limitations of base independent claim 1, Rasmussen also does

not anticipate these claims for at least the same reasons above." PO Resp. 74; *see also* Pet. Reply 10 (stating "PO makes no separate arguments regarding dependent claims 4, 7–10, and 13, which are, therefore, also anticipated, for the reasons identified in the Petition."). For the reasons stated in Section III.B.1., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its core.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 4 and 7–10 are anticipated by Rasmussen based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

For the reasons discussed above in Section III.B.2., we are persuaded the Petitioner meets its burden of showing by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its cover.

Petitioner argues that Rasmussen discloses "wherein said gusset is formed of an open cell construction," as recited by claim 4. Pet. 41–42 (citing Ex. 1006 ¶¶ 29, 49; Ex. 1007 ¶¶ 25, 45; Rhodes Decl. ¶¶ 121–123). We find that a cited portion of Rasmussen teaches "side portions 220 of the cover 190 can be highly porous," "the bottom portion 210 of the cover 190 can also be highly porous," and "the side portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow." Ex. 1006 ¶ 49; Ex. 1007 ¶ 45. In view of our interpretation of "open cell construction" as "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," we find that Rasmussen's highly porous side portions 220 disclose claim 4.

Petitioner argues that Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 7. Pet. 44 (citing Ex. 1006 ¶¶ 50, 52; Ex. 1007 ¶¶ 46, 48; Rhodes Decl. ¶¶ 128–129). We find that the cited portions of Rasmussen teach "[a]lternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [or] a cotton/polyester blend," a moisture wicking material. Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶ 129.

Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover," as recited by claim 8. Pet. 46–47 (citing 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2; Rhodes Decl. ¶ 136). We find that the cited portions of Rasmussen teach and depict "wherein inner surfaces of said first panel, said second panel and said gusset define an inner cavity." Ex. 1006 ¶ 48, Fig. 2; Ex. 1007 ¶ 44, Fig. 2. As discussed above for the challenge of claim 8 based on disclosures related to core 110, we also find that Rasmussen teaches and depicts that filler material 180 is in a cavity defined by core 110. Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Claims 9, 10, and 13 depend from claim 8. Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as recited by claim 9. Pet. 49 (citing Ex. 1006 ¶¶ 52, 53; Ex. 1007 ¶¶ 48, 49; Rhodes Decl. ¶ 140). We find that Rasmussen teaches that "cover 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps,

laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." Ex. 1006 ¶ 52; Ex. 1007 ¶ 48. We also find that Rasmussen teaches that "fasteners can be positioned to releasably secure at least one portion of a cover 190 to another portion of the cover 190." Ex. 1006 ¶ 53; Ex. 1007 ¶ 49.

Petitioner argues that Rasmussen discloses "wherein said fill material comprises a compliant material," as recited by claim 10. Pet. 46–47 (citing Ex. 1006 ¶¶ 19, 22, 30, 31, 36; Ex. 1007 ¶¶ 15, 18, 26, 27, 32; Rhodes Decl. ¶ 137). We find that the cited portions teach that "visco-elastic foam . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

Petitioner argues that Rasmussen discloses the pillow of claim 8, "further comprising an inner cover disposed inside of said cover, at least a portion of said fill material being disposed within said inner cover," as recited by claim 13. Pet. 50–51 (citing Ex. 1006 ¶ 15; Ex. 1007 ¶ 11; Rhodes Decl. ¶ 142). We find that Rasmussen teaches "core 110 of the illustrated pillow 100," which is depicted to be disposed inside of cover 190. Ex. 1006 ¶ 15, Fig. 2; Ex. 1007 ¶ 11, Fig. 2. As discussed above, we find that core 110 includes filler material 180. Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Patent Owner responds that, "[b]ecause dependent claims 2–20 include all the limitations of base independent claim 1, Rasmussen also does not anticipate these claims for at least the same reasons above." PO Resp. 74; *see also* Pet. Reply 10 (stating "PO makes no separate arguments

regarding dependent claims 4, 7–10, and 13, which are, therefore, also anticipated, for the reasons identified in the Petition"). For the reasons stated in Section III.B.2., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its cover.

Thus, based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 4, 7–10, and 13 are anticipated by Rasmussen based on disclosures related to its core.

I. Conclusion as to the Anticipation Challenges

For the reasons above and based on our review of the full record, Petitioner persuades us by a preponderance of the record (1) that claims 1–4, 7–10, 14, 15, 18, and 20 are anticipated by Rasmussen based on disclosures related to its core and (2) that claims 1–4, 7–10, 13–15, 17, 18, and 20 are anticipated by Rasmussen based on disclosures related to its cover.

IV. OBVIOUSNESS CHALLENGES

Petitioner contends that, under 35 U.S.C. § 103(a), (1) claims 5, 6, and 19 are unpatentable over Rasmussen and Doak (Pet. 17, 60–64); (2) claim 12 is unpatentable over Rasmussen and Mason (*id.* at 17, 64–65); and (3) claim 19 is unpatentable over Rasmussen and Burton (*id.* at 18, 68–69) with citations to these references and the Rhodes Declaration. Patent Owner disputes the alleged obviousness of these claims with citations to the references, the Parachuru Declaration, and other record evidence. PO Resp. 74–77.

To prevail in its challenges, under 35 U.S.C. § 103(a), Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C.

§ 316(e); 37 C.F.R. § 42.1(d). 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 at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996).

As discussed below, the parties' disputes are related to the scope and content of the prior art, differences between claims 5, 6, and 19 and the prior art, and the level of ordinary skill in the art. The parties do not dispute and do not direct us to any objective evidence of nonobviousness.

After reviewing the complete record, we conclude that Petitioner has shown by a preponderance of the evidence that the asserted references teach or suggest each limitation of claims 5, 6, 12, and 19; that a person of ordinary skill in the art would have had a reason to combine Rasmussen with one of Doak, Mason, or Burton; and that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the asserted references.

A. Level of Ordinary Skill

Petitioner asserts that a person of ordinary skill in the art, whether the priority date is June 2011 or June 2012, would have

> at least a bachelor's degree in textile design, textile science, textile engineering or a similar field and at least one year of experience in the design of pillows and other sleep-related textile products; or, alternatively, a person having at least three to five years of experience in the design of pillows and other sleep-related textile products.

Pet. 18 (citing Rhodes Decl. ¶¶ 72–74).

Patent Owner contends that a person of ordinary skill in the art would have

> at least a bachelor's degree in textile science, textile engineering or a similar field along with several years of industry experience in applying the moisture and heat transfer properties of materials which typically come into close direct or indirect contact with human skin. Additional graduate education in textile or material sciences might substitute for experience.

PO Resp. 27 (citing Parachuru Decl. ¶¶ 20–25). Patent Owner also argues that Petitioner's proposed level of ordinary skill

> fails to adequately reflect the relevant technical experience and knowledge that would have been necessary to understand and implement the technical aspects of the '883 Patent and asserted references, such as how the thermodynamic processes of conduction, convection, and radiation interact at the interface between humans and various fabrics as well as the moisture dispersing properties of fabrics as they relate to liquid and vapor forms of perspiration.

Id. (citing Parachuru Decl. ¶¶ 36–54). Petitioner replies that Patent Owner's declarant "conceded that the challenged patent is directed to 'pillow design' . . . and that it was 'desirable' for a [person of ordinary skill in the art] to have pillow design experience." Pet. Reply 7 (citing Ex. 1061, 26:16–19, 31:9–13).

Factual indicators of the level of ordinary skill in the art include "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *Jacobson Bros., Inc. v. U.S.*, 512 F.2d 1065, 1071 (Ct. Cl. 1975); *see also Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983) (quoting with approval *Jacobson Bros.*). We find, based on our review of the record before us, that Petitioner's stated level of ordinary skill in the art is reasonable because it is consistent with the record's indication of "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *See, e.g.*, Pet. 9–16 ("Technology Background"); PO Resp. 3–27 ("Background of the Relevant Technology at the Time of the '883 Patent"); Ex. 1006 ¶¶ 2–4; Ex. 1008; Ex. 1011; Ex. 1013; Ex. 2001 ¶¶ 36–54.

We resolve any differences in favor of including "several years of industry experience in applying the moisture and heat transfer properties of materials" as part of "at least one year of experience in the design of pillows and other sleep-related textile products" of a person holding a "bachelor's degree in textile science, textile engineering or a similar field." *See* Rhodes Decl. ¶ 5 ("I am also an adjunct professor . . . teaching . . . an entry level course for textile and fashion majors."), ¶ 6 ("I received a Bachelor of Science degree in Textile Design."), ¶ 74 ("I met at least these minimum qualifications to be a person having ordinary skill in the art at the time of the claimed invention."); Ex. 1062 ¶ 4 ("I teach concepts relating to moisture

and heat transfer in my textile curriculum in my academic role as a professor").

Therefore, we apply Petitioner's definition, quoted above, in our analysis of the challenges under 35 U.S.C. § 103(a). Pet. 18.

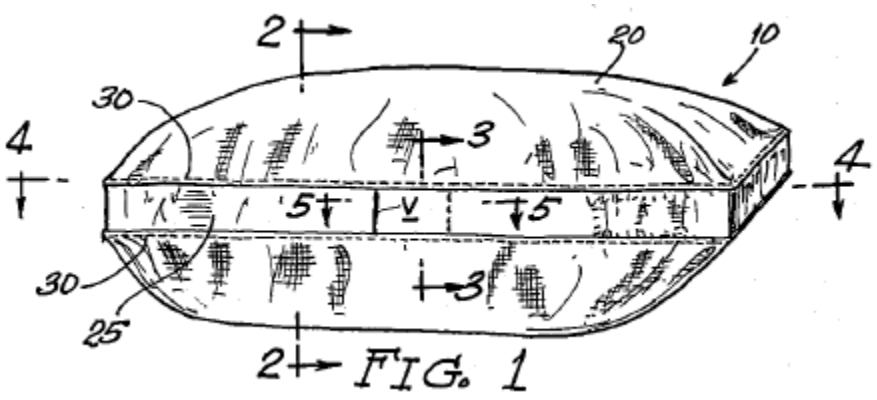
B. Rasmussen and Doak

Petitioner contends that claims 5, 6, and 19 are unpatentable over Rasmussen and Doak. Pet. 62–63. Claims 5, 6, and 19 depend directly from claim 1. Ex. 1047, 5:46–50, 6:42–45.

Claim 5 recites "wherein said first and second panels each define a generally rectangular footprint common with said gusset;" claim 6 recites "wherein said first and second panels are arctuatey bowed out in opposing directions;" and claim 19 recites "wherein said gusset comprises two longer longitudinal portions joined by two shorter end portions, the longitudinal portions being contiguous with the end portions." *Id.*

1. Doak (Ex. 1008)

Doak relates to "pillows . . . or the like." Ex. 1008, 1:9–10. Figures 1 and 4 of Doak are reproduced below.



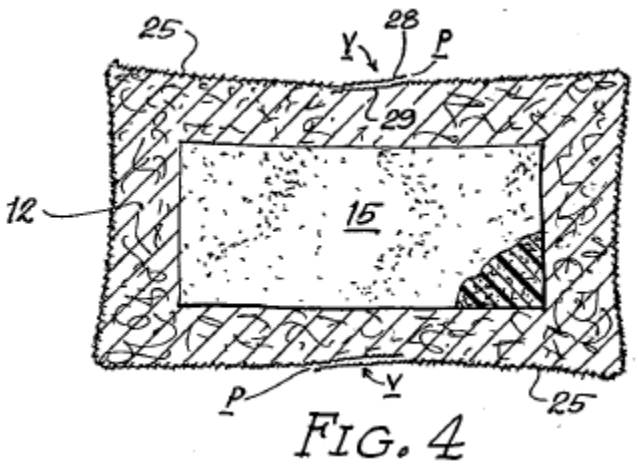


FIG. 4

Figure 1 shows pillow 10, and Figure 4 is a sectional view taken along line 4–4 of Figure 1. *Id.* at 1:51–52, 1:58–59. Pillow 10 has filling 12 enclosed in cover 20. *Id.* at 1:63–67, 2:12–15. Cover 20 comprises web portion 25, "which extends around the perimeter of the pillow and may be of substantial width." *Id.* at 2:15–17.

2. Claims 5, 6, and 19

Petitioner argues that Rasmussen teaches the limitations of claim 1, from which claims 5, 6, and 19 depend. Pet. 61. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claim 1.

Petitioner also argues that Doak teaches first and second panels that each define a generally rectangular footprint common with a gusset, as required by claim 5; panels that are arcuately bowed in opposing directions, as required by claim 6; and a gusset with longer longitudinal portions joined contiguously with shorter end portions, as required by claim 19. Pet. 62 (citing Ex. 1008, Figs. 1, 4; Rhodes Decl. ¶¶ 167–168). We find that Petitioner's citations to Figures 1 and 4 of Doak teach the limitations of claims 5, 6, and 19.

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Doak to "satisfy known consumer expectations for a conventionally shaped pillow." Pet. 63; Rhodes Decl. ¶ 169 ("A person of ordinary skill in the art would have had a credible reason to combine Rasmussen with Doak to use the shape of Doak to satisfy consumer expectations for a conventionally shaped pillow."); *see also KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.").

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Doak in the manner asserted by Petitioner. Rhodes Decl. ¶ 169 ("The use of arcuately bowed out opposing top and bottom panels joined by a perimetric gusset that shares a rectangular footprint with the top and bottom panels is a basic pillow design that has been commonplace . . . as Doak itself demonstrates . . . modifying the pillow of Rasmussen to have the shape characteristics of the pillow of Doak would have been a simple combination for a POSITA that would have yielded predictable results without requiring undue experimentation.").

Patent Owner responds that Rasmussen does not anticipate claim 1, from which claims 5, 6, and 19 depend. PO Resp. 74. Patent Owner also argues that Petitioner does not rely on Doak for features of claim 1 that are missing in Rasmussen. *Id.* For the reasons discussed above in

Section III.B., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 1.

Patent Owner further responds for claims 5 and 19 that one of ordinary skill in the art would not have been motivated to modify Rasmussen to have a rectangular shape because "such a modification would undermine the fundamental principles of Rasmussen's design, which relies on a pillow having a plurality of lobes," a feature that Patent Owner contends is critical and provides benefits. *Id.* at 74–76 (citing Ex. 1006 ¶ 14, Fig. 1; Parachuru Decl. ¶¶ 101–103, 178–180). Patent Owner additionally argues that Petitioner provides no evidence why one of ordinary skill in the art would make the modification and forego the associated benefits and that Rasmussen does not indicate a rectangular shape would be appropriate. *Id.* at 75. Patent Owner contends that Petitioner's declarant admitted to not understanding Rasmussen's lobes. *Id.* (citing Ex. 2016, 58:13–22). Petitioner replies that Rasmussen does not teach that "its lobes are 'fundamental' or 'critical'" and "merely teaches various embodiments having lobes." Pet. Reply 24–25 (citing Ex. 1006 ¶¶ 6, 14, claims 1–9, 11–19; Ex. 1062 ¶¶ 35–37).

Patent Owner points us to paragraph 14 of Rasmussen, and in that paragraph, we find that Rasmussen teaches that "in other embodiments, . . . the lobes 120, 130 can have different sizes" and "[a]ny combination of lobes having the same size or different sizes is possible." *See* PO Resp. 74–75. This paragraph does not address whether these embodiments of Rasmussen "define a generally rectangular footprint common with said gusset," as recited by claim 5. Second, it does not indicate that a rectangular lobed pillow would fail to provide the benefits of a lobed pillow, thereby

undermining the asserted fundamental principles of Rasmussen's design. *See* Ex. 1006 ¶ 14 ("The lobed shape of the pillow 100 provides a number of support surfaces for a user," "can enhance breathing of a user resting his or her head against the pillow 100," and "can also provide support for the shoulder and/or neck of the user when the user is sleeping on his or her side or back.").

Further, we find that Rasmussen teaches that the same listed benefits can be provided by a rectangular pillow. *See* Ex. 1006 ¶ 2 ("Conventional pillows can be found in a wide variety of shapes and sizes, and are often adapted for supporting one or more body parts of a user."). Even if the lobes of Rasmussen are critical, as contended by Patent Owner, Rasmussen does not indicate having a rectangular shape would somehow be incompatible with having lobes, as argued by Patent Owner. *See id.* ¶¶ 2, 14.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 5, 6, and 19 would have been obvious Rasmussen and Doak.

C. Rasmussen and Mason

Petitioner contends that claim 12 is unpatentable over Rasmussen and Mason. Pet. 64–65. Claim 12 depends from claim 8, which, in turn, depends from claim 1. Ex. 1047, 6:16–17. Claim 8 recites "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover." *Id.* at 6:3–5. Claim 12 recites "wherein said fill material comprises a gel." *Id.* at 6:16–17.

1. Mason (Ex. 1012)

Mason "is directed to methods of preparing apparatuses comprising a gel layer and an additional layer, such as a foam layer." Ex. 1012 ¶ 2. The

apparatus according to Mason "generally comprises a gel layer" and "can also comprise a covering overlaying the gel layer." *Id.* ¶¶ 8, 13. "Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows." *Id.* ¶ 14; *see also id.* ¶¶ 57, 58, 64 (listing pillows as an embodiment).

According to Mason, "while the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user" and the "heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow." *Id.* ¶¶ 41, 43. Mason states that "[i]n light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase." *Id.* ¶ 6. The gel layer can be combined with a foam layer, a cover layer, or optional further layers. *Id.* ¶¶ 8, 84, 85, 94, 95.

2. Claim 12

Petitioner argues that Rasmussen teaches the limitations of claims 1 and 8. Pet. 64. For the reasons stated above in Sections III.B. and III.H., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claims 1 and 8.

Petitioner also argues that Mason teaches "wherein the compliant fill material includes gel," as required by dependent claim 12. Pet. 64 (citing Ex. 1012 ¶¶ 8, 13, 14, 43, 57, 58, 64, 80–85, 94, 95Fig. 2; Rhodes Decl. ¶ 171). We find that Petitioner's citations to Mason teach the limitation of claim 12. Ex. 1012 ¶¶ 8 ("The apparatus prepared according to the invention generally comprises a gel layer."), 13 ("[T]he apparatus can also

comprise a covering overlaying the gel layer."), 14 ("Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows."), 57, 58, 64.

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Mason because the "addition of 'gel' can be used to provide a cooling effect to address the known problem of heat buildup in foam," "can 'contribute[] to the "good" feel users desire in a support apparatus,'" and addresses "increased demand, known ability to address heat buildup in foam with gel, and Rasmussen's stated desire to enhance cooling," as argued by Petitioner. Ex. 1012 ¶¶ 6 ("In light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase."), 41 ("[W]hile the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user."), 42, 43 ("The heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow."); Rhodes Decl. ¶¶ 172, 173; *see also* Pet. 64–65 (citing Ex. 1012 ¶¶ 6, 41–43; Rhodes Decl. ¶¶ 172, 173), 68.

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Mason in the manner asserted by Petitioner. Rhodes Decl. ¶¶ 172 ("[U]se [of gel] was increasingly common prior to the alleged invention."), 173 ("Use of fill material comprising gel in the pillow taught by Rasmussen would have yielded predictable results with little or no experimentation.").

Patent Owner argues that Petitioner "does not rely on any disclosure in Mason with respect to any of the features of claim 1 that are entirely

missing from Rasmussen" and thus, "has failed to meet its burden of showing that Rasmussen in view of Mason renders dependent claim 12 obvious." PO Resp. 76–77. As discussed above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claim 12 would have been obvious over Rasmussen and Mason.

