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Paper 60
Date: April 24, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CASPER SLEEP INC.,
Petitioner,

v.

WERNER MEDIA PARTNERS, LLC,
Patent Owner.

IPR2024-00474
Patent 10,842,301 B2

Before BARRY L. GROSSMAN, JASON W. MELVIN, and RYAN H. FLAX, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

JUDGMENT

Corrected,[1] Determining All Challenged Claims Unpatentable
Denying each Party's Motion to Exclude
35 U.S.C. § 318(a), 37 C.F.R. § 42.71

[1] This corrected decision omits a footnote regarding the filing of Exhibit 2022.

I. INTRODUCTION

Werner Media Partners LLC ("Patent Owner") is the owner of U.S. Patent 10,842,301 B2 (Ex. 1001, "the '301 patent"). Paper 5, 1. On January 18, 2024, Casper Sleep Inc. ("Petitioner") filed a Petition for *inter partes* review challenging the patentability of claims 1 and 2 of the '301 patent (all claims). Paper 2, 1 ("Pet."). On February 8, 2024, Patent Owner filed an express waiver of a preliminary response to the Petition. Paper 6.

We instituted trial in this proceeding on April 26, 2024. Paper 7 ("Institution Decision" or "DI").

Patent Owner filed a Response to the Petition (and the Institution Decision) on August 23, 2024. Paper 12 ("Response" or "Resp."). On November 15, 2024, Petitioner filed a Reply (Paper 24, "Reply") to Patent Owner's Response, which was followed by Patent Owner filing a Sur-reply (Paper 31, "Sur-reply") on December 6, 2024.

On January 13, 2025, we granted-in-part Petitioner's Motion to Strike (Paper 37), wherein Exhibits 2030–2045 were stricken from the record.[2] Paper 48.

Oral argument was heard at a final hearing held on January 24, 2025, and a transcript of the hearing is of record. *See* Paper 55 ("Hr'g Tr.").

Petitioner bears the burden of proving unpatentability of the challenged claims, and this ultimate burden of persuasion never shifts to

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[2] We did not strike any portion of Patent Owner's Sur-reply; instead, we disregard and do not consider any evidence or arguments therein exceeding the proper scope of a sur-reply under 37 C.F.R. § 42.23(b) and as explained in our Consolidated Trial Practice Guide ("CTPG"), 84 Fed. Reg. 64,280 at 73–75 (Nov. 2019). Paper 48, 7–8.

Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2023). After considering the parties' arguments and supporting evidence, as discussed in detail below, we conclude that Petitioner proves by a preponderance of the evidence that the challenged claims of the '301 patent are unpatentable. Our reasoning on the merits is discussed below.

Also discussed in further detail below are the parties' respective Motions to Exclude evidence (and the parties' related Oppositions and Replies). Paper 39 ("Petitioner's Motion" or "Pet. Mot."); Paper 46 ("Patent Owner's Motion" or "PO Mot."); Paper 49 ("Petitioner's Opposition" or "Pet Opp."); Paper 50 ("Patent Owner's Opposition" or "PO Opp."); Paper 51 ("Patent Owner's Reply" or "PO Reply"); Paper 52 ("Petitioner's Reply" or "Pet. Reply"). For the reasons discussed below, these motions are each *denied*.

A. REAL PARTIES-IN-INTEREST

Petitioner states, "the real party-in-interest is Petitioner, Casper Sleep Inc." Pet. 77. Supplementing this, Petitioner further states:

> On October 29, 2024, Carpenter Co., a Virgin[i]a corporation located at 5016 Monument Ave, Richmond, VA 23230 ("Carpenter") announced that Petitioner Casper Sleep Inc. ("Petitioner") has become a subsidiary of Carpenter.
>
> As a result, pursuant to 37 C.F.R. § 42.61(a)(3), (b)(1), Petitioner updates its designation of each real party-in-interest as follows:
>
> 1. Petitioner; and
>
> 2. Carpenter.

Paper 26.

Patent Owner states, "the real party-in-interest is Patent Owner, Werner Media Partners LLC." Paper 5, 1 (Patent Owner's Mandatory Notice).

B. RELATED MATTERS

Petitioner states that "the [90/015,]251 Reexam [i]s a possible related matter (to the extent that the '251 Reexam is a still an active proceeding)." Pet. 77. Patent Owner identifies this same reexamination proceeding, which it identifies as "closed," as possibly related.[3] Paper 5, 1.

