

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SEALED AIR CORPORATION,
Petitioner,

v.

RANPAK CORP.,
Patent Owner.

IPR2020-01249
Patent 6,756,096 B2

Before CHRISTOPHER L. CRUMBLEY, JON B. TORNQUIST, and
WESLEY B. DERRICK, *Administrative Patent Judges*.

DERRICK, *Administrative Patent Judge*.

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

I. INTRODUCTION

In this *inter partes* review, Sealed Air Corporation (“Petitioner”) challenges the patentability of claims 13–15 (“the challenged claims”) of U.S. Patent No. 6,756,096 B2 (Ex. 1001, “the ’096 patent”), owned by Ranpak Corp. (“Patent Owner”).

We have jurisdiction to hear this *inter partes* review 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 discussed herein, claims 13–15 of the ’096 patent are determined unpatentable.

A. Procedural History

On July 7, 2020, Petitioner filed a Petition requesting an *inter partes* review of claims 13–15 of the ’096 patent. Paper 1 (“Pet.”). Patent Owner declined to file a Preliminary Response to the Petition. On January 15, 2021, we instituted an *inter partes* review of the challenged claims on all grounds raised in the Petition. Paper 6. Following institution, Patent Owner filed a Patent Owner Response (Paper 9, “PO Resp.”), Petitioner filed a Reply to the Patent Owner Response (Paper 11, “Pet. Reply”), and Patent Owner filed a Sur-Reply to Petitioner’s Reply (Paper 12, “PO Sur-Reply”).

Petitioner relies on the declaration testimony of Charles Klass (Exs. 1002, 1028) to support the Petition. Patent Owner took cross-examination via deposition of Mr. Klass (Ex. 2003). Patent Owner relies on the declaration testimony of Glenn May (Ex. 2001). Petitioner took cross-examination via deposition of Mr. May (Ex. 1027).

Oral hearing was requested by both parties. Papers 14, 15. We heard argument on October 15, 2021, and a transcript of the hearing has been entered into the record. Paper 21 (“Tr.”).

B. Real Parties-in-Interest

Petitioner Sealed Air Corporation identifies Sealed Air Corporation (US) as an additional real party-in-interest, as well as a number of subsidiaries of Sealed Air Corporation. Pet. i. Patent Owner Ranpak Corp. identifies itself as the real party-in-interest. Paper 5, 1. The parties do not raise any issue about real parties-in-interest.

C. Related Proceedings

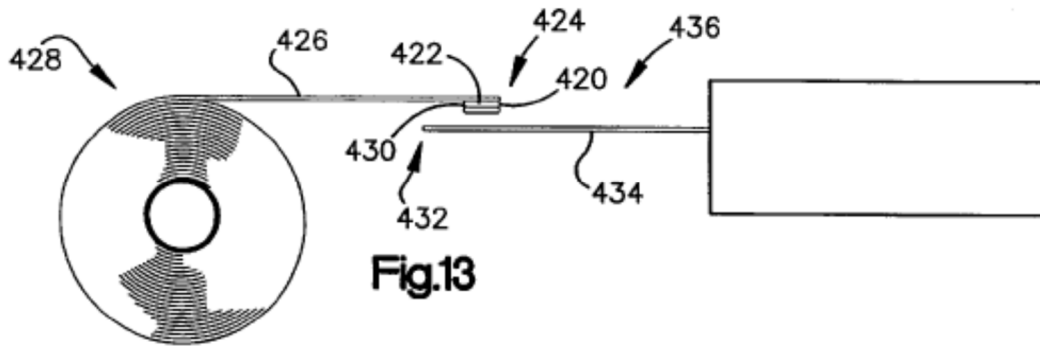
The parties identify a district court case involving the '096 patent as a related matter: *Ranpak Corp. v. Sealed Air Corporation*, Case No. 1-19-cv-08206 (N.D. Ill.). Pet. ii; Paper 5, 1–2.

D. The '096 Patent (Ex. 1001)

The '096 patent is titled “Method of Loading a Cushioning Conversion Machine and Sheet Stock Material Supply Useful Therein” and issued on June 29, 2004, from an application filed on November 19, 2001. Ex. 1001, code (22), (45), (54). The '096 patent claims priority to provisional application No. 60/249,698, filed November 17, 2000. *Id.* at code (60), 1:7–11.

The '096 patent is directed to sheet stock material provided in a compact configuration such as a roll of wound stock material or a stack of fan-folded stock material. Ex. 1001, code (57). The sheet stock material is intended for use in cushioning conversion machines that convert sheet stock material into a dunnage product. *Id.* at code (57), 1:15–16. The sheet stock material has, on its leading or trailing end, a pressure sensitive adhesive layer and a removable release liner covering that covers the adhesive layer. *Id.* at code (57). The provided adhesive layer on the leading or trailing end facilitates splicing of a succeeding supply of stock material to an almost spent supply of stock material. *Id.* at code (57), 1:17–19.

Figure 13 illustrates sheet stock material provided as a wound roll.



Id. at 11:18–24, Fig. 13 (depicting a succeeding supply of stock material 428 and an almost spent supply of stock material 436). As depicted,

the leading edge 420 of the adhesive layer 422 is aligned with the leading edge 424 of the ply of sheet material 426 of the succeeding supply of stock material 428 and the trailing edge 430 of the adhesive layer 422 is offset from the trailing edge 432 of the ply of sheet material 434 of the almost spent supply of stock material 436.

Id. at 11:18–24. While not labeled in Figure 13, the element depicted beneath adhesive layer 422 is similarly depicted elsewhere, e.g., in Figure 12, and identified as a liner covering the adhesive layer. *See, e.g., id.* at 11:5–8, Fig. 12.

E. The Challenged Claims

Claims 13–15 are reproduced below.

13. A supply of sheet stock material for use in a cushioning conversion machine, comprising:

at least one ply of kraft paper rolled or folded into a compact configuration,

each ply of kraft paper having on a leading or trailing end thereof a pressure sensitive adhesive layer and a removable release liner covering the pressure sensitive adhesive layer.

14. A supply of sheet stock material as set forth in claim 13, wherein the kraft paper is 30# kraft paper.

15. A supply of sheet stock material as set forth in claim 13, wherein the kraft paper is 50# kraft paper.

Ex. 1001, 16:37–48.

F. Instituted Grounds of Unpatentability at Issue

We instituted trial on all grounds of unpatentability proposed by Petitioner, as shown below:

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
13	102	Kirkpatrick ²
13–15	103	Kirkpatrick
13–15	103	Kirkpatrick, Ratzel ³
13–15	103	Weirauch, ⁴ Ratzel

II. ANALYSIS

A. Principles of Law

A claim is anticipated under § 102 only if each limitation in the claim is found in a single prior art reference, arranged as recited in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008).

A claim is unpatentable under § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. §§ 102 and 103 effective March 16, 2013. Because the challenged patent issued from an application filed before March 16, 2013, we refer to the pre-AIA version of 35 U.S.C. §§ 102 and 103.

² US 4,188,257, issued Feb. 12, 1980. Ex. 1003.

³ WO 97/01434, published Jan. 16, 1997. Ex. 1004.

⁴ US 5,692,699, issued Dec. 2, 1997. Ex. 1005.

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 skill in the art; and (4) when in evidence, objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Notwithstanding what the teachings of the prior art would have suggested to one skilled in the art, objective evidence of non-obviousness (so called “secondary considerations”) may lead to a conclusion that the challenged claims would not have been obvious. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

The Petition guides the proceeding. *See Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1335–36 (Fed. Cir. 2020). Our reviewing court explains that “[f]rom the outset, we see that Congress chose to structure a process in which it’s the petitioner, . . . who gets to define the contours of the proceeding,” and that “the statute envisions that a petitioner will seek an inter partes review of a particular kind—one guided by a petition describing

each claim challenged and the grounds on which the challenge to each claim is based.” *Id.* at 1335 (quoting *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (internal quotations omitted)) (alterations in original). “[T]he petitioner’s petition, not the Director’s discretion is supposed to guide the life of the litigation,” and “the petitioner’s contentions, not the Director’s discretion, define the scope of the litigation all the way from institution through to conclusion.” *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) (quoting *SAS*, 138 S. Ct. at 1356–57 (internal quotations omitted)).