D. Rasmussen and Burton

Petitioner argues that claim 19 is unpatentable over Rasmussen and Burton, in addition to the challenge discussed above based on Rasmussen and Doak. Pet. 68–69.

Claim 19 depends from claim 1 and recites "wherein said gusset comprises two longer longitudinal portions joined by two shorter end portions, the longitudinal portions being contiguous with the end portions." Ex. 1047, 6:42–45.

1. Burton (Ex. 1013)

Burton "concerns a gusseted pillow being a particular top and bottom section arrangement and an intermediate gusset portion." Ex. 1013, 1:8–10. Figure 2 of Burton is reproduced below.

FIG. 2

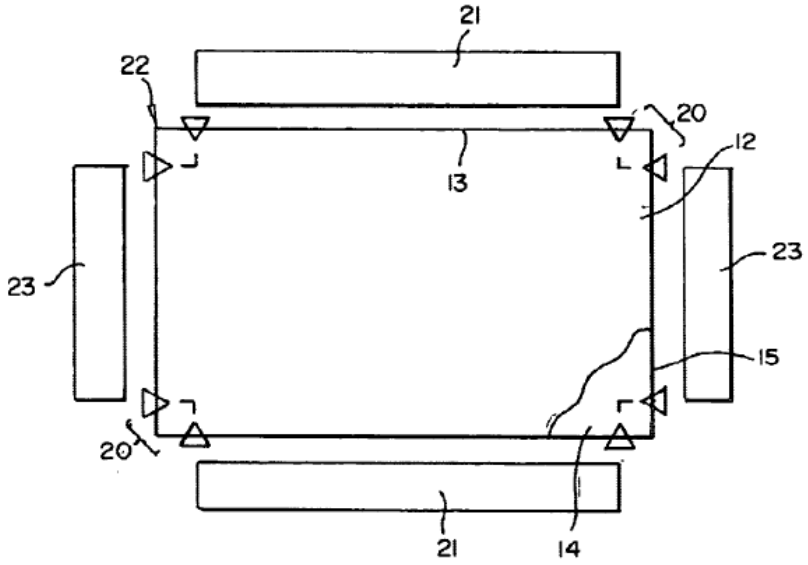


Figure 2 is a diagram showing the configuration of top and bottom sections and gusset portion of a pillow. *Id.* at 1:52–54. Pillow 10 includes top fabric section 12 and intermediate gusset portion 16 (shown in Figure 1). *Id.* at 1:66–2:2. Burton explains that the gusset portion of the pillow of Figure 2 includes pillow length parts 21 that are approximately 22 inches and pillow width parts 23 that are 16 inches. *Id.* at 2:13–24.

2. Claim 19

For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claim 1. Petitioner argues that Burton teaches or suggests the limitations of claim 19. Pet. 68–69 (citing Ex. 1013, 2:14–15, Fig. 2; Rhodes Decl. ¶¶ 180–182). We find that Petitioner's citations to Burton teach the limitations of claim 19. Ex. 1013, 2:14–15 ("FIG. 2 also shows the length and width of the gusset portion."); *see also id.* at 2:16–19 ("Typically, the gusset portion 16 is a continuous strip; it is shown in individual parts in FIG. 2 to match the four sides of the top and bottom sections.").

We also determine that one of ordinary skill in the art would have had a reason to modify Rasmussen with the teachings of Burton with a reasonable expectation of success. Rhodes Decl. ¶ 183 ("Burton's basic rectangular gusseted pillow design . . . has long been a well known and common pillow design" and "many consumers would prefer the more conventional and common pillow shape formed by rectangular top and bottom panels joined by perimetric gusset"); *see also* Pet. 69 (citing Rhodes Decl. ¶ 183).

Patent Owner argues that a person of ordinary skill in the art "would not have modified Rasmussen's pillow to have a standard rectangular shape" for the same reasons asserted against the challenge based on Rasmussen and Doak. PO Resp. 76. For the same reasons discussed above in Section IV.B.2., Petitioner persuades us that one of ordinary skill in the art would have been motivated to modify Rasmussen to have a rectangular shape.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claim 19 would have been obvious over Rasmussen and Burton.

V. IMPROPER REPLY ARGUMENTS

Patent Owner filed a List of Improper Reply Arguments (Paper 31), to which Petitioner also filed a response (Paper 32). Patent Owner asserts that, in its Reply, Petitioner argues for the first time that air will travel a path of least resistance through the pillow, that "material" and "base material" of claims 14 and 15 can be fibers, that Rasmussen's lobed design is the result of fill material configuration, and that Rasmussen's design can be modified

to have lobes and a rectangular shape. Paper 31, 1–2 (citing Pet. Reply 10, 13, 23, 25). The parties also filed a Joint Notice of Unresolved Demonstrative Objections (Paper 34), in which Patent Owner alleges that slides 13, 26, 29, 31, and 32 contain new arguments as discussed above and Petitioner alleges that slide 47 contains a new argument from Patent Owner's Observations (Paper 30).

We do not rely on any of the portions of the Petitioner's Reply that argue air will travel a path of least resistance through the pillow, "material" and "base material" of claims 14 and 15 can be fibers, or Rasmussen's lobed design is the result of fill material configuration. We also do not rely on the demonstratives.

Further, because Petitioner initially argued that one of ordinary skill in the art would "modify the shape of the pillows taught by Rasmussen to utilize the shape taught by Doak, including . . . its rectangular shape" (Pet. 63), Petitioner's argument in its Reply–that "four subtle lobes at the corner could even be maintained, if desired, and still yield a 'generally rectangular' pillow" (Pet. Reply 25)–is not a new argument, as contended by Patent Owner. A lobed and generally rectangular pillow would be the result of Petitioner's proposed modification and would still "satisfy known consumer expectations for a conventionally shaped pillow," as discussed above in Section IV.B.2.

VI. CONCLUSION

For the foregoing reasons, based on the full record before us, we determine that Petitioner has demonstrated, by a preponderance of the

evidence, that claims 1–10, 12–15, and 17–20 of the '883 patent are unpatentable.

VII. ORDER

Accordingly, it is:

ORDERED that claims 1–10, 12–15, and 17–20 of U.S. Patent No. 9,015,883 B2 have been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the 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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Paper No. 41
Entered: June 12, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREDMAN BROS. FURNITURE COMPANY, INC.,
Petitioner,

v.

BEDGEAR, LLC,
Patent Owner.

Case IPR2017-00350
Patent 8,887,332 B2

Before HYUN J. JUNG, BART A. GERSTENBLITH, and AMANDA F. WIEKER, *Administrative Patent Judges.*

JUNG, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that, of all the challenged claims, claims 1–11, 13, 15–22, 24, 25, and 27–34 of U.S. Patent No. 8,887,332 B2 are unpatentable, but has not shown by a preponderance of the evidence that claim 23 is unpatentable.

A. Procedural History

Fredman Bros. Furniture Company, Inc. ("Petitioner") filed a Petition, requesting institution of an *inter partes* review of claims 1–11, 13, 15–25, and 27–34 of U.S. Patent No. 8,887,332 B2 (Ex. 1001, "the '332 patent"). Paper 1 ("Pet."). Bedgear, LLC ("Patent Owner") timely filed a Preliminary Response. Paper 7. Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims of the '332 patent. Paper 8 ("Dec. on Inst.").

After institution, Patent Owner filed a Response (Paper 14, "PO Resp."), to which Petitioner filed a Reply (Paper 21, "Pet. Reply"). Petitioner proffered a Declaration of Jennifer Frank Rhodes (Ex. 1005, "Rhodes Declaration" or "Rhodes Decl.") with its Petition, and a Declaration of Jennifer Frank Rhodes in Support of Petitioner's Reply (Ex. 1062). Patent Owner proffered a Declaration of Dr. Radhakrishnaiah Parachuru in Support of Patent Owner's Preliminary Response (Ex. 2001) and in Support of Patent Owner's Response (Ex. 2004, "Parachuru Declaration" or "Parachuru Decl."). Deposition transcripts for Dr. Parachuru (Ex. 1061) and Ms. Rhodes (Exs. 2016, 2020) were filed.

Patent Owner filed Observations on Cross-Examination of Petitioner's Reply Witness Jennifer Frank Rhodes (Paper 27), to which Petitioner filed a response (Paper 30). As authorized in our Order (Paper 29), Patent Owner filed a List of Improper Reply Arguments (Paper 31), to which Petitioner also filed a response (Paper 32).

An oral hearing in this proceeding and Cases IPR2017-00351, IPR2017-00352, and IPR2017-00524 was held on March 20, 2018; a transcript of the hearing is included in the record (Paper 36, "Tr.").

B. Grounds of Unpatentability at Issue

We instituted *inter partes* review on the grounds that

claims 1–3, 6–9, 13, 16, 18–20, 22, 27, 29–31, 33, and 34, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen[1];

claims 1–3, 6–9, 11, 13, 15, 16, 18–20, 22, 23, 27, and 31–34, under 35 U.S.C. § 102(b) or § 102(e), are anticipated by Rasmussen, separately and independently of the ground above, based on an alternative interpretation of Rasmussen;

claim 17, under 35 U.S.C. § 103(a), is unpatentable over Rasmussen,

claims 4, 5, and 28, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Doak[2];

claims 24 and 25, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Schlussel[3];

[1] WO 2010/075294 A1, published July 1, 2010 (Ex. 1006).
[2] US 3,109,182, issued Nov. 5, 1963 (Ex. 1008).
[3] US 2007/0261173 A1, published Nov. 15, 2007 (Ex. 1009).

claim 17, under 35 U.S.C. § 103(a), is unpatentable over Rasmussen and Schecter[4];

claims 10 and 21, under 35 U.S.C. § 103(a), are unpatentable over Rasmussen and Mason[5]; and

claim 28, under 35 U.S.C. § 103(a), is unpatentable over Rasmussen and Burton.[6] Dec. on Inst. 37–38.

In an Order following *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we modified our Decision on Institution to institute on all of the grounds presented in the Petition. Paper 37, 2; *see also* Dec. on Inst. 19–20, 22, 23, 25, 27, 29–32 (determining Petitioner had not demonstrated a reasonable likelihood of prevailing on certain grounds). In accordance with that same Order, the parties conferred and reached agreement to withdraw the grounds upon which we did not institute review. *See* Papers 37, 38. After receiving authorization (Paper 38), the parties filed a Joint Motion to Limit the Petition (Paper 39), which we granted (Paper 40). Thus, the review is limited to the grounds listed above, and this Decision addresses only those grounds.

C. Related Proceedings

The parties indicate that the '332 patent has been asserted in *Bedgear, LLC v. Fredman Bros. Furniture Co., Inc.*, Case No. 1:15-cv-6759 (E.D.N.Y.) and *Cabeau, Inc. v. Bedgear, LLC*, Case No. 2:16-cv-09238 (C.D. Ca.). Pet. 77; Paper 4, 2; Ex. 1052.

[4] US 6,988,286 B2, issued Jan. 24, 2006 (Ex. 1011).
[5] US 2007/0246157 A1, published Oct. 25, 2007 (Ex. 1012).
[6] US 6,760,935 B1, issued July 13, 2004 (Ex. 1013).

The ’332 patent issued from a continuation of an application that issued as U.S. Patent No. 8,646,134 B1 (Ex. 1049, “the ’134 patent”), which is challenged in Case IPR2017-00352. The ’332 patent is also related to the patent at issue in Case IPR2017-00351 (Ex. 1047).

D. The ’332 Patent (Ex. 1001)

The ’332 patent issued November 18, 2014, from an application filed December 16, 2013, which is a continuation of an application filed June 22, 2012, and claims priority to a provisional application filed June 22, 2011. Ex. 1001, [22], [45], [60], [63], 1:7–12.

The ’332 patent relates to an “upper neck and head support in the form of a pillow for the human body.” *Id.* at 1:18–19. Figure 1 of the ’332 patent is reproduced below.

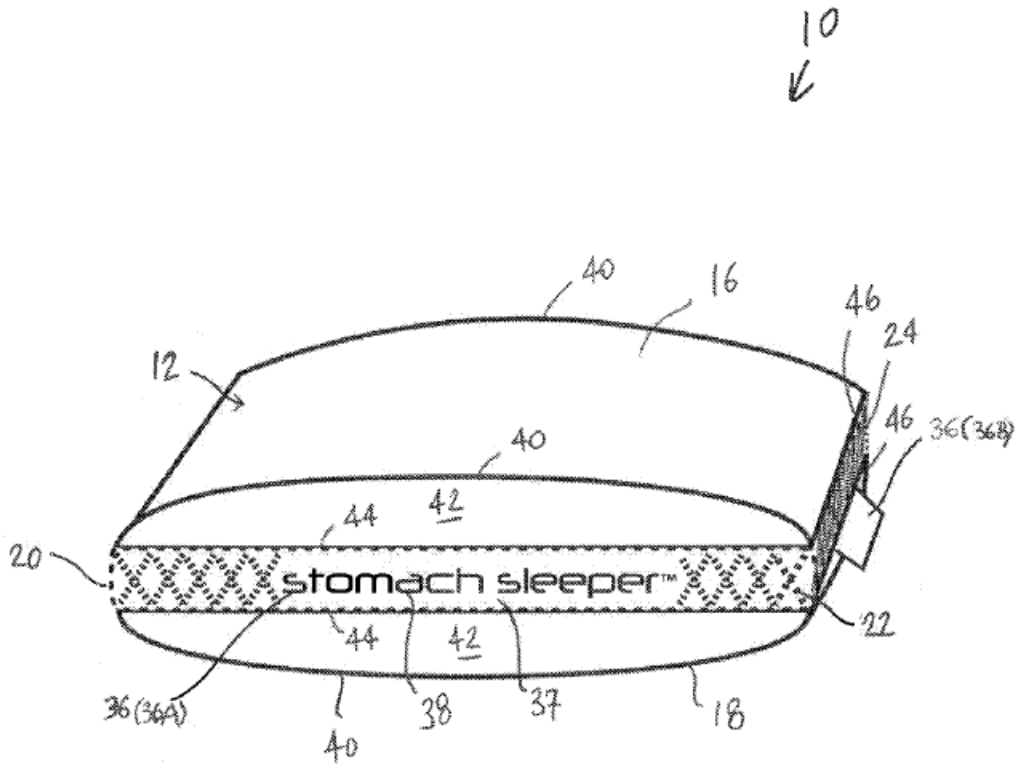


FIG. 1

Figure 1 shows a perspective view of a pillow of the ’332 patent. *Id.* at 1:51–52. Pillow 10 has cover 12, and cover 12 includes opposing first and second panels 16, 18 and gusset 20 that joins panels 16, 18. *Id.* at 1:64–2:2. Gusset 20 is formed of an open cell construction and has sufficient width to separate panels 16, 18 so as to define an airflow channel through the panels. *Id.* at 2:2–8. The specification states that an "'open cell construction' as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." *Id.* at 1:41–44. The "open cell construction of the gusset 20 may be defined by various constructions." *Id.* at 2:20–21. The specification describes gusset 20 providing venting, permitting air exchange, and having porous or open cell construction panels. *See id.* at 1:37–40, 2:10–13, 4:19–36, 4:53–55.

In connection with Figure 3, the open cell construction of gusset 20 may be defined by a "plurality of interlaced or spaced-apart strands 26 arranged randomly or in various patterns, such as a 'x' pattern (FIG. 1) or a rectangular pattern." *Id.* at 2:21–24.

Gusset 20 may be formed of base material 30 and has apertures 32 that are larger in size than any pores that may be inherently defined in base material 30. *Id.* at 2:36–41. The porosity of base material 30 may be "substantially greater" than the porosity of first panel 16 or second panel 18. *Id.* at 2:55–58. "'Substantially greater' refers to being at least greater than, but preferably being at least twice greater than" the reference value. *Id.* at 2:58–60.

The ’332 patent states that "with reference to FIG. 5, the gusset 20 may be formed with the base material 30 being inherently significantly

porous" (*id.* at 2:47–49) and that the "porosity of the base material 30 may be substantially greater than the porosity of the material forming the first panel 16 and/or . . . the second panel 18" (*id.* at 2:55–58). "[G]usset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination." *Id.* at 2:65–67.

E. Challenged Independent Claims

The '332 patent has 34 claims, of which Petitioner challenges claims 1–11, 13, 15–25, and 27–34. Claims 1, 31, 33, and 34 are independent and reproduced below:

> 1. A pillow comprising:
> a first panel having an edge defining a perimeter;
> a second panel having an edge defining a perimeter; and
> a gusset joining said first and second panels,
> wherein said first panel and said second panel each comprise a porous material, and wherein said gusset comprises a material having a greater porosity than the porous material.
>
> 31. A pillow comprising:
> a first panel;
> a second panel opposite the first panel; and
> a gusset perimetrically bounding and joining said first and second panels,
> wherein said first panel, said second panel and said gusset define a cover having an inner surface defining a chamber for fill material,
> wherein an interface between said first panel and said gusset comprises a zipper configured to provide access to the chamber.
>
> 33. A pillow comprising:
> a first panel having an edge defining a perimeter;
> a second panel having an edge defining a perimeter; and
> a gusset joining said first and second panels,

wherein said gusset is formed of an open cell construction, said open cell construction being formed by interlaced strands.

34. A pillow comprising:
a first panel having an edge defining a perimeter;
a second panel having an edge defining a perimeter; and
a gusset joining said first and second panels,
wherein said gusset is formed of an open cell construction, said open cell construction being formed by spaced-apart strands.

Ex. 1001, 5:22–29, 6:57–67, 7:4–17.

II. CLAIM INTERPRETATION

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).

A. "open cell construction"(claims 13, 18, 22, 33, and 34)

Petitioner proposes that "'open cell construction' need not be construed or given independent patentable weight beyond the specific structure recited in the claims" and that an interpretation "does not impact the prior art analysis herein." Pet. 20 (citing Rhodes Decl. ¶¶ 81–84). In the Decision on Institution, we did not interpret "open cell construction" expressly. Dec. on Inst. 7.

Patent Owner states that "[b]oth parties agree that the express definition for the term 'open cell construction' . . . should be adopted, namely a 'construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity.'" PO

Resp. 38 (citing Pet. 20). Petitioner also states that the parties "agree that the specification expressly defines 'open cell construction' as 'a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." Pet. Reply 2–3 (citing Pet. 19–20; PO Resp. 38; Ex. 1001, 1:41–44).

The specification of the '332 patent states that an "'open cell construction' as used herein refers to a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." Ex. 1001, 1:41–44. Based on the full record, we agree with parties that "open cell construction" is defined in the specification, and we interpret it in accordance with that definition to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity." *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) ("Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.").

B. "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel" (claim 13)

Patent Owner contends that "distinct 'open cell construction' phrases should be construed separately to properly account for the different structures expressly recited in these claims." PO Resp. 38. In support of its position, Patent Owner cites the claim language (*id.* at 39–40 (citing claims 13, 22, 33, and 34)), the specification (*id.* at 39 (citing Ex. 1001, Figs. 3, 4)), the prosecution history of the related '134 patent (*id.* at 40–41), and Dr. Parachuru's testimony (*id.* at 39–41 (citing Ex. 2001 ¶¶ 50, 55–56; Parachuru Decl. ¶¶ 101, 115–119)).

Patent Owner proposes interpreting "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel," as recited by claim 13, to mean "a construction made up of a constituent material that, by itself, has substantially higher porosity than the material of the first and second panels." PO Resp. 44–45. In support, Patent Owner cites the claim language, the specification (Ex. 1001, 2:47–64, Fig. 5), the prosecution history of the '134 patent (Ex. 1003, 47), and Dr. Parachuru's testimony (Parachuru Decl. ¶¶ 132–134). *Id.* Patent Owner argues that the claim phrase is directed to the "Using High-Porosity Materials Embodiment (FIG. 5)." *Id.*

As for "substantially greater," Petitioner contends that the '332 patent "expressly defined this term to mean simply 'greater than.'" Pet. 20 (citing Ex. 1001, 2:58–60). "Patent Owner agrees to adopt [Petitioner's proposed construction] solely for the purposes of this IPR." PO Resp. 46.