C. THE '301 PATENT AND RELEVANT BACKGROUND

The '301 patent, titled "COOLING PILLOW," issued on November 24, 2020, from U.S. Application 15/719,475, which was filed on September 28, 2017. Ex. 1001, codes (10), (45), (21), (22). The '301 patent indicates priority to provisional application 61/367,840, filed on July 28, 2016. *Id.* at code (60). However, the Office has found in the above-identified *ex parte* reexamination proceeding, and Patent Owner does not dispute, that the '301 patent's claims are entitled to only their actual filing date (i.e., September 28, 2017). *See* Ex. 1005, 134; *see also* Pet. 7–8; Reply 2–3.

The '301 patent indicates its invention relates to:

> A cooling pillow generates a gust of cooled air when compressed. A solid, resilient, compressible foam block forms a core of the cooling pillow. A phase change material layer adhered to a surface of the foam block. Holes can be formed in the foam block to enhance the feel of the pillow and to improve the speed at which air is displaced when the cooling pillow is compressed. A pillow protector enclose[ure] of lightweight

[3] Office records indicate that this reexam was denied on July 7, 2023.

> breathable material encloses the foam block. The pillow protector prevents the foam block and cooling layer from being abraded during insertion and removal from a pillow case. The pillow case encloses the pillow protector, which in [turn] holds the foam block and cooling layer. The pillow case has a breathable surface. The breathable surface is oriented to overl[a]y the cooling layer. A performance material can be used to form the breathable surface. To use the cooling pillow, the cooling pillow is oriented with the cooling layer and the breathable surface facing upward. The user then rests his or her head on the top of the pillow and compresses the cooling pillow with the weight of his or her head. As the pillow compresses, air is displaced and is cooled by the phase change material in the cooling layer. The result is a gust of cooled air against the user's head and neck.

Ex. 1001, Abstract. Such a cooling pillow is illustrated, for example, at Figure 9, which we reproduce below:

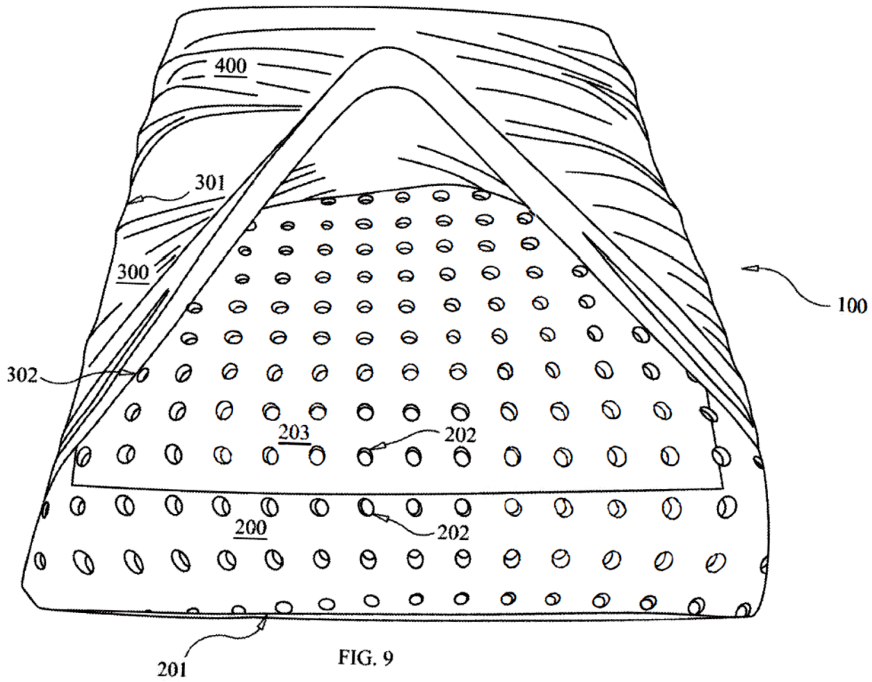


FIG. 9

The '301 patent states that "FIG. 9 is a left, top perspective view of the cooling pillow." *Id.* at 7:47–48. Figure 9 shows cooling pillow 100 having

foam block 200, holes 202, cooling layer 203, pillow protector 300 with opening 302, and pillow cover 400. *Id.* at 7:63–11:12.