To prevail, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2019). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

B. Testimony of Mr. Klass

Patent Owner contends that “Mr. Klass is likely unqualified to offer testimony regarding the perspective of a [person of ordinary skill in the art] at the time of the invention.” PO Resp. 10 n.22. Patent Owner argues that Mr. Klass “has no experience with or knowledge regarding the design or use of the type of cushioning conversion machines described in the ’096 Patent”

and has a “fundamental lack of understanding of the ’096 Patent’s disclosure and the associated real-world purpose and use of the device described therein.” *Id.* at 10–14 (citing Ex. 2003, 52:3–53:4, 53:13–54:85 [sic, 54:8], 55:22–56:15, 80:9–81:19; Ex. 2001 ¶¶ 30–32, 50, 71). Patent Owner further contends that Mr. Klass, in effect, acknowledged in his Reply Declaration (Ex. 1028) that he “is not a [person of ordinary skill in the art] and [] lacks the relevant knowledge and understanding of one.” PO Sur-Reply 5 n.9. Patent Owner’s counsel argued during the hearing that “Mr. Klass is not an expert in cushioning conversion” (Tr. 42:21–22) and that “Mr. Klass is not a person of ordinary skill in the art under our definition. And he doesn’t even purport to be” (*id.* at 57:26–58:1).

Patent Owner fails to cite any authority to support its argument that we should, in effect, disregard Mr. Klass’ testimony as to the level of ordinary skill in the art because he is not a person of ordinary skill in what Patent Owner contends is the relevant field. *See* PO Resp.; PO Sur-Reply. Patent Owner’s counsel similarly was unable to identify any such authority at the hearing. Tr. 42:9–15. Further, Mr. Klass’ testimony was not that he is not a person of ordinary skill in the art, but rather that his opinions set forth in his earlier declaration would not be different under the level of ordinary skill as defined by Mr. May. Ex. 1028 ¶¶ 4–5.

On this record, we find Mr. Klass’ testimony well-supported as it pertains to relevant issues and see no reason to summarily disregard it. *See* Exs. 1002, 1028. Complete overlap between a witness’ technical qualifications in the field of the invention is not necessary for the witness’ testimony to be admissible. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010); *see also* Patent Trial and Appeal

Board Consolidated Trial Practice Guide November 2019 (“CTPG”)⁵ at 34 (“There is . . . no requirement of a perfect match between the expert’s experience and the relevant field.”). Nor must they themselves be a person of ordinary skill in the art, but only that they are “qualified in the pertinent art.” CTPG at 34 (citing *Sundance, Inc. v. DelMonte Fabricating Ltd.*, 550 F.3d 1356, 136364 (Fed. Cir. 2008)). Mr. Klass’ education includes a minor in Pulp & Paper Technology (Ex. 1006) and his lengthy experience in the pulp and paper industry includes work—as a process engineer—involving splicing and corrugators (Ex. 1002 ¶ 8). Mr. Klass has the “knowledge, skill, experience, training, [and] education” of a “specialized” nature that is likely to “assist the trier of fact to understand the evidence.” Fed. R. Evid. 702. Accordingly, we find Mr. Klass has sufficient relevant technical expertise to consider and weigh his testimony as we have in this decision. See *SEB S.A.*, 594 F.3d at 1373.

C. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art “would have had at least a bachelor’s degree in mechanical, chemical, or paper engineering, or a related technical field, and at least 2–3 years of experience in paper web conversion and/or processing” and “would have had knowledge of and experience with conventional paper web splicing techniques.” Pet. 13 (citing Ex. 1002 ¶ 27). Petitioner further contends that “[a]dditional work experience in relevant work industries could compensate for less education, or an education in a different field, and advanced education or degrees may similarly compensate for less work experience.” *Id.* (citing Ex. 1002 ¶ 28). Petitioner further sets forth “general knowledge

⁵ Available at www.uspto.gov/sites/default/files/documents/tpgnov.pdf.

that would have been possessed by a [person of ordinary skill in the art] at the time of the invention” (*id.* at 14 (citing Ex. 1002 ¶¶ 29–38)), including the use of “kraft paper . . . in web feed devices . . . to make cushioning materials, dunnage pads, protective packaging, [and] corrugated cardboard paperboard” (*id.* (citing Ex. 1002 ¶¶ 30–31; Ex. 1003, 1:16–34; Ex. 1011, 1:32–38; Ex. 1012, 2:8–15; Ex. 1013, 5:43–62; Ex. 1014, 5:22–39; Ex. 1015, 3:36–40; Ex. 1016, 1:53–67)) and use of double-sided adhesives to splice sheet stock materials (*id.* at 15–16 (citing Ex. 1002 ¶¶ 34–36; Ex. 1005, 1:44–65, Ex. 1010, 1:33–61; Ex. 1017, 9:18–42; Ex. 1018, 2:1–4)). Mr. Klass further testifies that his opinions expressed in Exhibit 1002 would not differ under Patent Owner’s definition of the level of ordinary skill. Ex. 1028 ¶ 5 (“I have considered the entirety of my earlier declaration (Ex-1002) under Mr. May’s definition of the level of ordinary skill None of my opinions expressed in my earlier declaration would be different.”).

Patent Owner contends that a “person of ordinary skill in the art . . . would have had ‘at least a bachelor’s degree in packaging science, industrial engineering, mechanical engineering, or equivalent education or experience, or combinations thereof, and at least one year of experience designing and/or using machines that provide on-demand dunnage or void fill for packaging.’” PO Resp. 8. Patent Owner contends that the field of the invention of the ’096 patent is “cushioning machines used for producing packaging” and that “paper web conversion and/or processing” is an unrelated field. *Id.* at 10 (citing Ex. 2001 ¶¶ 30, 33, 70).

Patent Owner argues that while use of kraft paper as a sheet stock material for a cushioning conversion machine was known, splicing sheet stock materials with double-sided adhesives was not within the state of the

art and was not within the knowledge possessed by a person of ordinary skill in the art. PO Resp. 14–22 (citing Ex. 2001 ¶¶ 37–58). Patent Owner argues that that certain prior art references cited by Petitioner relate to “cushioning conversion machines” (Exs. 1004, 1011–1016) and others to “continuous web splicing and production machines” (Exs. 1003, 1005, 1007–1010, 1017–1019). *Id.* at 15 (citing Ex. 2001 ¶ 37).

Patent Owner contends that a person of ordinary skill in the art “of paper web conversion and/or processing has a very different background and knowledge base than a [person of ordinary skill in the art] in the art of cushioning conversion machines.” PO Resp. 18 (citing Ex. 2001 ¶ 46). Patent Owner argues that, “[a]s Mr. May explains, the markets of suppliers/paper processing and paper cushioning/dunnage converting are completely different and separate from one another,” that is, “the supply side and the packaging side.” *Id.*; Ex. 2001 ¶ 46. Patent Owner relies on the relevant trade shows and publications differing. *Id.* (citing Ex. 2001 ¶¶ 47–49). Patent Owner also relies on differences in what degrees would be helpful to a person of ordinary skill in the art of “paper making” as compared to “cushioning conversion machines,” discounting the relevance of chemical and paper engineering for “cushioning conversion machines.” *Id.* at 19–20 (citing Ex. 2001 ¶¶ 51–52). Patent Owner also relies on Mr. May’s testimony that he was “not aware of double-sided tape ever having been used to facilitate splicing in the field of cushioning conversion machines,” even if it was known for “splicing in continuous web processing.” *Id.* at 20; Ex. 2001 ¶ 53. Patent Owner also relies on Mr. May’s further testimony as to his personal knowledge of the industry, including, in particular, having never seen double-sided adhesives “marketed for paper cushioning conversion applications” “prior to and during the year

2000” (PO Resp. 20–21 (citing Ex. 2001 ¶¶ 55–57)) and on his opinion that a person of ordinary skill in the art “would not have been knowledgeable about the type of continuous web splicing techniques used in making paper and paper products, such as corrugated paper, at the time of the invention” (*id.* at 22 (citing Ex. 2001 ¶ 58; Ex. 2003, 80:9–81:19)).