The specification states that "'[s]ubstantially greater' refers to being at least greater than, but preferably being at least twice greater than." Ex. 1001, 2:58–60. Based on the full record, we interpret "substantially greater" to mean "greater than." *See In re Paulsen*, 30 F.3d at 1480.

The language of claim 13 does not require expressly that the constituent material by itself has higher porosity than the material of the first and second panels. Patent Owner's proposed interpretation also narrows the interpretation of "open cell construction," that is analyzed above in Section II.A.

We find that the specification of the '332 patent describes that an open cell construction has overall porosity greater than the inherent porosity of a

constituent material. Ex. 1001, 1:41–44. We also find that the '332 patent states that "with reference to FIG. 5, the gusset 20 *may be formed* with the base material 30 being inherently significantly porous" (*id.* at 2:47–49) (emphasis added) and that the "porosity of the base material 30 *may be substantially greater* than the porosity of the material forming the first panel 16 and/or . . . the second panel 18" (*id.* at 2:55–58) (emphasis added). We find that these portions of the '332 patent contemplate embodiments in addition to ones encompassed by Patent Owner's proposed interpretation. The specification also expressly states that open cell construction can be the embodiment of Figure 5 combined with other configurations. *See id.* at 2:20–21 ("open cell construction of the gusset 20 may be defined by various constructions"), 2:65–67 ("gusset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination").

The prosecution history of the related '134 patent indicates that the claim was amended to include "said open cell construction is formed by interlaced or spaced-apart strands" in response to what the Examiner believed was allowable subject matter in the dependent claims. *See* Ex. 1003, 45 (Claim 1 amended to include "said open cell construction is formed by interlaced or spaced-apart strands."), 49 ("By way of this amendment, Claim 1 has been amended to incorporate the allowable subject matter of Claim 2."). However, the prosecution history does not indicate that Applicant intended the amendment to result necessarily in Patent Owner's proposed interpretation. *See id.* In view of our determinations above, the claim language, specification, and prosecution history do not provide a sufficiently persuasive reason for further specifying "a constituent

material that, by itself, has substantially higher porosity than the material of the first and second panels" for the interpretation of "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and . . . said second panel."

Thus, based on the full record, we interpret "said open cell construction is formed by porosity of said base material being substantially greater than porosity of material formed said first panel and . . . said second panel," as recited by claim 13, to mean that the open cell construction is formed by at least the porosity of the base material being greater than the porosity of the material of the first and second panels.

C. "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" (claim 16)

Patent Owner proposes interpreting "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" to mean "the pillow is designed to have air which enters the pillow through the first or second panel then exit the pillow through the gusset." PO Resp. 46. In support, Patent Owner refers to the language of claims 1 and 16 (*id.* at 46–49), the specification (*id.* at 48–49 (citing Ex. 1047, 1:37–40, 2:10–13, 4:19–36, 4:53–55)), and Dr. Parachuru's testimony (*id.* at 46–49 (citing Parachuru Decl. ¶¶ 135–144)).

Patent Owner argues that "the claim language itself explicitly requires that the pillow be configured to have air enter through the first and second panels to then have this ***same*** air exit through the gusset" and "does not address (i.e., require or restrict) air entering through a structure other than a panel (e.g., a gusset) nor any such air exiting the pillow in a particular

manner (e.g., through a panel, gusset, or other structure)." *Id.* at 46–47 (citing Parachuru Decl. ¶¶ 137, 138). Patent Owner also states that the "claim language is . . . unambiguous on its face in requiring that at least some air which enters through the panels, must then exit through the gusset." *Id.* at 47.

Petitioner replies that the proposed interpretation rewrites the express claim language, is illogical, and is unsupported by the specification. Pet. Reply 6–7 (citing Ex. 1001, 2:10–13; Ex. 1061, 35:11–15, 61:17–62:12). Petitioner also contends that express construction is unnecessary because Patent Owner's proposed interpretation is disclosed by Rasmussen. *Id.* at 7.

We agree with Patent Owner that "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" does not restrict air entering through another structure, such as the gusset, and does not address air exiting through other structures, such as the panel. *See* PO Resp. 47. The claim language requires "at least some air which enters through the panels" exits through the gusset alone or in combination with another structure. *See id.* The portions of the specification cited by Patent Owner support its above-quoted statements because the cited portions describe gusset 20 providing venting, permitting air exchange, and having porous or open cell construction panels. *See* PO Resp. 48–49; Ex. 1047, 1:37–40, 2:10–13, 4:19–36, 4:53–55. Further interpretation is not required for determining whether Petitioner shows by a preponderance of the evidence the unpatentability of claim 16. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (construing *explicitly* only those claim

terms in controversy and only to the extent necessary to resolve the controversy).

D. "said open cell construction being formed by strands defining a mesh configuration" (claim 22)

Patent Owner proposes interpreting "said open cell construction being formed by strands defining a mesh configuration," recited by claim 22, to mean "a construction in which open cells are defined by strands arranged in mesh configuration, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 43–44; *see also id.* at 38–42 (arguing that open cell construction claim phrases should be construed separately). In support, Patent Owner cites the claim language, the specification (Ex. 1001, 2:20–35, Fig. 3), the prosecution history of the related '134 patent, and Dr. Parachuru's testimony (Parachuru Decl. ¶¶ 126–128). *Id.* at 43–44. Patent Owner argues that the claim phrase is "directed to the Arranging Strands Embodiment (FIG. 3)." *Id.* at 43.

The language of claim 22 does not include expressly "such that the overall porosity is greater than the porosity of the constituent material itself." Also, in view of the parties' agreed-to interpretation of "open cell construction" discussed above in Section II.A., Patent Owner's proposed additional requirement of "such that the overall porosity is greater than the porosity of the constituent material itself" is substantially included in the interpretation of "open cell construction." *See* Ex. 1001, 1:41–44 ("'open cell construction' as used herein refers to a construction having *overall porosity greater than the inherent porosity of the constituent material*") (emphasis added).

We further find that the specification of the ’332 patent does not expressly describe that an open cell construction formed by strands defining a mesh configuration results in overall porosity that is greater than the porosity of the constituent material. *See* Ex. 1001, 2:20–35. The specification associates open cell construction with venting or air exchange. *See, e.g.*, *id.* at 2:10–13, 4:31–33. For the embodiment of Figure 3, the specification describes that open cell construction may be defined by interlaced or spaced-apart strands made of various materials and arranged randomly or in various patterns. *Id.* at 2:15–31.

The specification also expressly states that open cell construction can be the embodiment of Figure 3 combined with other disclosed embodiments. *See* Ex. 1001, 2:20–21 (“open cell construction of the gusset 20 may be defined by various constructions”), 2:65–67 (“gusset 20 may include one or more of the open cell configurations described above in connection with FIGS. 3–5 singularly or in any combination”). The specification, thus, indicates that strands defining a mesh configuration need not be the only structure that results in overall porosity greater than the porosity of the constituent material.

The prosecution history of the related ’134 patent indicates that the claim was amended to include “said open cell construction is formed by interlaced or spaced-apart strands” in response to what the Examiner believed was allowable subject matter in the dependent claims. *See* Ex. 1003, 45 (Claim 1 was amended to include “said open cell construction is formed by interlaced or spaced-apart strands.”), 49 (“By way of this amendment, Claim 1 has been amended to incorporate the allowable subject matter of Claim 2.”). However, the prosecution history of the related ’134

patent does not indicate that Applicant intended the amendment to result in Patent Owner's proposed interpretation. *See id.*

Additionally, to the extent that Patent Owner is interpreting "said open cell construction is formed by strands defining a mesh configuration" to mean that the open cell construction is formed *only* by strands defining a mesh configuration, we do not agree because the specification expressly states that open cell construction can be a combination of the embodiment shown in Figure 3 combined with other disclosed embodiments. *See* Ex. 1001, 2:20–21, 2:65–67.

Thus, based on the full record, we interpret "said open cell construction is formed by strands defining a mesh configuration," as recited by claim 22, to mean that the open cell construction is formed by at least strands defining a mesh configuration.

E. "said open cell construction being formed by interlaced strands" (claim 33)

Patent Owner proposes interpreting "said open cell construction being formed by interlaced strands," as recited by claim 33, to mean "a construction in which open cells are defined by strands arranged in an [interlaced] manner, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 42, 43. In support, Patent Owner cites the claim language, the specification (Ex. 1001, 2:20–35, Fig. 3), the prosecution history of the related '134 patent (Ex. 1003, 45), and its declarant testimony (Parachuru Decl. ¶¶ 120–125). *Id.* at 42–43.

For the same reasons discussed above in Section II.D., we determine that the language of claim 33, the specification of the '332 patent (Ex. 1001, 2:21–35), and the prosecution history of the related '134 patent (Ex. 1003,

45, 49) do not support Patent Owner's proposed interpretation. Based on the full record, we interpret "said open cell construction being formed by interlaced strands," as recited by claim 33, to mean that the open cell construction is formed by at least interlaced strands.

F. "said open cell construction being formed by spaced-apart strands" (claim 34)

Patent Owner proposes interpreting "said open cell construction being formed by spaced-apart strands," as recited by claim 34, to mean "a construction in which open cells are defined by strands arranged in [a spaced-apart] manner, such that the overall porosity is greater than the porosity of the constituent material itself." PO Resp. 42, 43. In support, Patent Owner cites the claim language, the specification (Ex. 1001, 2:20–35, Fig. 3), the prosecution history of the related '134 patent (Ex. 1003, 45), and its declarant testimony (Parachuru Decl. ¶¶ 120–125). *Id.* at 42–43.

For the same reasons discussed above in Section II.D., we determine that the language of claim 34, the specification of the '332 patent (Ex. 1001, 2:21–35), and the prosecution history of the related '134 patent (Ex. 1003, 45, 49) do not support Patent Owner's proposed interpretation. Thus, based on the full record, we interpret "said open cell construction being formed by spaced-apart strands," as recited by claim 34, to mean that the open cell construction being formed by at least spaced-apart strands.

G. Other Terms

The term "gusset" appears in independent claims 1, 31, 33, and 34. Ex. 1001, 5:25, 6:60, 7:7, 7:14. Petitioner proposes that the "broadest reasonable construction of 'gusset' is 'a generally vertically-oriented portion of a pillow between the top and bottom panels of a pillow to provide for

enlargement or expansion of the pillow.'" Pet. 18–19 (citing Rhodes Decl. ¶ 80). In our Decision on Institution, we agreed with Patent Owner that claims 1, 31, 33, and 34 did not require that the gusset be "generally vertically oriented" or that it "provide for enlargement or expansion of the pillow." Dec. on Inst. 6; *see also* PO Resp. 37 ("[T]he Board decided that 'gusset' did not require an express interpretation."); Pet. Reply 2 ("The Board determined no construction was necessary.").

Patent Owner responds that "there is no need to construe the term" "[f]or purposes of this IPR." PO Resp. 37. "Petitioner also agrees express construction is unnecessary for this proceeding." Pet. Reply 2.

Based on the full record, we concur with the parties that an express interpretation for "gusset" is not necessary for determining whether Petitioner has demonstrated by a preponderance of the evidence that the challenge claims are unpatentable. *See Vivid Techs.*, 200 F.3d at 803. We also determine that express interpretation of any other claim term is not necessary. *See id.*

III. ANTICIPATION CHALLENGES

Petitioner contends that claims 1–3, 6–9, 11, 13, 15, 16, 18–20, 22, 23, 27, and 29–34 are anticipated by Rasmussen (Ex. 1006) with citations to Rasmussen and the Rhodes Declaration. Pet. 14, 21–59. Patent Owner responds to the alleged anticipation with citations to Rasmussen, the Parachuru Declaration, and other record evidence. PO Resp. 53–75.

To prevail in its anticipation challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). To anticipate a claim under 35 U.S.C. § 102, "a single

prior art reference must expressly or inherently disclose each claim limitation." *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That "single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art." *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

Petitioner also argues that the claims of the '332 patent are not entitled to a priority date before June 22, 2012. Pet. 21. Petitioner argues that Rasmussen (Ex. 1006) is § 102(b) prior art, if the challenged claims are entitled only to a priority date of June 22, 2012. Petitioner alternatively argues that a provisional application (Ex. 1007, to which Rasmussen claims priority, *see* Ex. 1006, [30]) is § 102(e) prior art, if the challenged claims are entitled to the earlier priority date of June 22, 2011. Pet. 21. Petitioner, thus, provides parallel citations to Rasmussen and the provisional application, which Petitioner asserts is identical to Rasmussen. Pet. 21 n.1; Ex. 1057 (comparison of Rasmussen and its provisional).

As discussed below, the full record persuades us that Petitioner has proven by a preponderance of the evidence that claims 1–3, 6–9, 11, 13, 15, 16, 18–20, 22, 27, and 29–34, but not claim 23, are anticipated by Rasmussen under 35 U.S.C. § 102(b) and § 102(e).

A. Rasmussen (Ex. 1006)

Rasmussen describes a "pillow assembly including a visco-elastic foam core and a cover having a top portion and a side portion that is more permeable than the top portion." Ex. 1006, [57]. Figure 1 of Rasmussen is reproduced below.

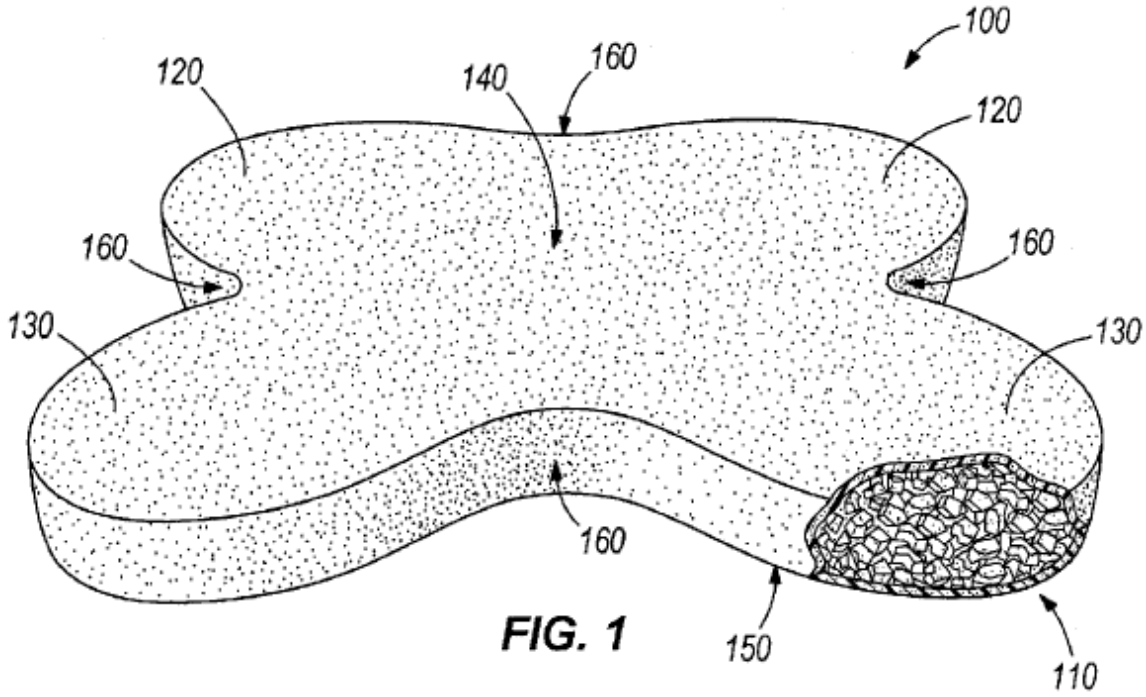


FIG. 1

Figure 1 shows a perspective view of a pillow with a portion of its cover removed to expose its core. *Id.* ¶ 10. Pillow 100 includes core 110, and core 110 includes top layer 140, bottom layer 150, and sidewalls 160 connecting top layer 140 and bottom layer 150. *Id.* ¶¶ 14, 15.

Sidewalls 160 can be "highly porous, and therefore provide a significant degree of ventilation for the pillow," and "this capability is achieved through the use of a 3D textile core sidewall 160." *Id.* ¶ 29. Top layer 140, bottom layer 150, and sidewalls 160 define cavity 170 that receives filler material 180. *Id.* ¶ 15, Fig. 2. "[F]iller material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam" with "hardness . . . for desirable softness and body-conforming qualities." *Id.* ¶¶ 19, 30.

Pillow 100 can include a rib where top layer 140 and sidewall 160 "meet and are joined." *Id.* ¶ 15. According to Rasmussen,

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Id. ¶ 18.

The "core can be enclosed within a cover having highly porous sides." *Id.* ¶ 6. Cover 190 includes top portion 200, bottom portion 210, and side portions 220. *Id.* ¶ 48. Top portion 200 "can be less porous than the side portions 220 or the bottom portion 210 of the cover 190." *Id.* ¶ 50. Side portions 220 "can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material) . . . and covering the highly porous material of the core sidewalls 160." *Id.* ¶ 49. "[S]ide portions 220 of the cover 190 . . . can permit significant ventilation into and out of the pillow." *Id.* "Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [and] a cotton/polyester blend." *Id.* ¶ 52. "[C]over 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." *Id.*

For embodiments "in which reticulated or non-reticulated visco-elastic foam is used to construct portions of the core (e.g., the top layer 140, the bottom layer 150, and/or the filler material 180), the pillow 100 provides a soft and comfortable surface for a user's body" and "can also conform to a user's body, thereby distributing the force applied by the user's body upon the top layer 140." *Id.* ¶ 46. The "use of reticulated foam can also enhance

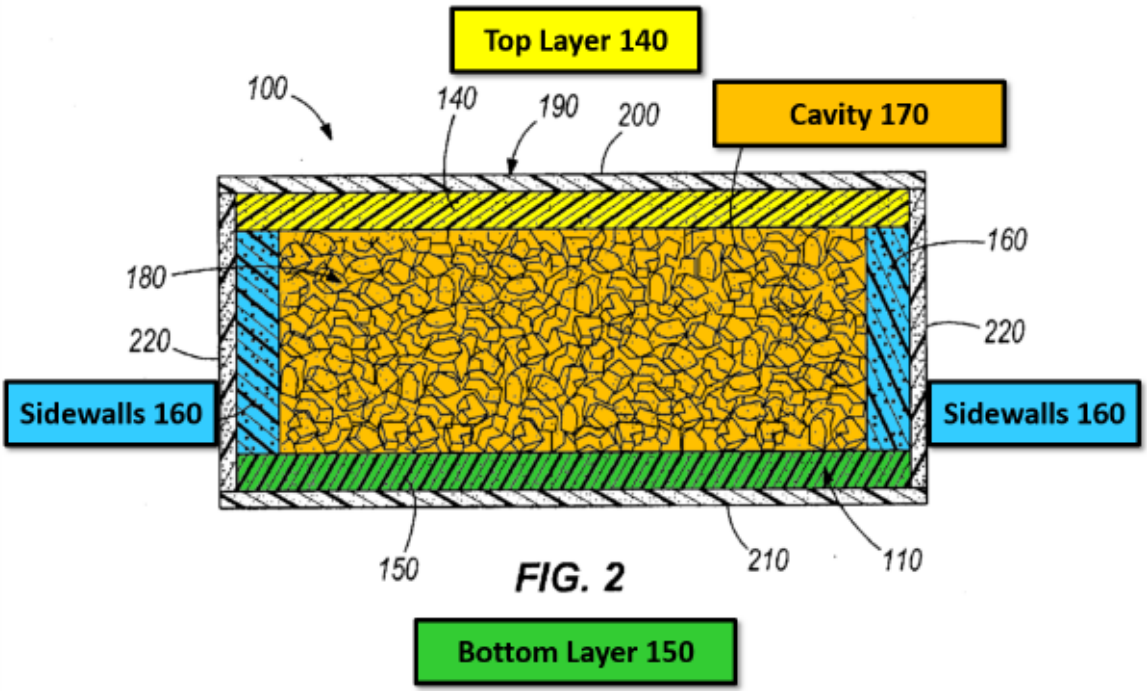
the ability of the pillow 100 to wick moisture away from the user's body thereon." *Id.* ¶ 22.