The claims of the '301 patent, which are set forth below, are directed to "[a] process for manufacturing bedding," e.g., a pillow, and the '301 patent describes such a process, in its entirety, as follows:

> A preferred embodiment of a process for making a cooling pillow includes the following steps. A conventional mixture of materials for forming a solid, resilient, compressible polyurethane foam is prepared. Before pouring the mixture into the mold, a mold releasing agent is sprayed on the surface of the mold. Next, the ***mixture is poured into a mold***. The mold has the shape of the desired pillow. A preferred size pillow is 41 cm by 61 cm by 14 cm. Next, the mold is heated to 51.7° C. The temperature of the mold is held at 51.7° C. for at least ten minutes and no more than twelve minutes. After the time expires, ***a block of solid, resilient, compressible polyurethane that is shaped like the mold is removed from the mold***.
>
> ***The foam block is "cracked" twice*** to improve the feel of the pillow. To crack the pillow, the pillow is ***run between a set of rollers***.
>
> ***Holes are formed*** in the foam block according to the following steps. First the foam block is ***compressed by pressing*** the top surface of the foam block toward the bottom surface. Next, an array of ***punches are pressed*** against the top surface of the compressed pillow to form holes that transverse the foam block from the top surface to the bottom surface. The resulting holes will have a frustoconical shape. The holes have a diameter of one centimeter at the top surface. The holes have a diameter of 0.6 cm at the bottom surface. The holes are formed in a repeating rectangular pattern in which the holes are center spaced 2.5 cm apart from each other.
>
> The phase change material is purchased in a microencapsulated state. The preferred phase change material is sold under the trademark ENFINIT® 28 PCM. The ***PCM is mixed with a batch of the above-described polyurethane***

> ***material***. The weight ratio of microencapsulated PCM to polyurethane is 2:3-3:7. The PCM-polyurethane mixture is ***applied in two coats*** to the top surface of the foam block. Each coat is ***cured*** by reheating the painted foam block to 51.6° C. for ten to twelve minutes. The resulting cooling layer is between one and two millimeters (1-2 mm) thick.
>
> To complete the cooling pillow, the foam block with cooling layer is placed within a pillow protector. The pillow protector is stitched close[d]. The pillow protector, which houses the foam block with cooling layer, is inserted into the pillow case. When the pillow protector is inserted, the top surface of the foam block, on which the cooling layer is applied, is oriented to underlie the uniform side of the pillow cover.
>
> The process for making the cooling pillow is conducted under standard laboratory conditions unless otherwise specified.

Id. at 11:13–12:9, 12:36 (emphasis added to highlight certain disputed subject matter).

In the preferred process described above, forming a foam, solid shape in a mold is discussed. The '301 patent introduces this concept by describing that "[a] block of solid, resilient, compressible foam forms a core of the cooling pillow. The foam block can be made from polyurethane foam, visco elastic foam, and gel infused polyurethane foam. Alternative foams include natural latex and synthetic latex foams." *Id.* at 3:1–5, 8:39–45. The '301 patent further describes that this foam is formed into a pillow by first providing a mixture of materials, spraying it with a gas to form a liquid foam, then filling the mold with that liquid, and then curing the liquid to form a solid foam. *Id.* at 3:16–33, 11:13–25.

The preferred process above also discusses applying a phase change material ("PCM") to a foam pillow. The '301 patent states "[a] phase-change material (PCM) is a substance that has a high heat of fusion and that

is capable of storing and releasing large amounts of energy by melting and solidifying at certain temperatures. Heat is absorbed or released when the material changes from solid to liquid and vice versa." *Id.* at 2:11–16. As noted above, PCM is not applied directly to the foam pillow in its native form, but is mixed with polyurethane, and that mixture is applied to the surface of the foam and is then flexible enough to be retained on the pillow without fracturing during use. *Id.* at 5:14–22, 8:59–9:18, 11:41–50.

The '301 patent states that "[a]n object of the invention is to alleviate discomfort felt while sleeping" and "[o]ne way the cooling pillow improves discomfort is through improving air flow" by using an "aerated gel memory foam" and "incorporating holes throughout the pillow." *Id.* at 5:29–39. The other ways the '301 patent describes alleviating such discomfort is by using phase change material on its surface and including a performance fabric in a pillow case where it overlies the PCM. *Id.* at 5:45–6:26.