On this record, we determine that a person of ordinary skill in the relevant art would have included those with a bachelor’s degree in mechanical or paper engineering with at least a year’s experience relating to producing cushioning materials, dunnage pads, and other protective packaging. As admitted by Patent Owner, production of such materials using kraft paper stock was known. PO Resp. 14. As to the use of double-sided adhesive, we do not agree with Patent Owner that it was unknown to the person of ordinary skill in the art because using double-sided tape to join rolls of sheet stock was known in the wider field of paper processing and we find that field reasonably includes producing paper cushioning products, and that such related knowledge reasonably would also have been within the knowledge of a skilled artisan in the “cushioning conversion machine” field as the same or similar paper cushioning products are produced. Moreover, regardless of whether double-sided tape was used in what Patent Owner contends is the “cushioning conversion machine” field, Mr. May’s testimony is limited to it not being used in that field, not that double-sided tape itself was not known to one of ordinary skill in the art in the field. Ex. 2001 ¶¶ 53–57. It reasonably follows that a person having knowledge of double-sided tape would also have knowledge of joining together sheets of paper or other stock using double-sided tape.

Further, to the extent that Patent Owner and Mr. May rely on “cushioning conversion machines” differing from paper processing

machines that produce paper cushioning products, on this record, there is insufficient evidence of a meaningful difference in their complexity, size, or operation. For example, Patent Owner relies heavily on the paper processing machines including machinery to allow splicing on the fly, but the prior art also teaches that non-continuous roll-to-roll splicing can be used. *See* Ex. 1010, 1:13–16 (disclosing that a splicing tape system “is applicable both to systems in which the splice is made on the fly and to systems in which the splice is made while the running web is stationary”); Ex.1017, 1:15–19 (disclosing that “[t]he splicing operation can be performed in a static or a dynamic mode.”). As to size, similarly, Patent Owner relies on the machinery for paper making or producing corrugated cardboard being larger than “cushioning conversion machines,” but there is no clear distinction between the two as to size, as discussed below. Also, there is no evidence that paper processing machines forming paper cushioning products from paper itself do not do so in the same general manner as the ’096 patent. Accordingly, finding no meaningful distinction to “cushioning conversion machines,” we discern no meaningful difference in the knowledge of the skilled artisan as it relates to the challenged claims.

Moreover, to the extent that there would be a narrower “cushioning conversion machine” field that did not include the use of double-sided tape, as Patent Owner contends, there would be no difference in the outcome of this case. As to obviousness, the scope of analogous prior art is not limited to the field of inventor’s endeavor, but also includes references that are “still reasonably pertinent to the particular problem with which the inventor is involved.” *See In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). As discussed below, we find Kirkpatrick reasonably pertinent to the particular problem with which the inventor is involved.

D. Claim Construction

We apply the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “[T]he specification is always highly relevant to the claim construction analysis . . . it is the single best guide to the meaning of a disputed term.” *Id.* at 1315 (internal quotation omitted). “[T]he specification aids in ascertaining the scope and meaning of the claims inasmuch the words of the claims must be based on the description.” *Id.* (internal quotation omitted). Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Patent Owner contends that the preamble of independent claim 13 is limiting and that “[a] supply of sheet stock material for use in a cushioning conversion machine” means “a supply of sheet stock that is suitable for use in” a “a stop/start machine proximate a packaging station adapted to . . . reform the sheet stock for on demand dunnage, such as cushioning or void fill.” PO Resp. 23–30.

Petitioner contends both that the preamble is not limiting, in that it merely recites the “intended use ‘in a cushioning conversion machine’” and

that the body of the claim “defines a structurally complete invention, reciting each structural feature of the claimed sheet stock material.” Pet. 18–19.

We determine that the preamble is not limiting and, if it was, that its meaning is not the narrow meaning that Patent Owner relies on to distinguish the claims from what is disclosed or would have been rendered obvious by the prior art.

Whether a preamble is limiting is “determined on the facts of each case in light of the overall form of the claim, and the invention as described in the specification and illuminated in the prosecution history.” *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1572–73 (Fed. Cir. 1996). “Generally, a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Marketing Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). “Conversely, a preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Id.* (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997); see also *Eli Lilly & Co. v. Teva Pharm. Int’l GmbH*, 8 F.4th 1331, 1340–41 (Fed. Cir. 2021) (quoting *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952 (Fed. Cir. 2006)) (“[W]e have often relied on the proposition that ‘[p]reamble language that merely states the purpose or intended use of an invention is generally not treated as limiting the scope of the claim.’”).

Precedent provides certain guideposts for use in determining whether a preamble limits claim scope. “[D]ependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it

indicates a reliance on both the preamble and claim body to define the claimed invention Likewise, when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope.” *Catalina*, 289 F.3d at 808 (internal citations omitted). “[W]hen reciting additional structure . . . underscored as important by the specification, the preamble may operate as a claim limitation.” *Id.* Similarly, “clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art . . . indicates use of the preamble to define, in part, the claimed invention.” *Id.* at 808. Thus, “statements of intended use or asserted benefits . . . may, in rare instances limit apparatus claims, but only if the applicant clearly and unmistakably relied on those uses or benefits to distinguish prior art.” *Catalina*, 289 F.3d at 809.

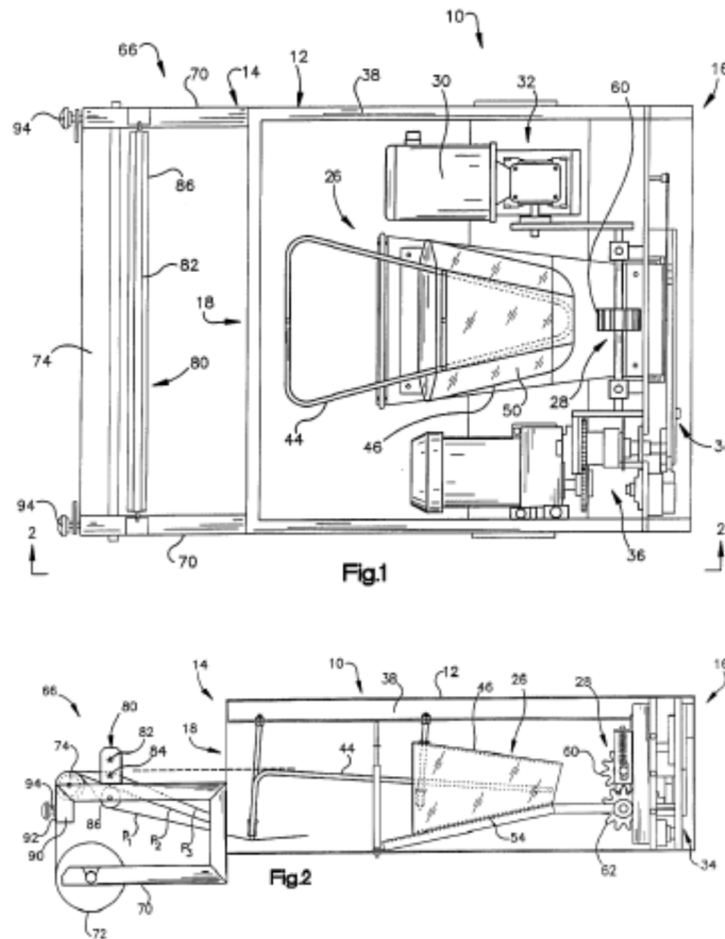
Patent Owner relies on the preamble language “[a] supply of sheet stock material for use in a cushioning conversion machine” being limiting because it “defines the very essence of the invention” where, Patent Owner contends, the phrase “cushioning conversion machine” “has a special meaning in the art.” PO Resp. 23, 27. Patent Owner argues that a person of ordinary skill in the art “would have recognized the term and understood it to mean the exact type of machine described in the ’096 Patent, as well as in numerous other of Patent Owner’s patents,” citing a number of such patents. *Id.* at 27 (citing Exs. 1011, 1021 [sic, 1012], 1013–1016). Patent Owner Ranpak relies on its “popular PadPak machine” as “represent[ing] a commercial embodiment of a ‘cushioning conversion machine’” and contends that “[s]uch a machine as described in the ’096 Patent and embodied in Ranpak’s products has a generally small footprint for portability, is adapted for start/stop operation, and is further adapted to supply on-demand paper dunnage/void fill at a packing station for secondary

packing.”⁶ *Id.* at 27–28 (citing Ex. 2001 ¶¶ 65–66). The image of the PadPak machine is reproduced below.