B. Independent Claims 1, 31, 33, and 34

Petitioner states that "Rasmussen anticipates claim 1 both by virtue of: i) its 'core 110' structure, including top layer 140, bottom layer 150, and sidewalls 160, as well as, separately and independently, by virtue of ii) its pillow 'cover 190' structure, including top portion 200, bottom portion 210, and side portions 220." Pet. 26; *see also id.* at 22–26 (asserting what Rasmussen discloses).

1. Challenge Based on the Core of Rasmussen

In its description of Rasmussen, Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 23.



The annotated Figure 2 from Rasmussen illustrates the components of core 110. *Id.*

a. Uncontested Limitations of Independent Claims 1, 31, 33, and 34

For claim 1, Petitioner argues that Rasmussen discloses a pillow comprising "a first panel having an edge defining a perimeter; a second panel having an edge defining a perimeter; and a gusset joining said first and second panels." Pet. 26–27 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2; Rhodes Decl. ¶¶ 107, 108).

Petitioner also argues that Rasmussen discloses a pillow comprising "a first panel; a second panel opposite the first panel; and a gusset . . . joining said first and second panels," as recited by independent claim 31, for the reasons asserted against claims 1–3, 8, and 19. Pet. 55; *see also id.* at 32–35 (for claims 2 and 3, additionally citing Rhodes Decl. ¶¶ 115–119; Ex. 1006, Figs. 1, 2; Ex. 1007, Figs. 1, 2), 40–41 (for claims 8 and 19, additionally citing Ex. 1006 ¶¶ 15, 19, 30–45, Figs. 1, 2; Ex. 1007 ¶¶ 11, 15, 26–41, Figs. 1, 2).

For independent claims 33 and 34, Petitioner further argues that Rasmussen discloses a pillow comprising "a first panel having an edge defining a perimeter; a second panel having an edge defining a perimeter; and a gusset joining said first and second panels" for the reasons asserted against claim 1. Pet. 57 ("Each of claim 33 and claim 34's first three limitations are identical to the first three limitations of claim 1.").

Patent Owner does not present arguments addressing these limitations of claims 1, 31, 33, and 34. *See* PO Resp. 53–74.

We find that the cited portions of Rasmussen disclose and depict that "core 110 of the illustrated pillow 100 includes a top layer 140, a bottom layer 150 opposite the top layer 140, and sidewalls 160 connecting the top layer 140 and the bottom layer 150." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007

¶ 11, Figs. 1, 2. In particular, we find that top layer 140 of Rasmussen discloses "a first panel having an edge defining a perimeter," bottom layer 150 of Rasmussen discloses "a second panel having an edge defining a perimeter," and Rasmussen's sidewall 160 connecting the top and bottom layers 140, 150 discloses "a gusset joining said first and second panels," as recited by independent claims 1, 33, and 34. Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

For independent claim 31, we find that top layer 140 of Rasmussen discloses "a first panel," bottom layer 150 of Rasmussen discloses "a second panel opposite the first panel," and Rasmussen's sidewall 160 connecting the top and bottom layers 140, 150 discloses "a gusset . . . joining said first and second panels," as recited by independent claim 31. *Id.*

Also for claim 31, Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover having an inner surface defining a chamber for fill material" and "an interface between said first panel and said gusset comprises a zipper configured to provide access to the chamber." Pet. 54–55. Petitioner additionally argues that core 110 of Rasmussen discloses the limitations of independent claim 31 for the same reasons given for claims 1, 2, 3, 8, and 19. *Id.* Petitioner further argues that Rasmussen discloses a zipper at the seam where the top layer and sidewalls are joined. *Id.* at 55 (citing Ex. 1006 ¶ 18; Ex. 1007 ¶ 14), 56 (citing Rhodes Decl. ¶¶ 167–170).

We find that the cited portion of Rasmussen teaches "top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers . . .) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an

opening in the top layer 140, sidewall 160, and/or bottom layer 150." Ex. 1006 ¶ 18; Ex. 1007 ¶ 14. We, thus, find that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover having an inner surface defining a chamber for fill material" and "an interface between said first panel and said gusset comprises a zipper configured to provide access to the chamber," as recited by independent claim 31.

b. "wherein said first panel and said second panel each comprise a porous material, and wherein said gusset comprises a material having a greater porosity than the porous material" (claim 1)

Petitioner contends that Rasmussen describes that top and bottom layers 140, 150 are porous material. Pet. 29 (citing Ex. 1006 ¶¶ 8, 19–24; Ex. 1007 ¶¶ 15–20; Rhodes Decl. ¶ 109). Petitioner also contends that sidewall 160 is more porous. *Id.* at 29–30 (citing Ex. 1006 ¶¶ 8, 29; Ex. 1007 ¶ 25; Rhodes Decl. ¶ 110).

We find that Rasmussen discloses porous top and bottom layers 140, 150. Ex. 1006 ¶ 22 ("by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 . . . reticulated foam can provide significantly increased ventilation for the top and/or bottom layer 140, 150"); *see also* Ex. 1007 ¶ 18 (disclosing the same). We also find that Rasmussen discloses highly porous sidewalls 160. Ex. 1006 ¶¶ 8 ("side layer is more permeable than the top layer and the bottom layer"), 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the

pillow 100" and "this capability is achieved through the use of a 3D textile core sidewall 160"); *see also* Ex. 1007 ¶ 25 (disclosing the same).

Patent Owner responds that Rasmussen does not disclose the "gusset material itself is more porous that the materials of the first and second panels." PO Resp. 68. Patent Owner argues that, under either of Petitioner's interpretations of Rasmussen, Rasmussen teaches at best that Petitioner's alleged gusset "as a whole" is more porous than the alleged panels, not that the base material of the alleged gusset is more porous than the materials of the alleged panels. *Id.* (citing Pet. 26, 29, 30; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). According to Patent Owner, "even if the alleged gusset in Rasmussen is more porous than the first and second panels, this does not necessarily mean (and is, thus, not inherent) that the material making up the gusset has a greater porosity than the material(s) forming the first and second panels." *Id.* at 68–69.

Petitioner, however, cites portions of Rasmussen that disclose the "side layer is more permeable than the top layer and the bottom layer" and "highly porous" sidewalls 160 allow air to enter and exit its sides "achieved through use of a 3D textile core sidewall 160." Pet. 29–30 (citing Ex. 1006 ¶ 29; Ex. 1007 ¶ 25). In connection with "3D textile," Rasmussen states that the "sides of the core can be defined by highly porous material (such as a 3D textile material)." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We, therefore, find that Rasmussen discloses that the 3D textile making up its sidewalls 160 has a greater porosity than the material forming its top and bottom layers 140, 150.

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its core.

c. "a gusset perimetrically bounding and joining said first and second panels" (claim 31)

Petitioner argues that Rasmussen discloses "a gusset perimetrically bounding and joining said first and second panels," as recited by claim 31 for the reasons given for claims 1–3, 8, and 19. Pet. 54–55; *see also id.* at 33–35 (for claims 2 and 3, citing Rhodes Decl. ¶ 116; Ex. 1006, Figs. 1, 2; Ex. 1007, Figs. 1, 2), 40–41 (for claims 8 and 19, citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2).

We find that Figures 1 and 2 show sidewall 160 of core 110 joined to top and bottom layers 140, 150. As discussed above in connection with claim 1, we find that Rasmussen discloses "sidewalls 160 connecting the top layer 140 and the bottom layer 150" and that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15; Ex. 1007 ¶ 18. We also credit the testimony of Petitioner's declarant. Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow").

Patent Owner responds that "[n]othing in these cited portions of Rasmussen (or anywhere else), however, discloses that the sidewalls of Rasmussen's core or the side portions of Rasmussen's cover 'perimetrically bound' the entirety of the corresponding top and bottom layers/portions." PO Resp. 74 (citing Pet. 33–37; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶¶ 15, 48; Ex. 1007 ¶¶ 18, 44; Rhodes Decl. ¶ 120) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 31 based on disclosures related to the core.

d. "wherein said gusset is formed of an open cell construction, said open cell construction being formed by interlaced strands" (claim 33) and "wherein said gusset is formed of an open cell construction, said open cell construction being formed by spaced-apart strands" (claim 34)

Independent claims 33 and 34 have similar limitations as claim 1 but require the gusset to be formed of a specific open cell constructions. Ex. 1001, 7:4–17. Specifically, independent claim 33 recites "wherein said gusset is formed of an open cell construction, said open cell construction being formed by interlaced strands," and independent claim 34 recites "wherein said gusset is formed of an open cell construction, said open cell construction being formed by spaced-apart strands." *Id.*

For independent claims 33 and 34, Petitioner cites previous arguments for limitations that are identical to ones in claim 1. Pet. 57. Petitioner also argues that the core of Rasmussen has a gusset with interlaced strands or spaced-apart strands because one of ordinary skill in the art would understand Rasmussen's "3D textile material" to have an open cell

construction formed by interlaced and spaced apart strands or 3D spacer fabric. Pet. 59 (citing Rhodes Decl. ¶¶ 175–179).

As discussed above, we find that Rasmussen discloses highly porous sidewalls 160. Ex. 1006 ¶¶ 8 ("side layer is more permeable than the top layer and the bottom layer"), 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through the use of a 3D textile core sidewall 160"); *see also* Ex. 1007 ¶ 25 (disclosing the same). In view of our interpretation of "open cell construction" to mean a "construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.A., we determine that "highly porous" sidewalls 160 disclose "said gusset is formed of an open cell construction," as recited by claims 33 and 34.

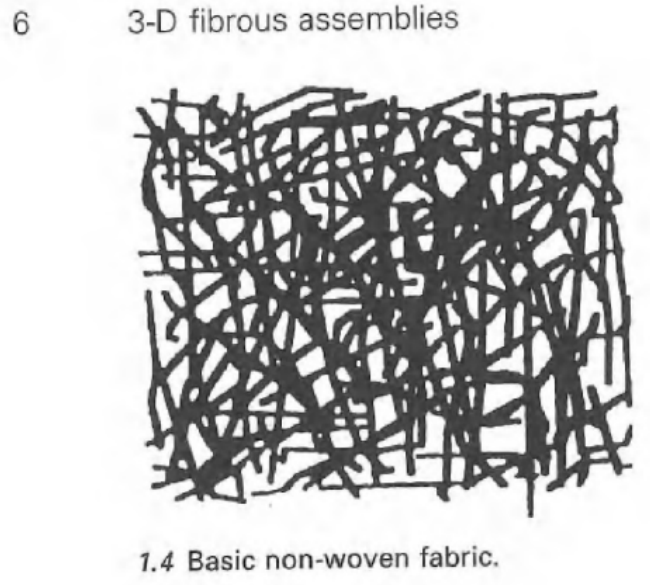
Petitioner's declarant states that

> "highly porous" "3D textile material" used for the gusset of Rasmussen's core 110 has interlaced strands in that the fibers are interlaced to create the three dimensional textile structure of the material, and that the material has spaced apart strands in that the fibers have spacing sufficient to make the material "highly porous."

Rhodes Decl. ¶ 178.

Patent Owner states that the "building block of textiles is the fiber(s)" (PO Resp. 4), "fibers can then be 'spun' into yarn to create various textiles" (*id.* at 5), "there are four primary techniques for constructing fabrics, namely: weaving, knitting, braiding, and nonwoven manufacturing" (*id.* at 12), "[s]tandard weaving used two perpendicular yarn sets" (*id.*), "knitting is

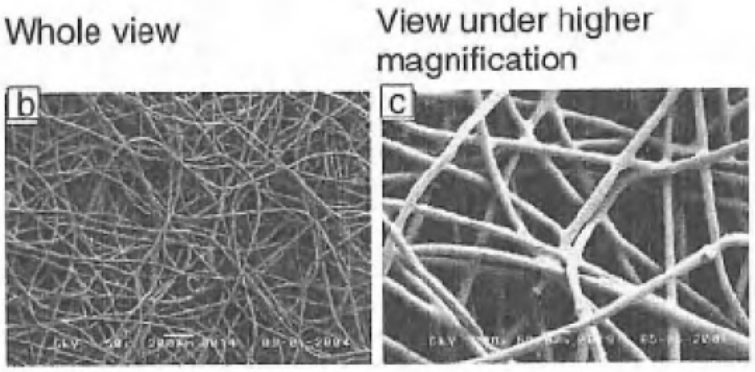
characterized by rows and columns of interconnected yarn loops" (*id.*), "[b]raiding can use a single yarn set, wherein two oriented braiders are intertwined/interlaced with each other" (*id.*), and "non-wovens use fibers, rather than yarns" (*id.* at 13). Reproduced below is a figure of non-woven fabric that Patent Owner provides.



The figure shows "[b]asic non-woven fabric." PO Resp. 13 (citing Ex. 2007, 6). Thus, the parties agree that a fabric or textile material would include strands. *See also* Ex. 2016, 27:12–13 ("A fabric in its most generic description would be a textile."), 27:15–19 (In response to "are there differences between a fabric and a textile," Petitioner's declarant answers "I would say that the terms are largely synonymous.").

Patent Owner also states that "[b]y extending the basic 2-D techniques of knitting, weaving, braiding, and non-wovens and adding further complexity a wide array of different 3-D textiles can be created." PO Resp. 13. Patent Owner provides examples of 3D textiles, all of which include "interlaced strands." *See* PO Resp. 14–27. In view of the above, we find that Rasmussen's "highly porous" "3D textile material" discloses "said

open cell construction being formed by interlaced strands," as recited by claim 33. For example, reproduced below is a figure of 3-D non-woven structures that Patent Owner provides.



1.22 Examples of 3-D non-woven structures.

The figures shows "[e]xamples of 3-D non-woven structures." PO Resp. 25 (citing Ex. 2007, 26).

Both parties also agree that highly porous textiles have spaced-apart strands. PO Resp. 27 ("The tightness of the 3D structure itself can also impact the overall porosity. Tighter structures tend to have lower porosity because there is less space between the yarns forming the structure."); Rhodes Decl. ¶ 178; Parachuru Decl. ¶ 93 ("Similarly, loose structures tend to have higher porosity due to the increased space between the yarns forming the structure."). Thus, we find that Rasmussen's "highly porous" "3D textile material" discloses "said open cell construction being formed by spaced-apart strands," as recited by claim 34.

Patent Owner responds that Rasmussen does not disclose expressly the specific open cell configurations of independent claims 33 and 34. PO Resp. 53. In particular, Patent Owner contends that Rasmussen does not disclose expressly an open cell construction formed by "interlaced strands," as required by claim 33, or "spaced-apart strands," as required by claim 34.

Id. at 53–55; *see also id.* at 54 (describing the disclosure of the '334 patent) (citing Ex. 1001, 2:21–24; Ex. 2016, 19:2–11, 140:13–22). According to Patent Owner, Petitioner's declarant admitted that Rasmussen does not disclose the open cell constructions of these claims. *Id.* at 54–55 (citing Ex. 2016, 76:17–78:7). Patent Owner also argues that Rasmussen's "3D textile material" or "highly porous 3D textiles" are broad terms that encompass many different types of material and fall short of demonstrating that Rasmussen discloses the specific claimed structures of the claims. *Id.* at 55.

Patent Owner also responds that "Petitioner never even argues that the 'interlaced,' 'spaced-apart,' or 'mesh' strand structures are *inherent* from Rasmussen's disclosure of 3-D textiles." PO Resp. 55. Patent Owner states that "both parties' experts acknowledge that 3D textiles, as well as highly porous 3D textiles, can have numerous possible configurations other than the specific open cell constructions recited in the claims," and thus, Rasmussen does not disclose inherently the claimed structures. *Id.* at 55–57 (citing Parachuru Decl. ¶¶ 67–73, 92–94, 158–164, 168–169; Ex. 2016, 15:23–16:7, 31:21–32:6, 36:3–7, 36:14–18, 37:7–21, 49:4–12, 50:15–51:12, 52:19–53:3, 123:7–23, 135:23–136:24). The record, however, indicates that "highly porous" "3D textile material" has "interlaced strands" and "spaced-apart strands," as argued by Petitioner and as required by claims 33 and 34.

Patent Owner further responds that Rasmussen's generic reference to 3D textiles does not disclose sufficiently the species set forth in the claims. PO Resp. 57. Patent Owner argues that both parties' experts agree that "3D textiles" is a broad genus that covers an exponential number of materials.

Id. at 57–59 (citing Parachuru Decl. ¶¶ 91–94; Ex. 2016, 31:21–32:6, 37:7–21).

Patent Owner additionally responds that Rasmussen's generic disclosure does not enable the specific, claimed species, and thus, does not anticipate the challenged claims. PO Resp. 59–60. Specifically, Patent Owner argues that Rasmussen discloses "3D textiles," which undisputedly encompasses an exponential number of materials and "is also completely devoid of any discussion of any particular species within such a broad genus." *Id.* at 60–61. Patent Owner also argues that the claimed structures "result from [] modifying or transforming a constituent base material," and Rasmussen provides no guidance regarding how to transform constituent materials to arrive at the claimed structures. *Id.* at 61 (citing Parachuru Decl. ¶ 153). Patent Owner additionally argues that undue experimentation would be required to arrive at the claimed structure and one of ordinary skill in the art would not be motivated to try based on Rasmussen's generic disclosure. *Id.* at 61–62.

Relying on its proposed interpretation of "open cell construction," Patent Owner argues that Rasmussen does not disclose open cells defined by "interlaced" or "spaced-apart strands," as required by claims 33 and 34. PO Resp. 64–66; *see also id.* at 66 (citing Parachuru Decl. ¶¶ 154–157). Patent Owner also argues that Petitioner does not indicate where Rasmussen teaches such open cell construction. *Id.* at 65–66 (citing Pet. 51, 59; Rhodes Decl. ¶¶ 157, 175–178). Patent Owner contends that "3D textile material" would not be understood to have such a structure, as asserted by Petitioner and Petitioner's declarant. *Id.* at 65. Patent Owner further argues that 3D textiles and highly porous textiles do not require interlaced or spaced-apart

strands. *Id.* at 66–67 (citing Parachuru Decl. ¶¶ 154–162). Patent Owner further contends that Petitioner's analysis renders claim limitations meaningless. *Id.* at 67 (citing Parachuru Decl. ¶ 161). Patent Owner additionally asserts that Rasmussen's generic reference to 3D textiles is not enabling and cannot anticipate the claims. *Id.* Based on the full record, Petitioner sufficiently shows that Rasmussen's "highly porous" "3D textile material" discloses the open cell constructions of claims 33 and 34. Also, even if Rasmussen uses the "3D textile" broadly, the full record persuades us that Rasmussen discloses the limitations of claims 33 and 34. PO Resp. 4, 5, 12–27; Rhodes Decl. ¶ 178; Ex. 1006 ¶¶ 8, 29; Ex. 1007 ¶ 25; Parachuru Decl. ¶ 93. Also, our interpretation of the limitations of claims 33 and 34 do not require modifying or transforming a constituent base material.