Id. at 28 (reproducing an image of what is stated to be Ranpak’s PadPak machine). Patent Owner contends “similarities between Patent Owner’s PadPak machine and the embodiment disclosed in the ’096 Patent are plainly evident from Figures 1 and 2 . . . reproduced below.” *Id.*

⁶ Patent Owner contends that “the machine of Figure 2 [of the ’096 patent] is specially adapted for stop/start operation controlled by a user . . . to produce dunnage products on demand,” quoting column 6, lines 42 to 46 of the ’096 patent, which states that “[t]he operation of the conversion machine 10 *may* be controlled by a controller, also in a well-known manner” (emphasis added). PO Resp. 4 (quoting Ex. 1001, 6:42–46). Patent Owner contends that the “‘well-known manner’ for controlling operation of a cushioning conversion machine was to selectively activate and deactivate the motors respectively driving the paper feed and cutting mechanisms.” *Id.* (citing Ex. 2001 ¶ 44).



Id. at 29 (reproducing Figures 1 and 2 of '096 patent, depicting top and side plan views of a cushioning conversion machine); Ex. 1001, 3:58–63. From these alleged similarities, Patent Owner contends that a person of ordinary skill in the art “would have understood ‘cushioning conversion machines’ to be much smaller in size and much simpler in design than large web processing machines like corrugators.” *Id.* (citing Ex. 2001 ¶¶ 67, 80).

On this basis, Patent Owner relies on the “supply of sheet stock material for use in a cushioning conversion machine” necessarily being limiting in that it must “be adapted for use in the cushioning conversion machine as defined” and not merely capable of being used in a cushioning conversion machine. *Id.* at 30–31. Patent Owner relies on this limiting the

size and weight of the “supply of sheet stock material” because a person of ordinary skill in the art “would have understood that the claimed stock material had to be of a size and weight sufficiently compact to withstand the start/stop, on-demand pulling forces of a ‘cushioning conversion machine.’” PO Sur-Reply 8 (citing PO Resp. 27–31; Ex. 2001 ¶¶ 39, 42–45, 61–68, 80); *see also id.* at 2 (“the paper supply of the ’096 Patent must be of a ‘compact configuration’ to not only fit in the cushioning conversion machine and its operating environment, but to ensure that the force required to pull the paper through the machine is less than the force that would cause the paper to rip.” (citing Ex. 2001 ¶¶ 43–45)).

Petitioner contends that the preamble’s recitation of “sheet stock material for use in a cushioning conversion machine” is merely an intended use and is not limiting. Pet. Reply 3–12. Petitioner argues that the preamble’s statement of an intended use is not limiting because “the body of Claim 13 describes a structurally complete sheet stock material” and that deleting “the disputed phrase from the preamble . . . [would] not affect the structural definition or operation of the [invention] itself.” *Id.* at 4 (citing *Arctic Cat Inc. v. GEP Power Prod., Inc.*, 919 F.3d 1320, 1328–29 (Fed. Cir. 2019); *Catalina*, 289 F.3d at 808, 809 (internal quotations omitted)). Petitioner also highlights that the disputed phrase neither serves as antecedent basis for any term in the body of the claim nor “recite[s] any ‘additional structure or step underscored as important in the specification.’” *Id.* at 5. Petitioner also highlights that Patent Owner did not rely on the disputed phrase during prosecution, relying instead on specific features of the sheet stock material set forth in the body of the claim. *Id.* at 6–8 (citing Ex. 1007, 80–83, 100–102, 109–110; Ex. 1028 ¶¶ 12–16).

Petitioner also disputes Patent Owner’s “narrow construction of ‘cushioning conversion machine’ . . . [that] limit[s] the machines to only those that operate in a certain way (‘a stop/start machine’), are positioned in a particular location . . . , and reform sheet stock material in a particular way.” *Id.* at 9–10. Petitioner highlights that “[t]he ’096 Patent’s specification never identifies a particular size or weight of the sheet stock roll.” *Id.* at 10. As to Patent Owner’s reliance on its PadPak machine, Petitioner contends that the image “is not part of the ’096 Patent’s intrinsic record, and offers no information regarding the size or weight of the sheet stock material,” and that due to a lack of evidence as to what is depicted that the image is irrelevant. *Id.* (citing PO Resp. 5, 17, 28; Ex. 1027, 16:6–19:21).

On this record, we determine that the preamble’s recitation of “sheet stock material for use in a cushioning conversion machine” is a statement of intended use and does not constitute a limitation. In doing so, we must construe the meaning of the term “cushioning conversion machine.”

In construing “cushioning conversion machine,” we note there is no guidance elsewhere in the remaining claim language as to its meaning, including in other claims, and so turn to the specification of the ’096 patent. *See Phillips*, 415 F.3d at 1312–13, 1315. The ’096 patent states that “[c]ushioning conversion machines convert [paper] sheet stock material . . . into a cushioning dunnage product.” Ex. 1001, 1:23–25 (Background). The ’096 patent also identifies its “invention [as] relat[ing] to machines for converting sheet stock material into a dunnage product.” *Id.* at 1:15–16 (Field of the Invention). Figures 1 and 2 are identified as top plan and side elevational views of a cushioning conversion machine. *Id.* at 3:57–63. The ’096 patent discloses that the “operation of the [cushioning] conversion

machine 10 *may* be controlled by a controller, also in a well-known manner” (emphasis added). *Id.* at 6:42–44. The ’096 patent provides no disclosure as to the size of the cushioning conversion machine or the sheet stock material that it converts into cushioning dunnage product. *See* Ex. 1001.

Turning to Mr. May’s testimony, we consider both its content and what weight it should be given. In doing so, we are guided by our reviewing court’s view that “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court.” *Phillips*, 415 F.3d at 1318. Opinion that is not corroborated by evidence is generally entitled to little weight. *Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (“It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate.”); *Cf. Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (“Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination.”).

Mr. May testifies that the phrase “cushioning conversion machine” has a particular meaning, “a stop/start machine proximate to a packaging station adapted to receive sheet stock material from a supply thereof and reform the sheet stock for on demand dunnage or void fill.” Ex. 2001 ¶ 61; *see also id.* ¶¶ 43, 66. Mr. May testifies “cushioning conversion machine” has had this “special meaning in the field of paper dunnage machines for many years” and that he has “never heard the phrase to reference machines outside the dunnage/void fill secondary packing industry.” *Id.* ¶ 62.

Mr. May further testifies that “cushioning conversion machine” “refers specifically to the type of machine described in the ’096 Patent.” *Id.*

Mr. May provides insufficient support in the record for this testimony, referring to the ’096 patent’s Figures 1 and 2 as depicting what are

contended to be simplistic features (*id.* ¶ 64 (citing Ex. 1001, Figs. 1–2)) and the image of what is contended to be Ranpak’s PadPak machine (*id.* ¶ 65).⁷ Mr. May similarly testifies that “the cushioning conversion machine depicted in the ’096 Patent is a typical size and has typical complexity for a cushioning conversion machine.” *Id.* ¶ 45.

On this record, Mr. May’s testimony of what “cushioning conversion machine” means in the field of paper dunnage machines fails to bear the weight required to limit the term as Patent Owner proposes. The ’096 patent identifies “cushioning conversion machines” to be machines that “convert sheet stock material . . . into a cushioning dunnage product.” Ex. 1001, 1:23–25 (Background). This is in effect the plain and ordinary meaning of the words themselves identifying a machine that converts feedstock into cushioning. Further, we find it consistent with the ’096 patent as a whole. Mr. May’s contrary testimony, as discussed above, lacks sufficient evidentiary basis to support Patent Owner’s contended construction over the plain and ordinary meaning. In effect, the basis for Mr. May’s testimony is limited to a showing that the meaning of the term encompasses a machine such as shown in the ’096 patent’s Figure 1 and 2. Mr. May’s testimony as to the PadPak machine being a “popular cushioning conversion machine[]” only goes to establishing that “cushioning conversion machine” encompasses similar machines, not that the term would be understood to be limited to the PadPak machine. Ex. 2001 ¶¶ 65–66. As to “cushioning conversion machines” being stop/start machines, the ’096 patent’s states that “the conversion machine 10 *may* be controlled by a controller” (emphasis

⁷ Elsewhere Patent Owner cites a number of its patents for using the term “cushioning conversion machine,” but this only supports that Patent Owner uses the term. *See* PO Resp. 27.

added), not that it must be. Ex. 1001, 6:42–43. As to size, as discussed above, the '096 patent provides no limitation as to the size of the apparatus or the sheet stock material.

Petitioner highlights that another of Patent Owner's patents, U.S. Patent No. 6,200,251 B1 (Ex. 1026, "the '251 patent"), discloses "that in a '*preferred* cushioning conversion machine, the stock supply assembly is adapted to supply stock material which is between 25 to 35 inches wide'" (emphasis added). Pet. Reply 14 (citing Ex. 1026, 2:56–59). Petitioner also highlights that the '251 patent was filed before the '096 patent's priority date and names the '096 patent's inventor among its inventors. *Id.*; compare Ex. 1026, codes (22), (75), with Ex. 1001, codes (22), (75). Such disclosure of a preferred embodiment in this circumstance is reasonable evidence that a skilled artisan would understand that a "cushioning conversion machine" included those "adapted to supply stock material . . . between 25 and 35 inches wide," but not that such machines were limited to using such widths. The relevance of this is that the sheet stock material used is not manifestly distinct from the sheet stock material used for corrugators, ranging from 35 to 110 inches in width, where Patent Owner contends corrugators are distinct from "cushioning conversion machines." See Ex. 2003, 95:22–96:6 (Mr. Klass testifying that the "width of commercial corrugators could be anywhere from 35 to 110 inches."); PO Resp. 33–34 (relying on Mr. Klass' testimony). Similarly, there is no persuasive evidence of a clear distinction in weight. Patent Owner and Mr. May rely on Mr. Klass' testimony as to the weight of paper rolls for corrugators, focusing solely on testimony as to the weight of large rolls and ignoring that the testimony also set forth that "[s]ome corrugators use smaller rolls." PO Resp. 34; Ex. 2001 ¶¶ 77–79; Pet. Reply 14–15; see also Ex. 1028 ¶¶ 21–22 (Mr. Klass' testimony that

“web feed rolls at the lower end of that range would be especially well suited for use in a cushioning conversion machine, even under [Patent Owner’s] narrow definition of such a machine” and that “my testimony certainly was not that *Kirkpatrick’s* web feed rolls would weigh tons.”).

In sum, on this record, we determine that “cushioning conversion machine” means a machine that converts sheet stock material into a cushioning dunnage product.

Having determined the proper meaning of “cushioning conversion machine,” we now turn to whether the phrase “supply of sheet stock material for use in a cushioning conversion machine” constitutes a limitation to the claimed subject matter. Patent Owner and Mr. May rely on the supply of sheet stock material being suitable for use in a cushioning conversion machine according to Patent Owner’s definition. PO Resp. 30–31. Patent Owner relies on this limiting the size and weight of the “supply of sheet stock material” because it must “fit in the cushioning conversion machine and its operating environment” (PO Sur-Reply 2 (citing Ex. 2001 ¶¶ 43–45)) and must “be of a size and weight sufficiently compact to withstand the start/stop, on-demand pulling forces of a ‘cushioning conversion machine.’” *Id.* at 8 (citing PO Reply 27–31; Ex. 2001 ¶¶ 39, 42–45, 61–68, 80); *see also id.* at 2; Ex. 2001 ¶¶ 43–45. Patent Owner contends that these “considerations were well-known to a [person of ordinary skill in the art] at the time of the ’096 Patent” (PO Sur-Reply 2–3), but neither Patent Owner nor Mr. May explains how these considerations limit the supply of sheet stock material in any meaningful way, particularly where “cushioning conversion machine” is not limited to Patent Owner’s narrow definition as discussed above. For example, while it may be that sheet stock for use in any paper processing machine should withstand the forces to which it is

subjected, there is an insufficient basis set forth for sheet stock in a “cushioning conversion machine” being subject to forces exceeding the shearing force required to tear the sheet stock. This holds true even if we assume that the cushioning conversion machine is a “stop/start machine,” as Patent Owner contends, because of the conclusory nature of the limited relevant testimony. *See* Ex. 2001 ¶ 45. Likewise, there is no basis for the sheet stock supply being limited in size to fit the machine because, as discussed above, there is no meaningful limit to the size of the “cushioning conversion machine.”

In arguing that the statement of intended use should be limiting, Patent Owner relies on the '096 patent's “specification repeatedly and unwaveringly point[ing] to use of the claimed sheet stock material in a cushion conversion machine” and on “the invention clearly hinge[ing] on this vital aspect.” PO Resp. 26 (citing Ex. 1001, Abstract, 2:17–31, 2:54–56, 3:59–61, 4:5–10). Patent Owner further relies on a number of cases in which preambles that recited an intended use were found limiting. *Id.* at 23–26. In contrast to those cases, however, the preamble is not necessary to understand limitations or terms in the claim body of claim 13 because, as discussed above, there is no apparent limitation to structure. Similarly, in contrast to other cases in which preambles reciting an intended use were found limiting, the preamble at issue here neither provides antecedent basis for a term in the body of the claim nor was relied on by Patent Owner to distinguish the claim from the prior art.⁸ Pet. Reply 4–5; PO Sur-Reply 9; *Catalina*, 289 F.3d at 808–809.

⁸ Patent Owner raises in its Sur-Reply that “it appears the Examiner ultimately did consider the preamble to be limiting,” citing the Examiner's

Patent Owner also contends that “Petitioner implicitly concedes that the preamble here gives ‘life, vitality, and meaning’ to the challenged claims by completely ignoring this argument and not addressing it at all.” PO Sur-Reply 7. Similarly, Patent Owner also argues that “Petitioner does not dispute Mr. May’s testimony” as to the meaning of “cushioning conversion machine” and “supply of sheet stock material” for such a machine, and that, “[a]s such, the preamble does provide additional structure to a [person of ordinary skill in the art] in addition to giving ‘life, vitality, and meaning’ to the claims, and a proper claim construction therefore treats the preamble as defining part of the claimed invention.” *Id.* at 8.

Contrary to Patent Owner’s arguments, Petitioner never conceded that the preamble gives life, vitality, and meaning to the challenged claims. Petitioner has consistently argued in detail that the body of the claim defines a structurally complete invention and that the preamble only states a purpose or intended use. Pet. 18–19; Pet. Reply 3–6; *See Catalina*, 289 F.3d at 808 (contrasting claims having a preamble that gives life, vitality, and meaning

Reasons for Allowance (PO Sur-Reply 9–10 (citing Ex. 1007, 112), but provides no authority for this action by the Examiner, absent any related argument by the applicant, to weigh toward the preamble limiting the claim (see PO Resp.; Sur-Reply). Moreover, it is not clear that the Examiner’s statement is anything more, in effect, than a repetition of the claim language, that is, it is not a clear affirmative statement about the meaning of that language or its limiting effect. *See* Ex. 1007, 112. Following repeated statements by the Examiner that the preamble was not given patentable weight (*id.* at 80–82, 100–102), such an ambiguous statement—standing alone—does not weigh significantly in favor of the Patent Owner’s position that the Examiner considered the preamble to limit the claim. *Cf. Salazar v. Proctor & Gamble Co.*, 414 F.3d 1342, 1345–46 (Fed. Cir. 2005) (finding an “examiner’s unilateral remarks did not alter the scope of the claim” because applicant’s silence “disavowed nothing”).

to claims in which the body defines a structurally complete invention and the preamble only states a purpose or intended use). Similarly, as detailed above, Petitioner has disputed throughout this proceeding Patent Owner's narrow construction for "cushioning conversion machine" and the evidence relied on by Mr. May in support of his testimony as to the meaning of "cushioning conversion machine" and "supply of sheet stock material." Pet. Reply 9 n.1, 9–10 (citing PO Resp. 5, 17, 27–30; Ex. 1027, 16:6–19:21).

For these reasons, we determine that the preamble only states a purpose or intended use for the invention and is, accordingly, not limiting.

We further determine that no additional claim construction is necessary to reach our decision in this case.

E. Asserted Obviousness over Kirkpatrick

Petitioner challenges claims 13–15 as having been obvious over Kirkpatrick. Pet. 28–32.