Patent Owner contends that Rasmussen does not disclose 3D spacer fabric, which is disclosed in the '332 patent as a preferred type of gusset material. PO Resp. 62–64 (citing Pet. 51, 57, 59; Ex. 1006 ¶ 49; Ex. 2016, 34:7–13, 36:14–18, 47:24–48:12, 46:9–47:3, 137:2–17, 138:2–10); Ex. 1001, 2:47–49.

The full record indicates that both parties' declarants agree that "spacer fabric" is also known as "3-dimensional fabric." Ex. 1009 ¶ 16 ("*Spacer fabric, also known as* double needle bar fabrics (typically knitted on a double needle bar machine) or *3-dimensional fabric*, is typically made by knitting two fabric layers.") (emphases added); Rhodes Decl. ¶ 60 (quoting Ex. 1009 ¶ 16); Parachuru Decl. ¶ 83 (quoting Ex. 1009 ¶ 16); *see also* PO Resp. 21–22 (quoting the same). As discussed above, Rasmussen discloses a highly porous 3D textile material.

Second, the full record indicates that both parties agree that 3D spacer material is "highly porous." Pet. 11 ("it was known to use spacer fabrics for breathability and cooling in bedding" and "were already being used for their 'airy' and 'mesh' construction to provide laterally ventilated side walls to 'optimize the sleeping climate' for mattresses"), 12 ("spacer fabric was known for use in pillows, including for pillow covers, and, as demonstrated by the Rasmussen reference discussed in detail below in Section IV, to provide a breathable gusset comprised of a highly porous 3D textile for lateral ventilation and cooling"); PO Resp. 21 ("The spacer fabric is highly porous because the sides of the fabrics between the top and bottom layers are only partially filled with spacer fibers."); Rhodes Decl. ¶ 55 ("3D spacer fabrics have been well known by skilled artisans before the '332 Patent to be 'highly breathable' based on their high air permeability, ability to transport water vapor, and thermal conductivity") (citing Ex. 1009 ¶ 16; Ex. 1029, 1; Ex. 1030, 22–25); Parachuru Decl. ¶ 84 ("spacer fabric is highly porous").

Further, Rasmussen discloses

> a cover having highly porous sides (e.g., made of a 3D textile material or a velour or stretch velour material) corresponding to and covering the sides of the core and/or a highly porous bottom (e.g., again, made of a 3D textile material or a velour or a stretch velour material).

Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We find that Rasmussen's disclosure of "velour or a stretch velour material" as an alternative to "3D textile material" indicates that "3D textile material" has similar specificity as "velour or a stretch velour material." *See also* Ex. 2016, 36:14–17 (In response to "[c]an you give me some examples of 3D knitted textiles," Petitioner's declarant answering "[v]elour, you can knit Terry cloth as well, fleece, 3D spacer

fabrics," thus indicating 3D spacer fabric and velour are in a same group). If "3D textile material" has less specificity, especially in the manner contended by Patent Owner, then the additional alternative of "velour or a stretch velour material" would be unnecessary. Thus, the record provides evidence that "3D textile material" is 3D spacer material and not materials that include 3D spacer material and "velour or stretch velour material."

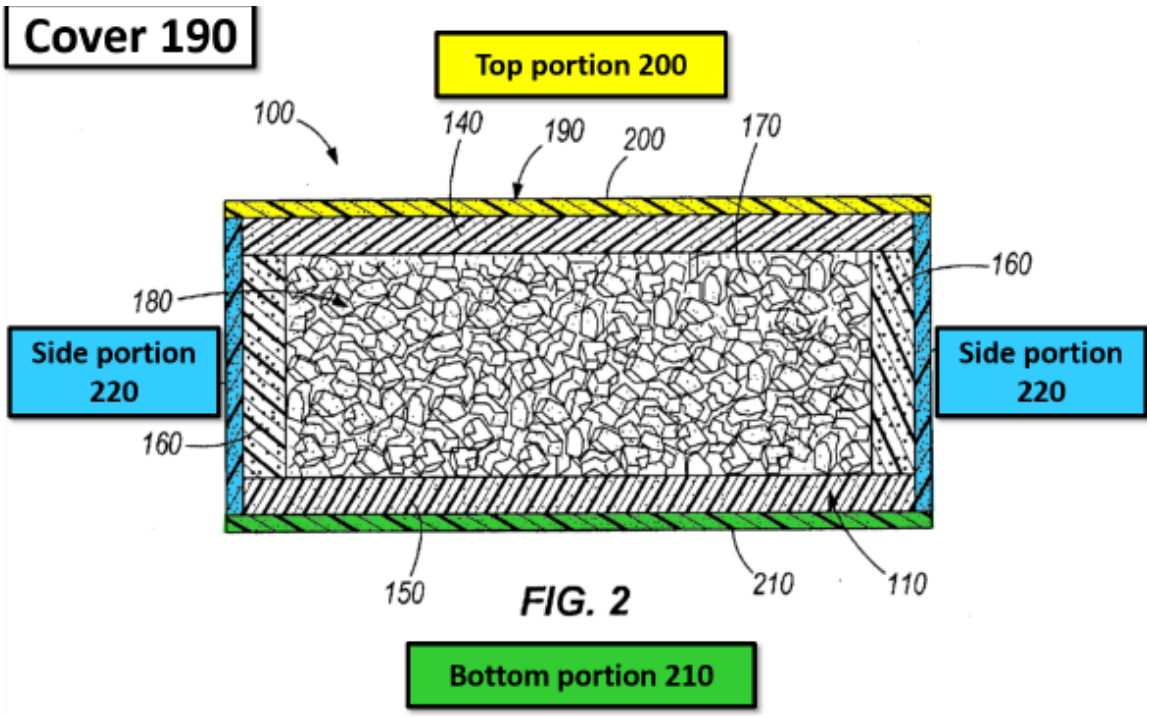
In the context of Rasmussen's description of materials that are highly porous and applicable for its sidewalls and side portions of a pillow, we find that "3D textile" must mean something appropriate for a pillow, and therefore mean something more specific, like "velour or stretch velour material." Record evidence does not indicate which other material is highly porous, 3-dimensional, and appropriate for a ventilated pillow. *See* Tr. 16:15–17:21, 18:3–19:10. Finally, Patent Owner's declarant indicates that spacer fabric includes a mesh component. Parachuru Decl. ¶ 83 ("spacer fabric . . . is typically made by knitting two fabric layers" that "could be the same or different, i.e. mesh or solid").

In view of the above, we find that the "3D textile material" of Rasmussen is 3D spacer fabric, not a generic reference to any 3D fabric. Therefore, Petitioner persuades us by a preponderance of the evidence that Rasmussen's "highly porous" "3D textile material" is 3D spacer fabric and anticipates claims 33 and 34 for another reason.

For the above reasons, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claims 33 and 34 based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

Separate and independent of its arguments based on core 110, Petitioner also contends that Rasmussen's cover 190 with top portion 200, bottom portion 210, and side portions 220 discloses the limitations of claim 1. Pet. 26; *see also id.* at 22–26 (asserting what Rasmussen discloses). In its description of Rasmussen, Petitioner provides an annotated Figure 2 from Rasmussen that is reproduced below. *Id.* at 24.



The annotated Figure 2 from Rasmussen illustrates components of cover 190. *Id.*

a. Uncontested Limitations of Independent Claims 1, 31, 33, and 34

For independent claims 1, 33, and 34, Petitioner argues that Rasmussen discloses a pillow comprising "a first panel having an edge

defining a perimeter; a second panel having an edge defining a perimeter; and a gusset joining said first and second panels." Pet. 27–28 (citing Ex. 1006 ¶¶ 48, 52, Figs. 1, 2; Ex. 1007 ¶¶ 44, 48, Figs. 1, 2; Rhodes Decl. ¶¶ 107, 108).

For independent claim 31, Petitioner also argues that Rasmussen discloses a pillow comprising "a first panel; a second panel opposite the first panel; and a gusset . . . joining said first and second panels" for the reasons asserted against claims 1–3, 8, and 19. Pet. 55–56; *see also id.* at 32–35 (for claims 2 and 3, additionally citing Rhodes Decl. ¶¶ 115–119; Ex. 1006, Figs. 1, 2; Ex. 1007, Figs. 1, 2), 40–41 (for claims 8 and 19, additionally citing Ex. 1006 ¶¶ 15, 19, 30–45, Figs. 1, 2; Ex. 1007 ¶¶ 11, 15, 26–41, Figs. 1, 2).

Patent Owner does not present arguments addressing these limitations of claims 1 and 31. *See* PO Resp. 53–74.

We find that the cited portions of Rasmussen disclose and depict that "pillow 100 can have a cover 190 substantially enclosing the pillow 100" and that "cover 190 can include a top portion 200, a bottom portion 210 opposite the top portion 200, and side portions 220 extending between the top portion 200 and the bottom portion 210." Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2.

In particular, we find that top portion 200 of Rasmussen discloses "a first panel having an edge defining a perimeter," bottom portion 210 of Rasmussen discloses "a second panel having an edge defining a perimeter," and Rasmussen's side portions 220 extending between top and bottom portions 200, 210 discloses "a gusset joining said first and second panels,"

as recited by independent claims 1, 33, and 34. Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

For independent claim 31, we find that top portion 200 discloses "a first panel," bottom portion 210 discloses "a second panel opposite the first panel," and side portions 220 disclose "a gusset . . . joining said first and second panels." *Id.*

Also for claim 31, Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover having an inner surface defining a chamber for fill material" and "an interface between said first panel and said gusset comprises a zipper configured to provide access to the chamber." Pet. 54–56. Petitioner contends that cover 190 of Rasmussen disclose the limitations of independent claim 31 for the same reasons given for claims 1, 2, 3, 8, and 19. *Id.* at 55–56. Petitioner further argues that Rasmussen discloses a zipper at either or both of the seams between top portion 200 and side portion 220 and between bottom portion 210 and side portion 220. *Id.* at 56 (citing Ex. 1006 ¶¶ 52, 53; Ex. 1007 ¶¶ 48, 49; Rhodes Decl. ¶¶ 167–170).

We find that Rasmussen discloses that "cover 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers . . .)." Ex. 1006 ¶ 52; Ex. 1007 ¶ 48. We also find that Rasmussen discloses that "cover 190 is removable from such layers 140, 150 and sidewalls 160 . . . by one or more releasable fasteners (e.g., zippers . . .)" and that "[a]ny such fasteners can be positioned to releasably secure at least one portion of a cover 190 to another portion of the cover 190." Ex. 1006 ¶ 53; Ex. 1007 ¶ 49.

b. "wherein said first panel and said second panel each comprise a porous material, and wherein said gusset comprises a material having a greater porosity than the porous material" (claim 1)

Petitioner contends that Rasmussen describes that top and bottom portions 200, 210 are less porous than side portions 220. Pet. 30 (citing Ex. 1006 ¶¶ 6, 49, 50, Fig. 2, claims 11, 12; Ex. 1007 ¶¶ 5, 45, 46, Fig. 2; Rhodes Decl. ¶¶ 111–113).

We find that Petitioner's citations to Rasmussen disclose that "the core can be enclosed within a cover having highly porous sides," "the top of the cover can be less porous than the sides or bottom of the cover," and "the top and bottom of the cover are less porous than the sides of the cover." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We also find that Rasmussen discloses highly porous side portions 220. Ex. 1006 ¶¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same).

We, thus, find that less porous top and bottom portions 200, 210 and highly porous side portions 220 made of 3D textile material disclose "wherein said first panel and said second panel each comprise a porous material, and wherein said gusset comprises a material having a greater porosity than the porous material," as recited by claim 1.

Patent Owner responds Rasmussen does not disclose that the "gusset material itself is more porous that the materials of the first and second panels." PO Resp. 68. Patent Owner argues that, under either of Petitioner's interpretations of Rasmussen, Rasmussen teaches at best that Petitioner's alleged gusset "as a whole" is more porous than the alleged panels, not that

the base material of the alleged gusset is more porous than the materials of the alleged panels. *Id.* (citing Pet. 26, 29, 30; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). According to Patent Owner, "even if the alleged gusset in Rasmussen is more porous than the first and second panels, this does not necessarily mean (and is, thus, not inherent) that the material making up the gusset has a greater porosity than the material(s) forming the first and second panels." *Id.* at 68–69.

Based on our findings above, Petitioner sufficiently shows that Rasmussen discloses that the material of the side portions 220 has a greater porosity than the material of its top and bottom portions 200, 210. *See also* Ex. 1006 ¶ 6; Ex. 1007 ¶ 5 (disclosing "highly porous material (such as a 3D textile material)").

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its cover.

c. "a gusset perimetrically bounding and joining said first and second panels" (claim 31)

Petitioner argues that Rasmussen discloses "a gusset perimetrically bounding and joining said first and second panels," as recited by claim 31 for the reasons given for claims 1–3, 8, and 19. Pet. 54–55; *see also id.* at 35–36 (for claims 2 and 3, citing Rhodes Decl. ¶ 118; Ex. 1006 ¶ 48, Fig. 2; Ex. 1007 ¶ 44, Fig. 2), 42 (for claims 8 and 19, citing Rhodes Decl. ¶ 133; Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2).

We find that "side portions 220 extend[] between the top portion 200 and the bottom portion 210" and that the inner surfaces of top portion 200, bottom portion 210, and side portions 220 define an inner cavity. Ex. 1006

¶ 48; Ex. 1007 ¶ 44. We also credit the testimony of Petitioner's declarant. Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow").

Patent Owner responds that "[n]othing in these cited portions of Rasmussen (or anywhere else), however, discloses that the sidewalls of Rasmussen's core or the side portions of Rasmussen's cover 'perimetrically bound' the entirety of the corresponding top and bottom layers/portions." PO Resp. 74 (citing Pet. 33–37; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶¶ 15, 48; Ex. 1007 ¶¶ 18, 44; Rhodes Decl. ¶ 120) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 31 based on disclosures related to the cover.

d. "wherein said gusset is formed of an open cell construction, said open cell construction being formed by interlaced strands" (claim 33) and "wherein said gusset is formed of an open cell construction, said open cell construction being formed by spaced-apart strands" (claim 34)

Independent claims 33 and 34 have similar limitations as claim 1 but require the gusset to be formed of an open cell construction. Ex. 1001, 7:4–17. Specifically, independent claim 33 recites "wherein said gusset is

formed of an open cell construction, said open cell construction being formed by interlaced strands," and independent claim 34 recites "wherein said gusset is formed of an open cell construction, said open cell construction being formed by spaced-apart strands." *Id.*

For independent claims 33 and 34, Petitioner cites previous arguments for limitations that are identical to ones in claim 1. Pet. 57. Petitioner also argues that the cover of Rasmussen has a gusset with interlaced strands or spaced-apart strands because one of ordinary skill in the art would understand Rasmussen's "3D textile material" to have an open cell construction formed by interlaced and spaced-apart strands or 3D spacer fabric. *Id.* at 59 (citing Rhodes Decl. ¶¶ 175–179).

As discussed above, we find that Petitioner's citations to Rasmussen disclose that "the core can be enclosed within a cover having highly porous sides," "the top of the cover can be less porous than the sides or bottom of the cover," and "the top and bottom of the cover are less porous than the sides of the cover." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We also find that Rasmussen discloses highly porous side portions 220. Ex. 1006 ¶¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same). Patent Owner asserts the same arguments for Petitioner's anticipation challenges based on the core and cover for these limitations, which we address above. *See* PO Resp. 53–67.

Thus, for the reasons discussed above for the core of Rasmussen, Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claims 33 and 34 based on disclosure related to its cover.

C. Dependent Claims 2 and 3

Claims 2 and 3 depend from claim 1. Ex. 1001, 5:30–39. For the reasons discussed above in Section III.B., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its core and its cover.

Claim 2 recites:

> a first end of said gusset engages said edge of said first panel such that said gusset extends continuously about an entire portion of the perimeter of the first panel; and
>
> a second end of said gusset opposite said first end engages said edge of said second panel such that said gusset extends continuously about an entire portion of the perimeter of the second panel.

Id. at 5:30–37. Claim 3 recites "wherein said gusset perimetrically bounds said first and second panels." *Id.* at 5:38–39.

Petitioner argues that the core of Rasmussen discloses claims 2 and 3. Pet. 33–35 (citing Rhodes Decl. ¶ 116; Ex. 1006, Figs. 1, 2; Ex. 1007, Figs. 1, 2). Petitioner also argues that the cover of Rasmussen discloses claims 2 and 3. *Id.* at 35–36 (citing Rhodes Decl. ¶ 118; Ex. 1006 ¶ 48, Fig. 2; Ex. 1007 ¶ 44, Fig. 2).

We find that Figures 1 and 2 show sidewall 160 of core 110 joined to top and bottom layers 140, 150 and side portion 220 of cover 190 joined to top and bottom portions 200, 210. As discussed above in connection with claim 1, we find that Rasmussen discloses "sidewalls 160 connecting the top layer 140 and the bottom layer 150" and that the "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15; Ex. 1007 ¶ 18. We also find that "side

portions 220 extend[] between the top portion 200 and the bottom portion 210" and that the inner surfaces of top portion 200, bottom portion 210, and side portions 220 define an inner cavity. Ex. 1006 ¶ 48; Ex. 1007 ¶ 44. We also credit the testimony of Petitioner's declarant that "Rasmussen anticipates claims 2–3." Rhodes Decl. ¶ 120; *see also* Ex. 2016, 95:11–15 (stating, during deposition, that "[a]s a person with many years of experience in the industry, one can read the Rasmussen patent and completely understand and expect to find that as described, the side wall goes around all of the edges of the pillow"), 103:3–9 (stating that "a person with experience, such as mine, in understanding of the product and that the consumer is expecting to find a cover that covers all sides of the pillow, Rasmussen makes it clear through description and illustration that the cover is on all sides of the pillow").

Patent Owner responds that "[n]othing in these cited portions of Rasmussen (or anywhere else), however, discloses that the sidewalls of Rasmussen's core or the side portions of Rasmussen's cover 'perimetrically bound' the entirety of the corresponding top and bottom layers/portions." PO Resp. 74 (citing Pet. 33–37; Ex. 2016, 94:18–95:15, 102:20–103:9).

After weighing Petitioner's evidence (Ex. 1006 ¶¶ 15, 48; Ex. 1007 ¶¶ 18, 44; Rhodes Decl. ¶ 120) and Patent Owner's evidence (Ex. 2016, 94:18–95:15, 102:20–103:9), we determine that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 2 and 3 in its challenge based on the core and its challenge based on the cover.

D. Dependent Claims 6–9, 19, and 20

1. Challenge Based on the Core of Rasmussen

Claims 6–8, 19, and 20 depend from claim 1. Ex. 1001, 5:45–53, 6:21–29. Claim 9 depends from claim 8. *Id.* at 5:54–55. For the reasons discussed above in Section III.B.1., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its core.

Petitioner argues that the core of Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 6. Pet. 38 (citing Ex. 1006 ¶¶ 22, 24; Ex. 1007 ¶¶ 18, 20; Rhodes Decl. ¶ 124). We find that a cited portion of Rasmussen teaches "advantages are achieved by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 of the pillow" and "use of reticulated foam can also enhance the ability of the pillow 100 to wick moisture away from the user's body thereon." Ex. 1006 ¶ 22; Ex. 1007 ¶ 18.

Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as recited by claim 7. Pet. 39 (citing Ex. 1006 ¶ 18; Ex. 1007 ¶ 14; Rhodes Decl. ¶ 126). We find that the cited portion of Rasmussen teaches

> top layer 140, bottom layer 150 and sidewalls 160 can include one or more releasable fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material pieces, hook and eye sets, tied ribbons, strings, cords, or other fastener elements) . . . located between the top layer 140 and sidewall 160, between a sidewall 160 and the bottom layer 150, or within an opening in the top layer 140, sidewall 160, and/or bottom layer 150.

Ex. 1006 ¶ 18; Ex. 1007 ¶ 14.

Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover," as recited by claim 8, and "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover such that an outer surface of said fill material engages inner surfaces of said first and second panels" as recited by claim 19. Pet. 40–41 (citing Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2). We find that the cited portions of Rasmussen teach and depict that "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180" and that an outer surface of filler material 180 engages inner surfaces of top and bottom layers 140, 150. Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Claim 9 depends from claim 8, and claim 20 depends from claim 1. Ex. 1001, 5:54–55, 6:26–29. Petitioner argues that Rasmussen discloses "wherein said fill material comprises a compliant material," as recited by claim 9, and "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover, said fill material comprising memory foam," as recited by claim 20. Pet. 41 (citing 1006 ¶¶ 19, 30–45; Ex. 1007 ¶¶ 15, 26–41; Rhodes Decl. ¶¶ 131–132). We find that the cited portions teach that "visco-elastic foam (sometimes referred to as 'memory foam' . . .) . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

Patent Owner states that "[f]or at least the reasons discussed above for why Rasmussen does not anticipate any of the challenged independent claims, Rasmussen also does not anticipate any of the challenged dependent claims." PO Resp. 74–75; *see also* Pet. Reply 10 ("PO makes no separate arguments regarding claims 6–9, 11, and 18–20, which are, therefore, also anticipated, for the reasons identified in the Petition.").

Based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 6–9, 19, and 20 are anticipated by Rasmussen based on disclosures related to its core.

2. Challenge Based on the Cover of Rasmussen

Claims 6–8, 19, and 20 depend from claim 1. Ex. 1001, 5:45–53, 6:21–29. Claim 9 depends from claim 8. *Id.* at 5:54–55. For the reasons discussed above in Section III.B.1., the record persuades us that Petitioner shows by a preponderance of the evidence that claim 1 is anticipated by Rasmussen based on disclosures related to its cover.

Petitioner argues that the cover of Rasmussen discloses "wherein said first panel is formed with a moisture dispersing material," as recited by claim 6. Pet. 37–38 (citing Ex. 1006 ¶¶ 50, 52; Ex. 1007 ¶¶ 46, 48; Rhodes Decl. ¶¶ 122–123). We find that the cited portions of Rasmussen teach "[a]lternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester [or] a cotton/polyester blend," a moisture wicking material. Ex. 1006 ¶ 52; Ex. 1007 ¶ 48; Rhodes Decl. ¶ 129.

Petitioner argues that Rasmussen discloses "wherein said cover is formed by at least two partially or wholly separable portions, with said separable portions being selectively joinable by a fastening means," as

recited by claim 7. Pet. 39–40 (citing Ex. 1006 ¶¶ 52, 53; Ex. 1007 ¶¶ 48, 49; Rhodes Decl. ¶ 127). We find that Rasmussen teaches that "cover 190 can have one or more seams" that "can be attached by . . . conventional fasteners (e.g., zippers, buttons, clasps, laces, hook and loop fastener material, hook and eye sets, tied ribbons, strings, cords, or other similar elements, and the like)." Ex. 1006 ¶ 52; Ex. 1007 ¶ 48. We also find that Rasmussen teaches that "fasteners can be positioned to releasably secure at least one portion of a cover 190 to another portion of the cover 190." Ex. 1006 ¶ 53; Ex. 1007 ¶ 49.

Petitioner argues that Rasmussen discloses "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover," as recited by claim 8, and "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover such that an outer surface of said fill material engages inner surfaces of said first and second panels" as recited by claim 19. Pet. 42 (citing Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2). We find that the cited portions of Rasmussen disclose and depict that "pillow 100 can have a cover 190 substantially enclosing the pillow 100" and that "cover 190 can include a top portion 200, a bottom portion 210 opposite the top portion 200, and side portions 220 extending between the top portion 200 and the bottom portion 210." Ex. 1006 ¶ 48, Figs. 1, 2; Ex. 1007 ¶ 44, Figs. 1, 2. We also find that Rasmussen teaches and depicts that cover 190 encloses core 110 which includes "cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Claim 9 depends from claim 8, and claim 20 depends from claim 1. Ex. 1001, 5:54–55, 6:26–29. Petitioner argues that Rasmussen discloses "wherein said fill material comprises a compliant material," as recited by claim 9, and "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover, said fill material comprising memory foam," as recited by claim 20. Pet. 41–43 (citing Ex. 1006 ¶¶ 19, 30–31, 36; Ex. 1007 ¶¶ 15, 26–27, 32; Rhodes Decl. ¶¶ 133–134). We find that the cited portions teach that "visco-elastic foam (sometimes referred to as 'memory foam' . . .) . . . can have a hardness of at least 30 N and no greater than about 175 N for desirable softness and body-conforming qualities" and that "filler material 180 of the pillow 100 can include, but is not limited to, granulated visco-elastic foam." Ex. 1006 ¶¶ 19, 30; Ex. 1007 ¶¶ 15, 26.

Patent Owner states that "[f]or at least the reasons discussed above for why Rasmussen does not anticipate any of the challenged independent claims, Rasmussen also does not anticipate any of the challenged dependent claims." PO Resp. 74–75; *see also* Pet. Reply 10 ("PO makes no separate arguments regarding claims 6–9, 11, and 18–20, which are, therefore, also anticipated, for the reasons identified in the Petition.").

Based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 6–9, 19, and 20 are anticipated by Rasmussen based on disclosures related to its cover.

E. Dependent Claims 11 and 32

Claim 11 depends from claim 8, which depends from claim 1. Ex. 1001, 5:58–60. Claim 32 depends from independent claim 31. *Id.* at 7:1–3. For the reasons discussed above in Section III.B.1., the record

persuades us that Petitioner shows by a preponderance of the evidence that claims 1 and 31 are anticipated by Rasmussen based on disclosures related to its cover.

Petitioner argues that Rasmussen discloses a pillow "further comprising an inner cover disposed inside of said cover, at least a portion of said fill material being disposed within said inner cover," as recited by claim 11. Pet. 43–44 (citing Ex. 1006 ¶ 15, Fig. 2; Ex. 1007 ¶ 11, Fig. 2; Rhodes Decl. ¶ 136). Petitioner asserts the same arguments for claim 32, which depends from independent claim 31 and recites "further comprising an inner cover disposed inside of said cover, at least a portion of said fill material being disposed within said inner cover." *Id.* at 57 (also citing Rhodes Decl. ¶ 172).

We find that the cited portions of Rasmussen teach and depict that cover 190 encloses core 110 which includes "cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2.

Patent Owner states that "[f]or at least the reasons discussed above for why Rasmussen does not anticipate any of the challenged independent claims, Rasmussen also does not anticipate any of the challenged dependent claims." PO Resp. 74–75; *see also* Pet. Reply 10 ("PO makes no separate arguments regarding claims 6–9, 11, and 18–20, which are, therefore, also anticipated, for the reasons identified in the Petition.").

Based on the full record, Petitioner persuades us by a preponderance of the evidence that claims 11 and 32 are anticipated by Rasmussen based on disclosures related to its cover.

F. Dependent Claim 13

Dependent claim 13 depends from claim 8, which, in turn, depends from claim 1. Ex. 1001, 5:51–53; 5:65–6:3. For the reasons stated above in Sections III.B. and III.D., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claims 1 and 8 based on disclosures related to its core and cover.

Claim 13 recites that "wherein said gusset is formed of an open cell construction and a base material, and said open cell construction is formed by porosity of said base material being substantially greater than porosity of material forming said first panel and substantially greater than porosity of material forming said second panel." Ex. 1001, 5:65–6:3. Petitioner argues that Rasmussen describes sidewalls 160 and side portion 220 can be formed of a "highly porous" material, such as "3D textile material." Pet. 45 (citing Rhodes Decl. ¶¶ 138–141).

As discussed above in Section III.B.1.b., we find that Rasmussen discloses porous top and bottom layers. Ex. 1006 ¶ 22 ("by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 . . . reticulated foam can provide significantly increased ventilation for the top and/or bottom layer 140, 150"); *see also* Ex. 1007 ¶ 18 (disclosing the same). We also find that Rasmussen discloses highly porous sidewalls 160. Ex. 1006 ¶¶ 8 ("side layer is more permeable than the top layer and the bottom layer"), 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through use of a 3D textile core sidewall 160"); *see also* Ex. 1007 ¶ 25 (disclosing the same).

Also, as discussed above in Section III.B.2.b., we find that Rasmussen discloses that the "the core can be enclosed within a cover having highly porous sides," "the top of the cover can be less porous than the sides or bottom of the cover," and "the top and bottom of the cover are less porous than the sides of the cover." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We also find that Rasmussen discloses highly porous side portions 220. Ex. 1006 ¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same).

We, thus, find (1) that 3D textile making up sidewalls 160 of core 110 has a greater porosity than the material forming top and bottom layers 140, 150 and (2) that cover 190 has highly porous side portions 220 made of 3D textile material and less porous top and bottom portions 200, 210.

Patent Owner responds with the same arguments asserted against claim 1. PO Resp. 68 (citing Pet. 26, 29, 30; Ex. 1006 ¶¶ 8, 50; Parachuru Decl. ¶¶ 175–178). In particular, Patent Owner argues that, "even if the alleged gusset in Rasmussen is more porous than the first and second panels, this does not necessarily mean (and is, thus, not inherent) that the material making up the gusset has a greater porosity than the material(s) forming the first and second panels." *Id.* at 68–69.

Based on our findings above, Petitioner sufficiently shows that Rasmussen discloses that the material of sidewalls 160 and side portions 220 have a greater porosity than the material of its top and bottom layers 140, 150 and its top and bottom portions 200, 210. *See also* Ex. 1006 ¶ 6;

Ex. 1007 ¶ 5 (disclosing "highly porous material (such as a 3D textile material)").

Thus, based on the full record, we determine that Petitioner shows by a preponderance of the evidence that Rasmussen anticipates claim 13 based on disclosures related to its core and cover.

G. Dependent Claim 15

Claim 15 depends from claim 1 and recites "wherein at least one of said first panel and said second panel comprise a material selected from a group consisting of: a 100% polyester fabric, rayon, nylon, or a spandex-blend fabric." Ex. 1001, 6:6–9. For the reasons stated above in Section III.B.2.b., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its cover.

Petitioner argues that Rasmussen's cover discloses claim 15. Pet. 46–47 (citing Rhodes Decl. ¶ 145; Ex. 1006 ¶¶ 50–52; Ex. 1007 ¶¶ 46–48). We find that cited portions of Rasmussen disclose that at least one of the components of its cover 190 can be polyester. Ex. 1006 ¶ 52; Ex. 1007 ¶ 48 ("Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester, a cotton/polyester blend.").

Patent Owner responds that Petitioner relies on properties of Rasmussen's original materials for independent claim 1 but for claim 15, relies on an alternative to those materials. PO Resp. 69–70 (citing Pet. 26–32, 51–52; Ex. 1006 ¶ 52). As described above in Section III.B.2.b., Petitioner relies on highly porous side portions 220 made of 3D textile material for the gusset of claim 1 and less porous top and bottom

portions 200, 210 for the first and second panels. Petitioner persuades us that the asserted first and second panels (top and bottom portions 200, 210) can be both less porous and a polyester or polyester blend sheet material.

Thus, in view of the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 15 based on disclosures related to its cover.

H. Dependent Claim 16

Claim 16 depends from claim 1 and recites "wherein: inner surfaces of said first panel, said second panel and said gusset define an inner cavity; and said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset." Ex. 1001, 6:10–15. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1 based on disclosures related to its core and cover. Petitioner argues that Rasmussen's core and cover disclose claim 16. Pet. 48–49 (citing Rhodes Decl. ¶¶ 150–151; Ex. 1006 ¶¶ 24, 29; Ex. 1007 ¶¶ 20, 25).

Regarding Rasmussen's core, as discussed above for claim 1, we further find that Rasmussen discloses that "top layer 140, bottom layer 150 and sidewalls 160 define a cavity 170 shaped to receive filler material 180." Ex. 1006 ¶ 15, Figs. 1, 2; Ex. 1007 ¶ 11, Figs. 1, 2. Regarding Rasmussen's cover, we find that Rasmussen discloses that the "the core can be enclosed within a cover having highly porous side." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We, thus, find that Rasmussen discloses "wherein: inner surfaces of said first panel, said second panel and said gusset define an inner cavity," as required by claim 16.

Also, as discussed above for claim 1, we find that Rasmussen discloses porous top and bottom layers. Ex. 1006 ¶ 22 ("by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 . . . reticulated foam can provide significantly increased ventilation for the top and/or bottom layer 140, 150"); *see also* Ex. 1007 ¶ 18 (disclosing the same). We also find that Rasmussen discloses highly porous sidewalls 160. Ex. 1006 ¶¶ 8 ("side layer is more permeable than the top layer and the bottom layer"), 29 ("the pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100" and "this capability is achieved through use of a 3D textile core sidewall 160"); *see also* Ex. 1007 ¶ 25 (disclosing the same).

We find that Petitioner's citations to Rasmussen disclose that "pillow 100 is provided with sidewalls 160 that are highly porous, and therefore provide a significant degree of ventilation for the pillow, allowing air to enter and exit the pillow 100 readily through the sides of the pillow 100." Ex. 1006 ¶ 29; Ex. 1007 ¶ 25. In view of our findings, we find that reticulated visco-elastic foam top and bottom layers 140, 150 that provide increased ventilation and highly porous sidewalls 160 that allow air to move through the sides of pillow 100 disclose "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset."

Regarding Rasmussen's cover, as discussed above for claim 1, we find that Rasmussen discloses that "the top of the cover can be less porous than the sides or bottom of the cover" and "the top and bottom of the cover are less porous than the sides of the cover." Ex. 1006 ¶ 6; Ex. 1007 ¶ 5. We

also find that Rasmussen discloses highly porous side portions 220. Ex. 1006 ¶ 49 ("side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)" and "can permit significant ventilation into and out of the pillow"); *see also* Ex. 1007 ¶ 45 (disclosing the same). We, thus, find that less porous top and bottom portions and highly porous side portions disclose "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset."

Patent Owner responds that "[n]owhere does Petitioner point to any evidence to support that Rasmussen's pillow enables the air which enters the pillow through either panel to then exit through the gusset," "Petitioner erroneously asserts that the claim merely requires air to enter and exit through both the panels and the gusset," and Petitioner "never attempts to make any connection with respect to the direction of the airflow through the inner cavity (i.e., into one of the panels and out of the gusset)." PO Resp. 71 (addressing Pet. 48–50).

Patent Owner also argues that, under Petitioner's anticipation challenge based on Rasmussen's core, the cited portions, at best, "teach[] that air flows through Rasmussen's top and bottom layer (i.e., the asserted panels) – with no mention whatsoever of the side layer (i.e., the asserted gusset)" or "teach[] airflow through Rasmussen's side layer (i.e., asserted gusset) – with no mention of Rasmussen's top or bottom layers (i.e., the asserted panels)." *Id.* at 71–72 (discussing Pet. 48–49). Patent Owner further argues that Petitioner's anticipation challenge based on Rasmussen's cover cites portions that "merely mention 'ventilation into and out of the pillow.'" *Id.* at 72 (discussing Pet. 48–49).

As discussed above, we find that Rasmussen discloses a pillow with top and bottom layers 140, 150 that provide increased ventilation and sidewalls 160 that allow air to enter and exit the pillow. Also, as discussed in Section II.C., we agreed with Patent Owner that "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset" does not restrict air entering through another structure, such as the gusset, and does not address air exiting through other structures, such as the panel. *See* PO Resp. 47. We also determined that this limitation requires "at least some air which enters through the panels" exits through the gusset alone or in combination with another structure. In view of this interpretation of "configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," we are persuaded that Petitioner sufficiently shows that Rasmussen discloses "said pillow is configured to have air enter the cavity through pores in the first and second panels and have the air exit the cavity through pores in the gusset," as recited by claim 16. We also note that claim 16 is an apparatus claim, and Petitioner has shown sufficiently that the structures disclosed by Rasmussen are so configured.

Thus, based on the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 16 based on disclosures related to its core and cover.

I. Dependent Claim 18

Claim 18 depends from claim 1 and recites "wherein said porous material comprises an open cell construction." Ex. 1001, 6:19–20. Claim 1 recites, in relevant part, "wherein said first panel and said second panel each

comprise a porous material, and wherein said gusset comprises a material having a greater porosity than the porous material." *Id.* at 5:26–29.

Petitioner contends that the core of Rasmussen discloses claim 18. Pet. 50–51 (citing Rhodes Decl. ¶¶ 153–154; Ex. 1006 ¶¶ 22–24; Ex. 1007 ¶¶ 18–22). We find that a cited portion of Rasmussen teaches "advantages are achieved by utilizing reticulated visco-elastic foam for the top layer 140 and/or bottom layer 150 of the pillow" and that "reticulated foam can provide significantly increased ventilation for the top and/or bottom layer 140, 150." Ex. 1006 ¶ 22; Ex. 1007 ¶ 18.

In view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," as determined above in Section II.A., we determine that "reticulated foam" top and bottom layers of Rasmussen's core that "provide significantly increased ventilation" disclose "wherein said porous material comprises an open cell construction," as recited by claim 18.

Petitioner also contends that the "highly porous" "velour or stretch velour" cover of Rasmussen discloses claim 18. Pet. 50–51 (citing Rhodes Decl. ¶¶ 153–154). We find that Rasmussen discloses that "side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material or a velour or stretch velour material)," that "bottom portion 210 of the cover 190 can also be highly porous (e.g., again, made of a 3D textile material or a velour or stretch velour material)," and that "[e]xamples of material that can be used for the top portion 200 of the cover 190 include a double jersey fabric, velour, or stretch velour." Ex. 1006 ¶¶ 49, 50; *see also* Ex. 1007 ¶ 45, 46 (disclosing the same). In

view of our interpretation of "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," we determine that the "highly porous" top and bottom portions of Rasmussen's cover also disclose "wherein said porous material comprises an open cell construction," as recited by claim 18.

Thus, based on the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 18 based on disclosures related to its core and cover.

J. Dependent Claim 22

Claim 22 depends from claim 1 and recites "wherein said gusset is formed of an open cell construction, said open cell construction being formed by strands defining a mesh configuration." Ex. 1001, 6:35–39. Petitioner contends that Rasmussen's disclosure of "3D textile material" for the sidewalls 160 of core 110 and the side portions 220 of cover 190 disclose claim 22. Pet. 51–52 (citing Rhodes Decl. ¶¶ 157–158).

Because we interpret "open cell construction" to mean "a construction having overall porosity greater than the inherent porosity of the constituent material or inherently having high porosity," we determine that the "highly porous" sidewalls 160 and side portions 220 disclose "wherein said gusset is formed of an open cell construction," as recited by claim 22.

As for "said open cell construction being formed by strands defining a mesh configuration," for the reasons discussed in connection with claims 33 and 34, the full record persuades us by a preponderance of the evidence that "highly porous" "3D textile material" of sidewalls 160 and side portions 220 discloses the limitation. The record indicates, whether 2D or 3D, "textile

material" includes "strands defining a mesh configuration." *See, e.g.*, PO Resp. 4–27.

Based on the full record, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 22 based on disclosures related to its core and cover.