1. Overview of Kirkpatrick (Ex. 1003)

Kirkpatrick is directed to an "[a]pparatus for handling webs of material . . . in the context of a web joining apparatus" that is used with production equipment that generates product from webs of rolled raw material, such as "paper, cardboard, kraft, floor coverings and the like." Ex. 1003, code (57), 1:5–24, 3:35–4:19. Kirkpatrick highlights that there is "no such thing as an endless supply of raw material, particularly rolled material such as paper, cardboard, kraft, floor coverings and the like." *Id.* at 1:17–19. Kirkpatrick's apparatus is configured for "joining the leading edge of a fresh web of material to the trailing edge of an expiring web of material without interrupting the continued advance of the expiring web." *Id.* at 1:5–12. To do this, it teaches the use of double-sided adhesive tape that can be applied across the width of the new roll's web by removing a release paper

from one adhesive surface of the double-sided adhesive tape and positioning the tape on the new roll, after which the release paper can be removed from the second adhesive surface to ready the web for splicing to the expiring web. *Id.* at 10:42–43, 10:53–65; *see also id.* Fig. 7 (illustrating double-sided adhesive tape (157) being applied at the leading edge (154) of the web (152)).

2. *Analysis*

a) *Independent claim 13*

Claim 13 is directed to a supply of sheet stock material for use in a cushioning conversion machine. As discussed above, we determine the phrase “for use in a cushioning conversion machine” is merely an intended use and not limiting.

Petitioner relies on Kirkpatrick as disclosing the recited “sheet stock material” having “at least one ply of kraft paper rolled or folded into a compact configuration” in its disclosure of “rolled material such as paper, cardboard, ***kraft***, floor coverings and the like,” that is to be joined by Kirkpatrick’s improved process. Pet. 24 (citing Ex. 1003, 1:5–12, 1:16–24; Ex. 1002 ¶ 65). Petitioner contends also that a person of ordinary skill in the art “would have understood Kirkpatrick as teaching that its new web feed roll (20)” —depicted in Figure 7— “may be a roll of kraft paper.” *Id.* at 25 (citing Ex. 1002 ¶¶ 65–67; Ex. 1003, 1:5–24, 3:49–57). Petitioner also contends that a person of ordinary skill in the art would have been motivated “to select single-ply kraft paper for use in any cushioning conversion machine” because of the qualities of single-ply kraft paper, i.e., that it is strong, pliable, recyclable, and effective for forming cushioning dunnage products, as evidenced by the fact that “kraft paper was a well-known material for producing cushioning dunnage products at the time of the

invention.” *Id.* at 29 (citing Ex. 1002 ¶ 75; Ex. 1012, 5:35–43; Ex. 1013, 5:38–47; Ex. 1014, 5:17–30; Ex. 1015, 3:25–38; Ex. 1016, 12:38–46).

Petitioner relies on Kirkpatrick disclosing plies “of kraft paper having on a leading edge or trailing edge . . . a pressure sensitive adhesive layer and a removable release liner covering the pressure sensitive adhesive” in its disclosed use of double-sided tape. Pet. 26–28. Petitioner contends that “when the double-sided adhesive tape (157) is applied [by the operator to] the leading end (154) of web (152) of a fresh feed roll (20)], the leading end of Kirkpatrick’s feed roll (20) includes ‘a pressure sensitive adhesive.’” *Id.* at 26 (citing Ex. 1003, 10:53–65; Ex. 1002 ¶¶ 68–69). Petitioner also contends that “it would have been obvious to a [person of ordinary skill in the art] to secure the double-sided tape (157) to the leading end of Kirkpatrick’s web feed roll (20) and store the roll (20) in this compact-rolled condition until it is needed for joining to an active/expiring roll (18),” because storing it in this condition “with the double-sided tape’s outer release paper left on the tape’s adhesive . . . would preserve the adhesive until the new roll (20) is needed for joining with an active/expiring roll” (*id.* at 29–30 (citing Ex. 1002 ¶ 76; Ex. 1003, 10:60–62; Ex. 1017, 9:18–42; Ex. 1018, 9:25–27), and would “reduce the number of steps that must be performed when the new roll (20) is needed during manufacturing, . . . [thereby] improv[ing] the speed and efficiency with which the new roll (20) could be mounted and made ready for joining” (*id.* at 30 (citing Ex. 1002 ¶ 77; Ex. 1003, 10:60–62; Ex. 1005, 1:58–61; Ex. 1010, 2:9–13, 4:7–12; Ex. 1017, 6:21–24; Ex. 1018, 9:25–27)).

Patent Owner focuses on Kirkpatrick’s disclosure relating to a “corrugated paper manufacturing line” and argues that “a corrugator is not a cushioning conversion machine” and that “Kirkpatrick’s “web feed rolls . . .

weigh tons” “render[ing] them incapable for use in a cushioning conversion machine as required by claim 13.” PO Resp. 32–35 (addressing whether Kirkpatrick anticipates claim 13). Patent Owner contends that claim 13 would not have been obvious because: (i) it defined the problem to be solved in a new way, and that this conclusion is reinforced by the indicia of non-obviousness (*id.* at 36–40); (ii) a person of ordinary skill in the art would not have looked to Kirkpatrick (*id.* at 43–47; PO Sur-Reply 17–22); and (iii) indicia of non-obviousness demonstrate that the invention was not obvious (PO Resp. 40–42, 47; PO Sur-Reply 15–17).

Patent Owner’s arguments are unavailing. As discussed above, the preamble does not limit the “supply of sheet stock material” as to its size or weight as Patent Owner contends. Moreover, even if it did, we discern no basis on this record for Kirkpatrick not reasonably disclosing and suggesting the same size and weight as would be required for a “cushioning conversion machine.” As highlighted by Petitioner, what Kirkpatrick teaches and suggests to one of ordinary skill in the art is not limited to very wide, heavy rolls of sheet stock for corrugators, but reasonably extends to narrower and lighter rolls of sheet stock. Pet. Reply 14–15; Ex. 1028 ¶¶ 19–22 (citing Ex. 1002 ¶¶ 3–12, 57; Ex. 1003, 3:35–40, 2:4:13–20 [sic, 4:13–19]; Ex. 2003, 95:22–96:16); Pet. Reply 14 (citing Ex. 1026, 2:56–59).

Patent Owner’s argument that the ’096 patent defined the problem in a new way includes that Petitioner’s challenge relies on impermissible hindsight. PO Resp. 36–40. Patent Owner relies on contended evidence of non-obviousness as supporting its argument. *Id.* at 40–42. Patent Owner argues that “[t]he inventors of the ’096 Patent defined the problem in a new way,” pointing to the earlier adoption of “single sided tape and spray adhesive splicing.” *Id.* at 36–37 (citing Ex. 2001 ¶ 40). At the same time,

however, Patent Owner states “[t]hat the need to replace an expiring paper supply with a new one was also well known,” as was the solution, “splicing the leading edge of the new stock with the trailing edge of the expiring stock.” *Id.* at 39 (citing Ex. 1001, 1:29–48; Ex. 2001 ¶¶ 39–40). Patent Owner, thus, argues using double sided tape instead of single sided tape and/or spray adhesive for the same function of splicing the leading edge of new stock to the trailing edge of expiring stock is impermissible hindsight.

Patent Owner fails to address the reasonable motivation identified by Petitioner for the skilled artisan to provide a roll in a compact configuration with the double-side tape with overlying outer release paper, i.e., to improve the speed and efficiency of mounting a new roll and making it ready for joining to an expiring roll. Pet. 29–30 (citing Ex. 1002 ¶ 76–77; Ex. 1003, 10:60–62; Ex. 1005, 1:58–61; Ex. 1010, 2:9–13, 4:7–12, Ex. 1017, 4:7–12, 9:18–42; Ex. 1017, 6:21–24; Ex. 1018, 9:25–27). Patent Owner’s argument is, rather, wholly consistent with the benefits of increased efficiency and convenience motivating the skilled artisan. PO Resp. 39–40 (citing Ex. 1001, 1:29–67; Ex. 2001 ¶¶ 39–41).

Patent Owner’s argument that a person of ordinary skill in the art would not have looked to Kirkpatrick goes to whether Kirkpatrick is analogous art. Patent Owner’s argument includes that, “absent hindsight, there is no reason a [person of ordinary skill in the art] would have looked to Kirkpatrick.” PO Resp. 43. Patent Owner argues that “[a]ny ‘motivation’ to look to Kirkpatrick is derived entirely from the invention itself” and that this “is a form of improper hindsight: ‘Defining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness.’” *Id.* (quoting *Insite Vision Inc. v. Sandoz, Inc.*, 783 F.3d 853, 859 (Fed. Cir. 2015) (citation omitted)).

Patent Owner sets forth that a reference must be analogous to be considered within the prior art for obviousness, being either “art from ‘the same field of endeavor,’ or art ‘reasonably pertinent to the particular problem with which the inventor is involved.’” PO Sur-Reply 18 (citing *Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015); *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011)).

Patent Owner contends that Kirkpatrick is not shown to be analogous art, arguing “suppliers/paper processing and paper cushioning/dunnage converting are completely different and separate” having “completely separate publications, trade shows, suppliers, consultants, etc.” PO Resp. 43–44; *see also* PO Sur-Reply 17–20 (addressing whether Kirkpatrick is in the same field of endeavor). In its Sur-Reply, Patent Owner elaborates on the ’096 patent being directed to cushioning conversion and on Kirkpatrick never mentioning cushioning conversion or dunnage and argues they are directed at different environments. PO Sur-Reply 18–19. Patent Owner argues that references are not in the same field of endeavor when used in different environments. *Id.* at 19–20 (citing *Smith & Nephew, Inc. v. Hologic, Inc.*, 721 F. App’x 943, 949 (Fed. Cir. 2018) (emphasis added, citations omitted) (analyzing *In re Clay*, 966 F.2d 656 (Fed. Cir. 1992))).

Patent Owner also contends that a person of ordinary skill in the art “of cushioning machines would not have been motivated to look at the art of paper processing.” PO Resp. 44 (citing Ex. 2001 ¶ 83; Ex. 2002 [sic, 2003], 80:9–81:19); *see also* PO Sur-Reply 20–22 (addressing whether Kirkpatrick is reasonably pertinent to problem addressed). Patent Owner’s argument includes that “even if a [person of ordinary skill in the art] were motivated to look to the nonanalogous art of Kirkpatrick, claim 13 would not have been obvious” because “[a] cushioning conversion machine is a start/stop, on-

demand machine” while Kirkpatrick is directed to continuous web processing “enabl[ing] continuous unwinding of materials” using a “flying splice” in which the “leading end of the new supply and the trailing end of the old supply are operating at the same speed at the time of the splice.” PO Resp. 44–47. In its Sur-Reply, Patent Owner elaborates on the allegedly complicated nature of Kirkpatrick’s apparatus to provide a “flying splice” and argues “[t]he problem facing Kirkpatrick—needing to stop the manufacturing machine . . . to load a new supply roll—was not the same problem articulated by the inventors of the ’096 Patent.” PO Sur-Reply 20–22 (citing Ex. 1003, 1:6–12, 1:25–30, 1:49–67).

Petitioner responds both that “the ’096 Patent and Kirkpatrick are in the same field of rolled sheet stock material and techniques for joining such rolls” without regard to the size of the sheet stock or whether the machines used operate continuously or discontinuously (Pet. Reply 17–18 (citing Ex. 1028 ¶ 25)) and that “Kirkpatrick is unquestionably ‘reasonably pertinent’ to the problem addressed in the ’096 Patent” (*id.* at 18). Petitioner highlights that Kirkpatrick is directed to joining the trailing end of an expiring web of material to a fresh web of material and uses the same material (kraft paper). *Id.* at 18 (citing Pet. 19–28; Ex. 1003, 3:67–4:12).

On this record, we determine that Kirkpatrick is analogous art and is properly considered in the determination of obviousness. Whether in the same field of endeavor as defined by Patent Owner or not, the problem in both Kilpatrick and the ’096 patent is to join a new supply roll to an expiring roll. Patent Owner’s contention that the problem is different focuses on Kirkpatrick accomplishing this using more complex machinery while the feedstock is moving instead of stationary. PO Sur-Reply 20–22. While the problem of joining a new supply roll to an expiring roll is addressed in a

different context, this does not alter that the basic nature of the problem to be solved is identical in both circumstances, whether accomplished in a “flying splice” or during a transitory stationary period. Further, it is apparent that large web processing machines, such as Patent Owner contends Kirkpatrick is directed to, and seeks to distance from the ’096 patent, are not removed from use in which rolls of sheet stock are joined while stationary. *See* Ex. 1010, 1:13–16 (disclosing that its splicing tape system “is applicable both to systems in which the splice is made on the fly and to systems in which the splice is made while the running web is stationary”); Ex. 1017, 1:15–19 (disclosing that “[t]he splicing operation can be performed in a static or a dynamic mode.”).⁹ Moreover, we determine that Petitioner’s position that Kirkpatrick is in the same field of endeavor as the ’096 patent is better founded than Patent Owner’s position that they are not. As addressed above, most particularly in regard to whether the preamble is limiting, there is no reasonable distinction to be drawn between a “cushioning conversion machine” and paper processing machines that produce cushioning products or dunnage from paper stock in regard to the complexity of the machines themselves, the size and/or weight of the feedstock supply they use, or in their use, including whether the operation is continuous or discontinuous.

Patent Owner contends that indicia of non-obviousness demonstrate that the invention was not obvious. PO Resp. 40–42, 47. Patent Owner contends that “there is no evidence that anyone in the cushioning converter

⁹ Petitioner relies on these references (Exs. 1010 and 1017) as evidencing the common use of double-sided adhesives to splice sheet stock materials. Pet. 15–16 (citing Ex. 1010, 1:8–12, 1:24–29, 1:33–61; Ex. 1017, 9:18–42), 30 (citing Ex. 1010, 1:33–61; Ex. 1017, 9:18–42)).

industry used Kirkpatrick, tried to use Kirkpatrick, or even suggested the splicing method from Kirkpatrick.” *Id.* at 47 (citing Ex. 2001 ¶¶ 85–87). Patent Owner relies on the existence of long-felt need and copying as evidence of non-obviousness. *Id.* at 40–42; *see also id.* at 39–40 (discussing prior splicing solutions). As to long-felt need, Patent Owner relies on the lack of “evidence that anyone in the paper cushioning conversion ever used or tried the solution recited in claim 13” for a “long period where those in the field used other techniques to improve splicing” as “strong evidence of non-obviousness.” *Id.* at 40 (citing *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1052 (Fed. Cir. 2016); PO Sur-Reply 16–17. As to copying, Patent Owner relies on contentions that its “product was well known in the industry, . . . enjoy[s] commercial success, and was readily accessible to Petitioner” and that “Petitioner’s product was materially identical (a copy) to the Patent Owner product, but instead of pre-apply[ing] one side of the adhesive, Petitioner included with the paper bundle a strip of double-sided adhesive with two release liners and instructions for applying it to the leading edge of the supply stock.” *Id.* at 41–42 (citing *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1336 (Fed. Cir. 2016); *Windsurfing International, Inc. v. AMF, Incorporated*, 782 F.2d 995, 1000 (Fed. Cir. 1986)).

Petitioner responds that “[t]here is no evidence of a long-felt but unresolved need” in that Patent Owner “never articulates a specific problem and never provides evidence of efforts to solve such a problem.” Pet. Reply 19. As to copying, Petitioner denies “it copied [Patent Owner’s] alleged invention,” contests Patent Owner’s contentions as merely “assertions” and not evidence, and argues that copying, in and of itself, is of limited probative value. *Id.* at 20.

On this record, Patent Owner fails to set forth persuasive evidence of long-felt need that weighs in favor of nonobviousness. Evidence of “a long-felt but unsolved need that is met by the claimed invention is further evidence of non-obviousness” and “is particularly probative . . . when it demonstrates both that a demand existed for the patented invention, and that others tried but failed to satisfy that demand.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1369 (Fed. Cir. 2017). As Petitioner contends, Patent Owner fails to identify any unresolved problem with the prior art solutions at the time of the invention, but, rather, details efforts taken to address drawbacks to using tape and spray adhesives prior to invention.¹⁰ PO Resp. 39–40 (citing Ex. 1001, 1:29–67; Ex. 2001 ¶¶ 39–41) (“The industry’s splicing solutions, [] were tedious and inconvenient. Thus, during the 1990s various efforts were made to address these drawbacks.”). Neither Patent Owner nor Mr. May identifies how those efforts failed to resolve the earlier problems and, accordingly, there is insufficient evidence of a long felt but *unsolved* need.