K. Dependent Claim 23

Claim 23 depends from independent claim 22 and recites "wherein said strands comprise polyester." Ex. 1001, 6:38–39. Petitioner contends that side portions 220 of cover 190 can be polyester or polyester blend and thus, the strands in the asserted gusset can comprise polyester. Pet. 52 (citing Rhodes Decl. ¶ 160; Ex. 1006 ¶ 52; Ex. 1007 ¶ 48).

We find that cited portion of Rasmussen discloses that at least one of the components of its cover 190 can be polyester *as an alternative* for a material described previously, which includes the "3D textile material" for side portions 220. Ex. 1006 ¶¶ 49 ("The side portions 220 of the cover 190 can be highly porous (e.g., made of a 3D textile material . . .)."), 52 ("Alternatives to the materials described above for the pillow cover 190 include any sheet material desired, including without limitation . . . polyester, a cotton/polyester blend."); *see also* Ex. 1007 ¶¶ 45, 48 (disclosing the same).

Thus, according to Rasmussen, 3D textile material and polyester sheet material are alternatives for side portions 220. It is not disclosed and it is not inherent that these materials are alternatives for side portions 220. Petitioner provides insufficient argument and evidence that this disclosure indicates "3D textile material" can be made from polyester or cotton/polyester blend.

Accordingly, Petitioner has not persuaded us that claim 23 is anticipated by Rasmussen.

L. Dependent Claim 27

Claim 27 depends from claim 22 and recites "wherein said strands are disposed in multiple layers." Ex. 1001, 6:46–47. Petitioner contends that Rasmussen's disclosure of "3D textile material" for the sidewalls 160 of core 110 and the side portions 220 of cover 190 discloses claim 27. Pet. 53 (citing Rhodes Decl. ¶¶ 161–162).

The full record persuades us by a preponderance of the evidence that "highly porous" "3D textile material" of sidewalls 160 and side portions 220 discloses claim 27. The record indicates, whether 2D or 3D, "textile material" includes "strands defining a mesh configuration." *See, e.g.*, PO Resp. 4–27.

The full record also persuades us by a preponderance of the evidence that "3D textile material" is 3D spacer fabric and that 3D spacer fabric has strands defining a mesh configuration." Parachuru Decl. ¶ 83 ("spacer fabric . . . is typically made by knitting two fabric layers" that "could be the same or different, i.e. mesh or solid").

For the reasons above, we determine that Petitioner demonstrates by a preponderance of the evidence that Rasmussen anticipates claim 27 based on disclosures related to its core and cover.

M. Dependent Claims 29 and 30

Claim 29 recites that the pillow of claim 1 further comprises "a reinforcing material provided at points of connection between the gusset and each of the first and second panels." Ex. 1001, 6:52–54. Claim 30 depends

from claim 29 and recites "wherein said reinforcing material is piping." *Id.* at 6:55–56.

Petitioner argues that Rasmussen's core discloses that "piping can be included at points of connection between the gusset and each of the first and second panels." Pet. 53–54 (citing Rhodes Decl. ¶ 165; Ex. 1006 ¶ 15; Ex. 1007 ¶ 11). We find that Rasmussen discloses "pillow 100 can include a rib where the top layer 140 and sidewalls 160 meet and are joined, and/or a rib where the bottom layer 150 and the sidewalls 160 meet and are joined." Ex. 1006 ¶ 15; Ex. 1007 ¶ 11. We credit the testimony of Petitioner's declarant regarding Rasmussen's rib and that Rasmussen discloses the limitations of claims 29 and 30. Rhodes Decl. ¶¶ 164–165.

Patent Owner responds that Petitioner "lacks any explanation or evidence to support that Rasmussen's 'rib' is a reinforcing material," that "Rasmussen does not disclose that the 'rib' is reinforcing material," and that Petitioner does not explain why a "rib" would be "piping." PO Resp. 73–74 (citing Pet. 53–54).

The evidence cited in the Petition (Rhodes Decl. ¶ 165; Ex. 1006 ¶ 15; Ex. 1007 ¶ 11) in view of arguments in Patent Owner's Response (PO Resp. 73–74) persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that Rasmussen anticipates claims 29 and 30 based on disclosures related to the core. For example, we are persuaded that a person of ordinary skill in the art would understand that Rasmussen's rib portion where the top or bottom layers join the sidewalls is a reinforcing piping. Rhodes Decl. ¶¶ 164–165 ("A person of ordinary skill in the art would understand these references to 'ribs' at the seams between these

components to be piping—ribs or cording are other terms used to refer to piping.").

N. Conclusion as to Anticipation Based on Rasmussen

Based on the full record before us, we determine that Petitioner demonstrates by a preponderance of the evidence that claims 1–3, 6–9, 11, 13, 15, 16, 18–20, 22, 27, and 29–34, but not claim 23, are anticipated by Rasmussen based on either Petitioner's arguments regarding core 110 or its arguments regarding cover 190.

IV. OBVIOUSNESS CHALLENGES

Petitioner contends that, under 35 U.S.C. § 103(a), claim 17 is unpatentable over Rasmussen in view of knowledge of one of ordinary skill in the art (Pet. 14, 47–48) and that claims 4, 5, 10, 17, 21, 24, 25, and 28 are unpatentable over Rasmussen in view of either Doak (*id.* at 14, 60–63), Schlussel (*id.* at 14, 67–69), Schecter (*id.* at 14, 71–72, 74), Mason (*id.* at 15, 74–75), or Burton (*id.* at 15, 76), with citations to these asserted references and the Rhodes Declaration. Patent Owner responds to the alleged obviousness with support from the references, the Parachuru Declaration, and the deposition transcript of Ms. Rhodes. PO Resp. 75–76.

To prevail in its challenges, under 35 U.S.C. § 103(a), Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). 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 at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex*

Inc., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996).

As discussed below, the parties' disputes are related to the scope and content of the prior art, differences between claims 4, 5, and 28 and the prior art, and the level of ordinary skill in the art. The parties do not dispute and do not direct us to any objective evidence of nonobviousness.

After reviewing the complete record, we conclude that Petitioner has shown by a preponderance of the evidence that the asserted references teach or suggest each limitation of claims 4, 5, 10, 17, 21, 24, 25, and 28, that a person of ordinary skill in the art would have had a reason to combine the teachings of the asserted references, and that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of those references.

A. Level of Ordinary Skill

Petitioner asserts that a person of ordinary skill in the art, whether the priority date is June 2011 or June 2012, would have

> at least a bachelor's degree in textile design, textile science, textile engineering or a similar field and at least one year of experience in the design of pillows and other sleep-related textile products; or, alternatively, a person having at least three to five years of experience in the design of pillows and other sleep-related textile products.

Pet. 15 (citing Rhodes Decl. ¶¶ 70–72).

Patent Owner does not propose a level of ordinary skill in the art. *See* PO Resp. 3–35, 49–76; *see also* Pet. Reply 7 ("PO's Response does not propose a POSITA definition."). However, Dr. Parachuru testifies that

> a person of ordinary skill in the art at the time of the ['332 patent] would have a bachelor's degree in textile science, textile engineering or a similar degree along with several years of industry experience in applying the moisture and heat transfer properties of materials which typically come into close direct or indirect contact with human skin. Additional graduate education in textile or material sciences might substitute for experience.

Parachuru Decl. ¶¶ 20–25. Petitioner replies that Patent Owner's declarant "conceded that the challenged patent is directed to 'pillow design' . . . and that it was 'desirable' for a [person of ordinary skill in the art] to have pillow design experience." Pet. Reply 7–8 (citing Ex. 1061, 26:16–19, 31:9–13).

Factual indicators of the level of ordinary skill in the art include "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *Jacobson Bros., Inc. v. U.S.*, 512 F.2d 1065, 1071 (Ct. Cl. 1975); *see also Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983) (quoting with approval *Jacobson Bros.*). We find, based on our review of the record before us, that Petitioner's stated level of ordinary skill in the art is reasonable because it is consistent with the record's indication of "the various prior art approaches employed, the types of problems encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field." *See, e.g.*, Pet. 7–13 ("Technology Background"); PO Resp. 3–28 ("Background of the Relevant

Technology at the Time of the '332 Patent"); Ex. 1006 ¶¶ 2–4; Exs. 1008, 1009, 1011–1013; Ex. 2001 ¶¶ 36–54.

We resolve any differences in favor of including "several years of industry experience in applying the moisture and heat transfer properties of materials" as part of "at least one year of experience in the design of pillows and other sleep-related textile products" of a person holding a "bachelor's degree in textile science, textile engineering or a similar field." *See* Rhodes Decl. ¶ 5 ("I am also an adjunct professor . . . teaching . . . an entry level course for textile and fashion majors."), ¶ 6 ("I received a Bachelor of Science degree in Textile Design."), ¶ 72 ("I met at least these minimum qualifications to be a person having ordinary skill in the art at the time of the claimed invention."); Ex. 1062 ¶ 4 ("I teach concepts relating to moisture and heat transfer in my textile curriculum in my academic role as a professor").

Therefore, we apply Petitioner's definition, quoted above, in our analysis of the challenges under 35 U.S.C. § 103(a). Pet. 15.

B. Rasmussen and Knowledge of One of Ordinary Skill

1. Dependent Claim 17

Claim 17 depends from claim 1. Ex. 1001, 6:16–17. For the reasons discussed above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1.

Claim 17 recites "wherein said porous material comprises rayon." Ex. 1001, 6:16–17. Petitioner states that "Rasmussen does not expressly teach using rayon in either the core or cover" but argues the use of rayon would have been obvious in view of Rasmussen's teaching that top portion 140 and bottom portion 150 can "include any sheet material desired,

including . . . any synthetic . . . fabric." Pet. 47–48 (citing Rhodes Decl. ¶ 48; Ex. 1006 ¶ 52; Ex. 1007 ¶ 48). Petitioner also argues that rayon has the known advantages of "softness, durability, and low cost." *Id.* at 48 (citing Rhodes Decl. ¶ 48; Ex. 1006 ¶ 52; Ex. 1007 ¶ 48).

Patent Owner responds that the "Petition does not rely on any additional disclosure in Mason, Schecter, or Schlussel with respect to any of the features of claims 1 or 22 discussed above that are entirely missing from Rasmussen" and thus, "Petitioner has failed to meet its burden of showing that any of these dependent claims are unpatentable." PO Resp. 76.

We find that Rasmussen teaches "[a]lternatives to the materials described above for the pillow cover 190 include any sheet material desired including without limitation any synthetic . . . fabric." Ex. 1006 ¶ 52; Ex. 1007 ¶ 48. We also determine that one of ordinary skill in the art would have used rayon because of its "softness, durability, and low cost" with a reasonable expectation of success. Pet. 47–48; Rhodes Decl. ¶ 48; Ex. 1006 ¶ 52; Ex. 1007 ¶ 48.

Based on the full record, we determine Petitioner carries its burden of showing by a preponderance of the evidence that claim 17 is unpatentable over Rasmussen.

C. Rasmussen and Doak

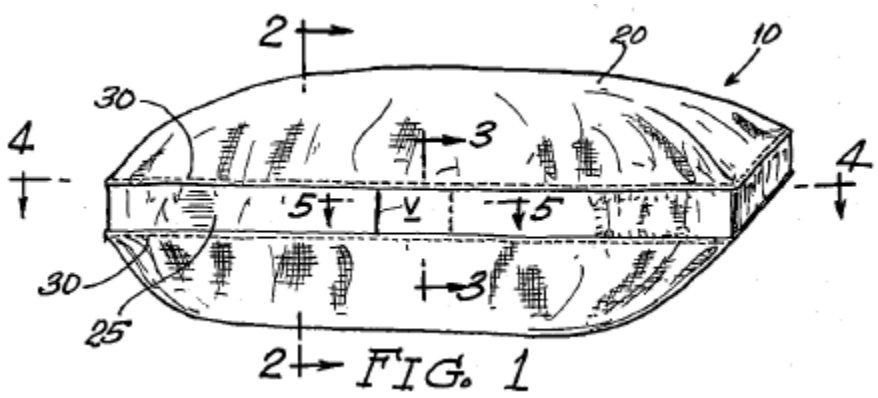
Petitioner contends that claims 4, 5, and 28 would have been obvious in view of Rasmussen and Doak with citations to these asserted references and the Rhodes Declaration. Pet. 14, 60–63. Claims 4, 5, and 28 depend directly from claim 1. Ex. 1001, 5:40–44, 6:48–51.

Claim 4 recites "wherein said first and second panels each define a generally rectangular footprint common with said gusset;" claim 5 recites

"wherein said first and second panels are arcuately bowed out in opposing directions;" and claim 28 recites "wherein said gusset comprises two longer longitudinal portions joined by two shorter end portions, the longitudinal portions being contiguous with the end portions." *Id.*

1. Doak (Ex. 1008)

Doak relates to "pillows . . . or the like." Ex. 1008, 1:9–10. Figures 1 and 4 of Doak are reproduced below.



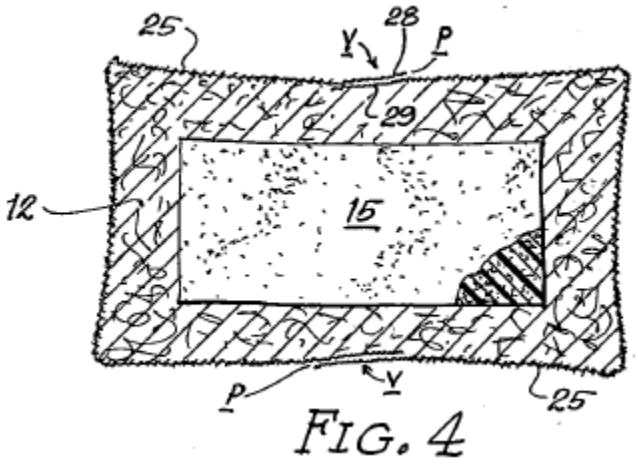


Figure 1 shows pillow 10, and Figure 4 is a sectional view taken along line 4–4 of Figure 1. *Id.* at 1:51–52, 1:58–59. Pillow 10 has filling 12 enclosed in cover 20. *Id.* at 1:63–67, 2:12–15. Cover 20 comprises web

portion 25, "which extends around the perimeter of the pillow and may be of substantial width." *Id.* at 2:15–17.

2. Claims 4, 5, and 28

Petitioner argues that Rasmussen teaches the limitations of claim 1, from which claims 4, 5, and 28 depend. Pet. 61. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claim 1.

Petitioner also argues that Doak teaches first and second panels that each define a generally rectangular footprint common with a gusset, as required by claim 4; panels that are arcuately bowed in opposing directions, as required by claim 5; and a gusset with longer longitudinal portions joined contiguously with shorter end portions, as required by claim 28. *Id.* at 61–62 (citing Ex. 1008, Figs. 1, 4; Rhodes Decl. ¶¶ 187–189). We find that Petitioner's citations to Figures 1 and 4 of Doak teach the limitations of claims 4, 5, and 28.

Petitioner contends that it would have been obvious "to modify the shape of the pillows taught by Rasmussen to utilize the shape taught by Doak" (Pet. 62 (citing Rhodes Decl. ¶ 190)), that the shapes of Doak are basic pillow designs that have been "commonplace for at least decades" (*id.*), that "it would have been a simple combination . . . to utilize [Doak's shape] for Rasmussen's pillow," (*id.*), that a reason to combine was to "satisfy known consumer expectations for a conventionally shaped pillow and to provide known aesthetic and functional benefits of a perimetric gusset" (*id.* (citing Rhodes Decl. ¶ 190)), and that one of ordinary skill in the art would have been motivated to combine "based on their common teaching

of a pillow having a gusset designed to enhance lateral ventilation through the pillow" (*id.* at 63).

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Doak to "satisfy known consumer expectations for a conventionally shaped pillow." Pet. 62; Rhodes Decl. ¶ 190 ("A person of ordinary skill in the art would have had a credible reason to combine Rasmussen with Doak to use the shape of Doak to satisfy consumer expectations for a conventionally shaped pillow."); *see also KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.").

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Doak in the manner asserted by Petitioner. Rhodes Decl. ¶ 190 ("The use of arcuately bowed out opposing top and bottom panels joined by a perimetric gusset that shares a rectangular footprint with the top and bottom panels is a basic pillow design that has been commonplace . . . as Doak itself demonstrates . . . modifying the pillow of Rasmussen to have the shape characteristics of the pillow of Doak would have been a simple combination for a POSITA that would have yielded predictable results without requiring undue experimentation.").

Patent Owner responds that Rasmussen does not anticipate claim 1, from which claims 5, 6, and 19 depend. PO Resp. 75. Patent Owner also argues that Petitioner does not rely on Doak for features of claim 1 that are missing in Rasmussen. *Id.* For the reasons discussed above in

Section III.B., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 1.

Patent Owner further responds for claims 4 and 28 that one of ordinary skill in the art would not have been motivated to modify Rasmussen to have a rectangular shape because "such a modification would undermine the fundamental principles of Rasmussen's design, which relies on a pillow having a plurality of 'lobes,'" a feature that Patent Owner contends is critical and provides benefits. *Id.* at 75 (citing Ex. 1006 ¶ 14, Fig. 1; Parachuru Decl. ¶¶ 179–180). Patent Owner additionally argues that Petitioner provides no evidence why one of ordinary skill in the art would make the modification and forego the associated benefits and that Rasmussen does not indicate a rectangular shape would be appropriate. *Id.* Patent Owner contends that Petitioner's declarant admitted to not understanding Rasmussen's lobes. *Id.* (citing Ex. 2016, 58:13–22). Petitioner replies that Rasmussen does not teach that "its lobes are 'fundamental' or 'critical'" and "merely teaches various embodiments having lobes." Pet. Reply 26 (citing Ex. 1006 ¶¶ 6, 14, claims 1–9, 11–19; Ex. 1062 ¶¶ 35–37).

Patent Owner points us to paragraph 14 of Rasmussen, and in that paragraph, we find that Rasmussen teaches that "in other embodiments, . . . the lobes 120, 130 can have different sizes" and "[a]ny combination of lobes having the same size or different sizes is possible." *See* PO Resp. 74–75. This paragraph does not address whether these embodiments of Rasmussen "define a generally rectangular footprint common with said gusset," as recited by claim 4. Second, it does not indicate that a rectangular lobed pillow would fail to provide the benefits of a lobed pillow, thereby

undermining the asserted fundamental principles of Rasmussen's design. *See* Ex. 1006 ¶ 14 ("The lobed shape of the pillow 100 provides a number of support surfaces for a user," "can enhance breathing of a user resting his or her head against the pillow 100," and "can also provide support for the shoulder and/or neck of the user when the user is sleeping on his or her side or back.").

Further, we find that Rasmussen teaches that the same listed benefits can be provided by a rectangular pillow. *See* Ex. 1006 ¶ 2 ("Conventional pillows can be found in a wide variety of shapes and sizes, and are often adapted for supporting one or more body parts of a user."). Even if the lobes of Rasmussen are critical, as contended by Patent Owner, Rasmussen does not indicate having a rectangular shape would somehow be incompatible with having lobes, as argued by Patent Owner. *See id.* ¶¶ 2, 14.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 4, 5, and 28 would have been obvious over Rasmussen and Doak.

D. Rasmussen and Schlussel

Petitioner contends that claims 24 and 25 are obvious in view of Rasmussen and Schlussel with citations to these asserted references and the Rhodes Declaration. Pet. 14, 63–68.

Claims 24 and 25 depend from claim 22, which, in turn, depends from claim 1. Ex. 1001, 6:42–45. Claim 24 requires "wherein said strands are connected at points of intersection of said strands," and claim 25 requires "wherein said strands are arranged in a 'x' pattern." *Id.*

1. Schlussel (Ex. 1009)

Schlussel relates to an "infant mattress pad which incorporates a spacer fabric." Ex. 1009 ¶ 2. Figure 1 of Schlussel is reproduced below.