On this record, Patent Owner fails to set forth persuasive evidence of copying that weighs in favor of nonobviousness. Patent Owner’s argument is grounded on the principle that “copying the claimed invention, rather than one within the public domain, is indicative of non-obviousness” (PO Resp. 41 n.104), but Patent Owner relies on Petitioner providing a “paper bundle [with] a strip of double-sided adhesive with two release liners and instructions for applying it to the leading edge of the supply stock” (*id.* at 41–42). Patent Owner offers no further explanation or reasoning for how

¹⁰ Because we find the evidence of long-felt need insufficient, we need not reach whether there is a nexus between the claimed invention and the contended improvement in the field.

this suffices as copying the claimed invention. *Id.* Nor does Patent Owner set forth any basis for what is provided by Petitioner not being within the public domain. *Id.*

Based on our review and consideration of the arguments and evidence, including that as to indicia of nonobviousness, we find that Petitioner demonstrates persuasively that Kirkpatrick teaches or suggests each element of independent claim 13, and that the claimed subject matter would have been obvious. Specifically, we find that Petitioner has shown by a preponderance of the evidence that Kirkpatrick teaches or suggests “[a] supply of sheet stock material” having “one ply of kraft paper rolled . . . into a compact configuration” in its disclosure of “rolled material” that includes “kraft” where a person would understand its “new feed roll (20)” —depicted in Figure 7—“may be a roll of kraft paper” and a person of ordinary skill in the art would have been motivated to “select single-ply kraft paper for use in any cushioning conversion machine.” Pet. 24 (citing Ex. 1003, 1:5–12, 1:16–24; Ex. 1002 ¶ 65), 25 (citing Ex. 1002 ¶¶ 65–67; Ex. 1003, 1:5–24, 3:49–57), 29 (citing Ex. 1002 ¶ 75).

We also specifically find that Petitioner has shown by a preponderance of the evidence that Kirkpatrick teaches or suggests plies “of kraft paper having on a leading edge or trailing edge thereof a pressure sensitive adhesive layer and a removable release liner covering the pressure sensitive adhesive layer” in its disclosed use of double-sided tape (Pet. 26–28 (citing Ex. 1003, 10:53–65; Ex. 1002 ¶¶ 68–69)), including that “it would have been obvious to a [person of ordinary skill in the art] to secure the double-sided tape (157) to the leading end of Kirkpatrick’s web feed roll (20) and store the roll (20) in this compact-rolled condition until it is needed for joining to an active/expiring roll (18),” because storing it in this

condition “with the double-sided tape’s outer release paper left on the tape’s adhesive . . . would preserve the adhesive until the new roll (20) is needed for joining with an active/expiring roll” (*id.* at 29–30 (citing Ex. 1002 ¶ 76; Ex. 1003, 10:60–62; Ex. 1017, 9:18–42; Ex. 1018, 9:25–27)), and would “reduce the number of steps that must be performed when the new roll (20) is needed during manufacturing, . . . [thereby] improv[ing] the speed and efficiency with which the new roll (20) could be mounted and made ready for joining” (*id.* at 30 (citing Ex. 1002 ¶ 77; Ex. 1003, 10:60–62; Ex. 1005, 1:58–61; Ex. 1010, 2:9–13, 4:7–12; Ex. 1017, 6:21–24; Ex. 1018, 9:25–27)).

We also specifically find that Patent Owner has not demonstrated that there are objective indicia of non-obviousness weighing in favor of the patentability of claim 13.

In sum, we determine that independent claim 13 has been shown by a preponderance of the evidence to be unpatentable.

b) Dependent claims 14 and 15

Dependent claims 14 and 15 specify that the kraft paper is 30-pound and 50-pound kraft paper, respectively. Ex. 1001, 16:45–48.

Petitioner contends that the person of ordinary skill in the art “would have found the selection of 30-pound weight kraft paper or 50-pound weight kraft paper to be an obvious design choice.” Pet. 31 (citing Ex. 1002 ¶ 80; Ex. 1011, 3:61–66; Ex. 1012, 5:35–43; Ex. 1013, 5:38–47; Ex. 1014, 5:17–30; Ex. 1015, 3:25–38; Ex. 1016, 12:38–46). According to Petitioner, the weight of kraft paper used to produce cushioning dunnage products was known to be a result-effective-variable, and a person of ordinary skill in the art “would have been motivated by the end-use of the cushioning conversion material (and the stiffness and resiliency properties required by that end-use)

to select either 30-pound kraft paper or 50-pound kraft paper.” *Id.* at 31–32 (citing Ex. 1002 ¶ 81).

Patent Owner contends that Petitioner’s argument fails because “Kirkpatrick is not a cushioning conversion machine” and that whether a person of ordinary skill in the art “would have been motivated to use 30-pound or 50-pound paper” with cushioning conversion machines “is irrelevant” because “[t]he proper inquiry is whether a [person of ordinary skill in the art] would have been motivated to use 30-pound or 50-pound kraft paper in the corrugator of Kirkpatrick.” PO Resp. 48–49. Patent Owner further argues that Petitioner and Mr. Klass fail to identify any such motivation. *Id.* at 49.

Petitioner responds that Kirkpatrick’s disclosure is not limited to corrugators and that Patent Owner fails to dispute that a person of ordinary skill in the art “would have been motivated by the end-use of the cushioning conversion material (and the stiffness and resiliency properties required by that end use) to select either 30-pound kraft paper or 50-pound kraft paper.” Pet. Reply 21 (citing Pet. 31–32; Ex. 1003, 1:35–40, 2:4:13–20 [sic, 4:13–19]; Ex. 1028 ¶ 20).

On this record, we determine that selection of 30-pound and 50-pound kraft paper would have been obvious as a matter of routine optimization of a result-effective variable for the dunnage product produced. Petitioner provides persuasive evidence that the weight of kraft paper is a known result-effective variable for the properties of cushioning material made from kraft paper, including the material’s stiffness and resiliency. *See, e.g.*, Ex. 1002 ¶ 81. Patent Owner’s response focusing on its contentions that Kirkpatrick does not disclose a cushioning conversion machine does not adequately rebut the obviousness case because, regardless of what

Kirkpatrick's machine is, it remains that the weight of kraft paper is sufficiently established as a result-effective variable for producing a dunnage product. In this circumstance, it follows that selection of 30-pound and 50-pound kraft paper is not inventive. *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) ("where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation"); *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977) (finding an exception where the variable was not known to be result effective); *In re Weymouth*, 499 F.2d 1273, 1276 (CCPA 1974) (finding an exception where the results obtained with optimization were unexpectedly good).

Having reviewed Petitioner's obviousness arguments and supporting evidence and Patent Owner's arguments and supporting evidence proffered in response, we determine that dependent claims 14 and 15 have been shown by a preponderance of the evidence to be unpatentable.

F. Remaining Grounds

Petitioner also challenges claim 13 as anticipated by Kirkpatrick (Pet. 19–28) and claims 13–15 as having been obvious over Kirkpatrick in view of Ratzel (Ex. 1004) (Pet. 32–41) and over Weirauch (Ex. 1005) in view of Ratzel (Pet. 41–50). Because we have already concluded that Petitioner has shown by a preponderance of the evidence that all of the challenged claims (claims 13–15) of the '096 patent are unpatentable, we need not address the alternative unpatentability grounds. *See SAS*, 138 S. Ct. at 1359 (2018) (holding that a petitioner "is entitled to a final written decision addressing all of the *claims* it has challenged") (emphasis added); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (nonprecedential) ("We agree that the Board need not address

[alternative grounds] that are not necessary to the resolution of the proceeding.”).

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 13–15 of the ’096 patent is unpatentable.

Claim(s)	35 U.S.C. §	Reference(s)	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
13	102 ¹¹	Kirkpatrick		
13–15	103	Kirkpatrick	13–15	
13–15	103 ¹²	Kirkpatrick, Ratzel		
13–15	103 ¹³	Weirauch, Ratzel		
Overall Outcome			13–15	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 13–15 of the ’096 patent are *unpatentable*; and

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

¹¹ As explained above in Section II.F., we do not reach this challenge.

¹² As explained above in Section II.F., we do not reach this challenge.

¹³ As explained above in Section II.F., we do not reach this challenge.

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