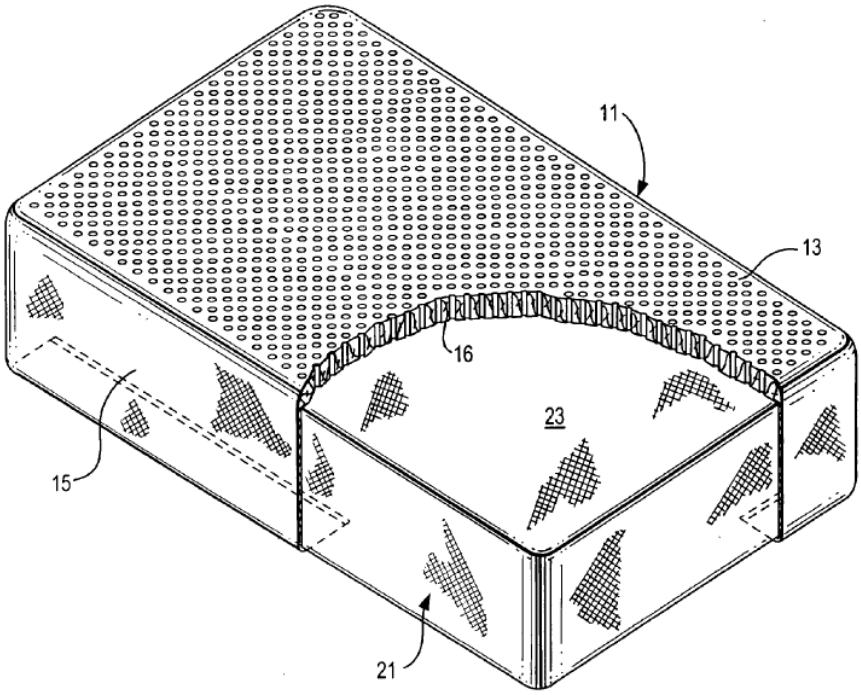


FIG. 1

Figure 1 shows a mattress pad applied to a mattress. *Id.* ¶ 14. Mattress pad 11 includes body portion 13 defined by single layer 16 made of a spacer fabric material. *Id.* ¶ 17. The "spacer fabric has three parts or components knitted together to form a fabric defined by two breathable outer fabric layers and a breathable cushioned middle comprising yarns interconnecting the two layers." *Id.* ¶ 7. Spacer fabric is also known as 3-dimensional fabric and "[s]uch spacer fabrics and their manufacture are well known in the art." *Id.* ¶ 16. It includes "separator yarns interdisposed between the two layers, creating a 3 dimensional cushioned material fabric construction which is highly breathable." *Id.*

2. Claims 24 and 25

For the reasons discussed above in Sections III.B. and III.J., Petitioner persuades us by a preponderance of the evidence that Rasmussen anticipates claim 1 and claim 22, which depends from claim 1.

Petitioner argues that one of ordinary skill in the art "would understand that Schlussel's 3D spacer fabric has strands connected at points of intersection, at a minimum, by being knitted." Pet. 68 (citing Rhodes Decl. ¶¶ 200–202). Petitioner also argues that Schlussel has strands arranged in an "x" pattern, as required by claim 25. *Id.* at 68–69 (citing Rhodes Decl. ¶¶ 207–210; Ex. 1009, Fig. 1).

We find that Schlussel teaches the limitations of claims 24 and 25. Ex. 1009 ¶ 7, Fig. 1. We also determine that one of ordinary skill in the art would have modified Rasmussen in view of Schlussel with a reasonable expectation of success to arrive at the subject matter of claim 24. Rhodes Decl. ¶ 202 (citing Ex. 1009 ¶¶ 16, 20). We further determine that one of ordinary skill in the art would have modified Rasmussen in view of Schlussel with a reasonable expectation of success to arrive at the subject matter of claim 25. *Id.* ¶ 208 ("X pattern would have been an obvious design choice.").

Patent Owner responds that Petitioner "does not rely on any additional disclosure in Mason, Schecter, or Schlussel with respect to any of the features of claims 1 or 22 discussed above that are entirely missing from Rasmussen." PO Resp. 76. Patent Owner, thus, argues that Petitioner has not met its burden of showing that claims 24 and 25 are unpatentable over Rasmussen and Schlussel. *See id.* For the reasons discussed above in

Section III.B., we determine that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 1.

For the reasons above, the record after trial persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 24 and 25 would have been obvious over Rasmussen and Schlussel.

E. Rasmussen and Schecter

Petitioner contends that claim 17 is unpatentable over Rasmussen and Schecter with citations to these references and the Rhodes Declaration. Pet. 14, 71–74. Claim 17 depends from claim 1 and recites "wherein said porous material comprises rayon." Ex. 1001, 6:16–17.

1. Schecter (Ex. 1011)

Schecter is "directed at providing a cushioning device such as a pillow." Ex. 1011, 1:44–45. Figure 1 of Schecter is reproduced below.

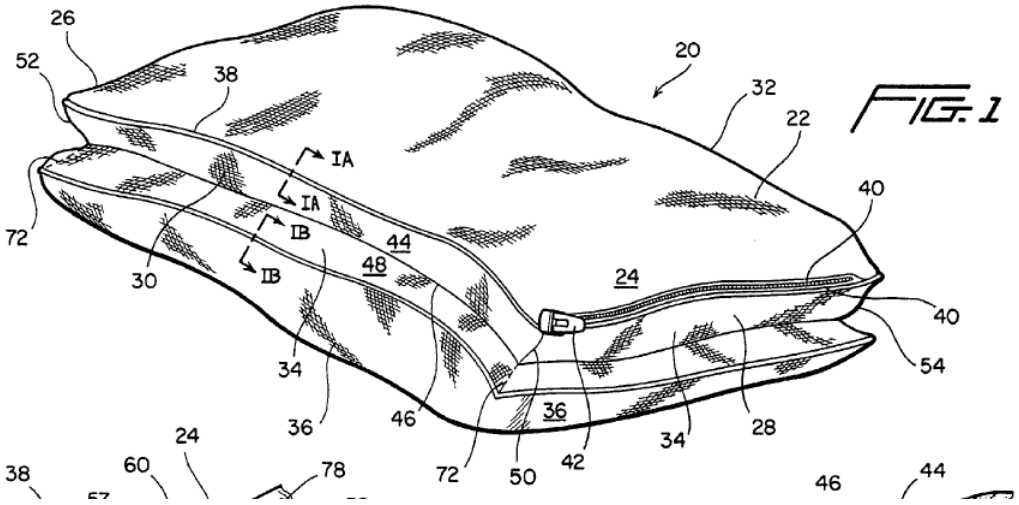


Figure 1 shows a perspective view of a pillow. *Id.* at 2:53–54. Pillow 20 includes cover 22 made of a flexible material such as textile

material. *Id.* at 3:22–26. Cover 20 includes upper top layer 24, intermediate gusset zone 34, and lower bottom layer 36. *Id.* at 3:42–43, 3:57–59, 3:66–4:1. The "cover material is a breathable fabric such as cotton (e.g. 100% or mixtures with other materials such as polyester or rayon)." *Id.* at 3:32–35. External, border edge or bead edge 38 can be provided at the border between gusset 34 and upper top layer 24. *Id.* at 4:11–15. A second gusset bead or external border edge 66 can be between intermediate gusset zone 34 and lower bottom layer 36. *Id.* at 5:20–23.

2. Claim 17

Petitioner argues that "Rasmussen teaches the limitations of claim 1." Pet. 74. For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claim 1.

Petitioner also argues that Schecter teaches "wherein said porous material comprises rayon," as recited by claim 17. Pet. 72, 74 (citing Ex. 1011, 3:32–34;). We find that Schecter teaches that its "cover material is a breathable fabric such as cotton (e.g., 100% or mixtures with other materials such as polyester or rayon)." Ex. 1011, 3:32–35.

We agree with Petitioner that "rayon was a well known material for pillow covers" (Pet. 74) and as discussed above, we find that Rasmussen teaches "[a]lternatives to the materials described above for the pillow cover 190 include any sheet material desired including without limitation any synthetic . . . fabric" (Ex. 1006 ¶ 52; Ex. 1007 ¶ 48). We, therefore, determine that one of ordinary skill in the art would have had reason to modify Rasmussen in view of Schecter with a reasonable expectation of success. Rhodes Decl. ¶ 218 ("rayon was a well known material for pillow

covers . . . and Rasmussen[] teach[es] that 'any natural and/or synthetic fabric' can be used in its cover").

Patent Owner responds that Petitioner "does not rely on any additional disclosure in Mason, Schecter, or Schlussel with respect to any of the features of claims 1 or 22 discussed above that are entirely missing from Rasmussen." PO Resp. 76. Patent Owner, thus, argues that Petitioner has not met its burden of showing that claim 17 is unpatentable over Rasmussen and Schecter. *See id.* We determine above that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 1.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claim 17 would have been obvious over Rasmussen and Schecter.

F. Rasmussen and Mason

Petitioner contends that claims 10 and 21 would have been obvious in view of Rasmussen and Mason with citations to these references and the Rhodes Declaration. Pet. 15, 74–75.

Claim 10 depends from claim 8, which depends from claim 1. Ex. 1001, 5:56–57. Claim 10 recites "wherein said fill material comprise a gel." *Id.* Claim 21 depends from claim 1 and recites "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed with said cover, said fill material comprising a gel." *Id.* at 6:30–33.

1. Mason (Ex. 1012)

Mason "is directed to methods of preparing apparatuses comprising a gel layer and an additional layer, such as a foam layer." Ex. 1012 ¶ 2. The

apparatus according to Mason "generally comprises a gel layer" and "can also comprise a covering overlaying the gel layer." *Id.* ¶¶ 8, 13. "Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows." *Id.* ¶ 14; *see also id.* ¶¶ 57, 58, 64 (listing pillows as an embodiment).

According to Mason, "while the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user" and the "heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow." *Id.* ¶¶ 41, 43. Mason states that "[i]n light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase." *Id.* ¶ 6. The gel layer can be combined with a foam layer, a cover layer, or optional further layers. *Id.* ¶¶ 8, 84, 85, 94, 95.

2. Claims 10 and 21

Petitioner argues that Rasmussen teaches the limitations of claims 1 and 8. Pet. 75. For the reasons stated above in Sections III.B. and III.D., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claims 1 and 8.

Petitioner also argues that Mason teaches "wherein said fill material comprises a gel," as required by claim 10. Pet. 74–75 (citing Ex. 1012 ¶¶ 8, 13, 14, 41–43, 57, 58, 64, 80–85, 94, 95, Fig. 2; Rhodes Decl. ¶ 220). We find that Petitioner's citations to Mason teach the limitation of claim 10. Ex. 1012 ¶¶ 8 ("The apparatus prepared according to the invention generally comprises a gel layer."), 13 ("[T]he apparatus can also comprise a covering

overlaying the gel layer."), 14 ("Non-limiting examples of further support apparatuses prepared according to the methods of the invention include . . . pillows."), 57, 58, 64.

For the reasons stated above for claim 8, we find that Rasmussen teaches "wherein said first panel, said second panel and said gusset define a cover, said pillow further comprising a fill material disposed within said cover," as required by claim 21. We also find that the cited portions of Mason teaches "said fill material comprising a gel," as further recited by claim 21. Ex. 1012 ¶¶ 8, 13, 14, 57, 58, 64.

We also determine that one of ordinary skill in the art would have had a reason to combine Rasmussen and Mason because the "addition of 'gel' can be used to provide a cooling effect to address the known problem of heat buildup in foam," "can 'contribute[] to the "good" feel users desire in a support apparatus,'" and addresses "increased demand, known ability to address heat buildup in foam with gel, and Rasmussen's stated desire to enhance cooling," as argued by Petitioner. Ex. 1012 ¶¶ 6 ("In light of the desirable properties afforded by gel materials, it is not surprising that demand for support apparatuses comprising gels continues to increase."), 41 ("[W]hile the initial warmth maintained by the contact with the foam may be of a comfortable level, an eventual heat build-up leads to discomfort for the user."), 42, 43 ("The heat exchange capacity of the gel materials used in the methods of the invention therefore further contributes to the good 'feel' users desire . . . in a . . . pillow."); Rhodes Decl. ¶¶ 221, 222; *see also* Pet. 75 (citing Ex. 1012 ¶¶ 6, 41–43; Rhodes Decl. ¶¶ 221, 222).

We further determine that Petitioner shows a reasonable expectation of success for combining Rasmussen and Mason in the manner asserted by

Petitioner. Rhodes Decl. ¶¶ 221 ("[U]se [of gel] was increasingly common prior to the alleged invention."), 222 ("Use of fill material comprising gel in the pillow taught by Rasmussen would have yielded predictable results with little or no experimentation.").

Patent Owner responds that Petitioner "does not rely on any additional disclosure in Mason, Schecter, or Schlussel with respect to any of the features of claims 1 or 22 discussed above that are entirely missing from Rasmussen." PO Resp. 76. Patent Owner, thus, argues that Petitioner has not met its burden of showing that claims 10 and 21 are unpatentable over Rasmussen and Mason. *See id.* We determine above that Petitioner has met its burden of showing by a preponderance of the evidence that Rasmussen anticipates claim 1.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claims 10 and 21 would have been obvious over Rasmussen and Mason.

G. Rasmussen and Burton

Petitioner contends that claim 28 is unpatentable over Rasmussen and Burton, in addition to the challenge discussed above based on Rasmussen and Doak. Pet. 15, 76.

Claim 28 depends from claim 1 and recites "wherein said gusset comprises two longer longitudinal portions joined by two shorter end portions, the longitudinal portions being contiguous with the end portions." Ex. 1001, 6:48–51.

1. Burton (Ex. 1013)

Burton "concerns a gusseted pillow being a particular top and bottom section arrangement and an intermediate gusset portion." Ex. 1013, 1:8–10. Figure 2 of Burton is reproduced below.

FIG. 2

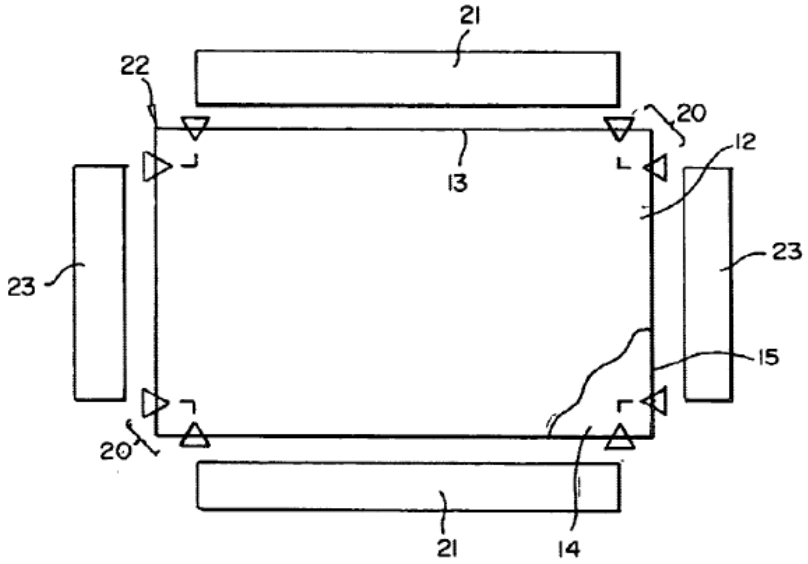


Figure 2 is a diagram showing the configuration of top and bottom sections and gusset portion of a pillow. *Id.* at 1:52–54. Pillow 10 includes top fabric section 12 and intermediate gusset portion 16 (shown in Figure 1). *Id.* at 1:66–2:2. Burton explains that the gusset portion of the pillow of Figure 2 includes pillow length parts 21 that are approximately 22 inches and pillow width parts 23 that are 16 inches. *Id.* at 2:13–24.

2. Claim 28

For the reasons stated above in Section III.B., Petitioner persuades us by a preponderance of the evidence that Rasmussen teaches the limitations of claim 1. Petitioner argues that Burton teaches or suggests the limitations of claim 28. Pet. 76 (citing Ex. 1013, 2:15–14, Fig. 2; Rhodes Decl. ¶¶ 224–225). We find that Petitioner's citations to Burton teach the limitations of

claim 28. Ex. 1013, 2:14–15 ("FIG. 2 also shows the length and width of the gusset portion."); *see also id.* at 2:16–19 ("Typically, the gusset portion 16 is a continuous strip; it is shown in individual parts in FIG. 2 to match the four sides of the top and bottom sections.").

We also determine that one of ordinary skill in the art would have had a reason to modify Rasmussen with the teachings of Burton with a reasonable expectation of success. Rhodes Decl. ¶ 226 ("Burton's basic rectangular gusseted pillow design . . . has long been a well known and common pillow design" and "many consumers would prefer the more conventional and common pillow shape formed by rectangular top and bottom panels joined by perimetric gusset"); *see also* Pet. 76 (citing *id.*).

Patent Owner argues that a person of ordinary skill in the art "would not have modified Rasmussen's pillow to have a standard rectangular shape" for the same reasons asserted against the challenge based on Rasmussen and Doak. PO Resp. 76. For the same reasons discussed above in Section IV.B.2., Petitioner persuades us that one of ordinary skill in the art would have modified Rasmussen to have a generally rectangular footprint.

For the reasons above, the full record persuades us that Petitioner carries its burden of showing by a preponderance of the evidence that claim 28 would have been obvious over Rasmussen and Burton.

V. IMPROPER REPLY ARGUMENTS

Patent Owner filed a List of Improper Reply Arguments (Paper 31), to which Petitioner also filed a response (Paper 32). Patent Owner asserts that, in its Reply, Petitioner argues for the first time that air will travel a path of least resistance through the pillow, that "material" and "base material" of

claims 1 and 13 can be fibers, that Rasmussen's rib would be understood as reinforcing, and that Rasmussen's design can be modified to have lobes and a rectangular shape. Paper 31, 1–2 (citing Pet. Reply 9, 23, 24, 26). The parties also filed a Joint Notice of Unresolved Demonstrative Objections (Paper 34), in which Patent Owner alleges that slides 13, 26, 29, 31, and 32 contain new arguments as discussed above and Petitioner alleges that slide 47 contains a new argument from Patent Owner's Observations (Paper 27).

We do not rely on any of the portions of the Petitioner's Reply that argue air will travel a path of least resistance through the pillow, "material" and "base material" of claims 1 and 13 can be fibers, or Rasmussen's rib would be understood as reinforcing. We also do not rely on the demonstratives.

Further, because Petitioner initially argued that one of ordinary skill in the art would "modify the shape of the pillows taught by Rasmussen to utilize the shape taught by Doak, including . . . its rectangular shape" (Pet. 62), Petitioner's argument in its Reply–that "four subtle lobes at the corner could even be maintained, if desired, and still yield a 'generally rectangular' pillow" (Pet. Reply 26)—is not a new argument, as contended by Patent Owner. A lobed and generally rectangular pillow would be the result of Petitioner's proposed modification and would still "satisfy known consumer expectations for a conventionally shaped pillow," as discussed above in Section IV.C.2.

VI. CONCLUSION

For the foregoing reasons, based on the full record before us, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–11, 13, 15–22, 24, 25, and 27–34, but not claim 23, of the ’332 patent are unpatentable.

VII. ORDER

Accordingly, it is:

ORDERED that claims 1–11, 13, 15–22, 24, 25, and 27–34 of U.S. Patent No. 8,887,332 B2 have been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the 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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