The '301 patent concludes with two independent claims, which are reproduced below (Petitioner's sub-numbering included):

> 1. A process for manufacturing bedding, which comprises:
>
> [a] providing a solid, resilient, compressible foam block, said block having a surface;
>
> [b] applying phase change material to said surface;
>
> [c] forming a hole into said block and through said surface; and
>
> [d] cracking said block.
>
> 2. A process for manufacturing bedding, which comprises:
>
> [a] providing a solid, resilient, compressible foam block, said block having a surface;

[b] applying phase change material to said surface;

[c] forming a hole into said block and through said surface;

[d] compressing said block by pressing on said surface before the forming of the hole; and

[e] performing the forming of the hole while said block is compressed.

Ex. 1001, 12:36–51. Comparing these two claims, we identify that their preambles and recited steps [a]–[c] are the same.

D. PETITIONER'S ASSERTED GROUNDS FOR UNPATENTABILITY

Petitioner asserts four grounds for unpatentability, as follows:

Ground	Claims Challenged	35 U.S.C. §[4]	Reference(s)/Basis
1	1, 2	103	Lievestro,[5] Schneider[6]
2	1, 2	103	Crawford,[7] Lievestro
3	1, 2	103	Ohta,[8] Schneider
4	1, 2	103	Ohta, Crawford

Pet. 65.

In support of these grounds for unpatentability, Petitioner submits, *inter alia*, the first and second Declarations of David M. Brienza, PhD

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[4] The earliest possible filing date of the '301 patent is after the relevant AIA revisions to the Patent Act took effect on March 16, 2013. 35 U.S.C. § 100 (note); *see* Ex. 1001, code (22); Ex. 1005, 134 (Reexam Examiner comments regarding priority). Therefore, AIA § 103 applies.

[5] NL 1020305, registered Apr. 4, 2002 (Netherlands Registration). Ex. 1012; *see also* Ex. 1013 ("Lievestro," English translation).

[6] WO 2016/090258 A1, published June 9, 2016. Ex. 1010 ("Schneider").

[7] US 2014/0141233 A1, published May 22, 2014. Ex. 1011 ("Crawford").

[8] JP 4817757 B2, issued Nov. 16, 2011. Ex. 1008; *see also* Ex. 1009 ("Ohta," English translation).

(Ex. 1006, Ex. 1075) and the Declaration of David Shiroff (Ex. 1076). There is no dispute that Dr. Brienza is competent to testify as to the subject matter of his declarations. *See* Resp.; *see also* Ex. 1006 ¶¶ 4–12, 23–25 (witness's background and experience); Ex. 1007 (witness's CV).

Patent Owner takes issue with Dr. Brienza's testimony because it "substantially repeats the arguments set forth in the Petition" and asks us to disregard it for this reason. Resp. 24. Other than the allegation, Patent Owner does not go into any details on this issue. *Id.* We do not agree with Patent Owner; we find Dr. Brienza's testimony useful in deciding the issues in this matter and will not disregard it.

Patent Owner also contests whether Mr. Shiroff is competent to testify as to the subject matter of his Declaration because he "is not qualified as an expert witness given his lack of personal knowledge about the secondary considerations raised by Patent Owner," and also because he lacks certain other personal knowledge of matters, "failed to submit supporting technical data" for his opinions, and relied on conversations with Dr. Brienza, which are allegedly hearsay. *See* PO Mot. We do not agree with Patent Owner's positions regarding Mr. Shiroff's testimony; we find him qualified to testify as to the subject matter of his declaration and find his testimony useful in deciding issues in this proceeding, and as discussed below we deny Patent Owner's Motion to Exclude. *See, e.g.*, Ex. 1076 ¶¶ 2, 13–22 (background and qualifications); Ex. 1077 (CV).

As support for its positions, Patent Owner submits, *inter alia*, the Declaration of Andrew Gross (Ex. 2001) and the Declaration of Jeff Quinn (Ex. 2013). Although Petitioner challenges the declaration testimony of Mr. Gross for other reasons, Petitioner does not dispute that he is competent

to testify as to the subject matter of his declaration. *See* Reply. Petitioner does argue that Mr. Quinn is not (at least) a person of ordinary skill in the art and, therefore, his testimony may not be relied upon to support the patentability (Petitioner uses the term "validity") of the '301 patent. *See* Pet. Mot. We do not agree with Petitioner's argument regarding Mr. Quinn's qualifications and, although this testimony is of limited value for other reasons discussed below, we deny Patent Owner's Motion to Exclude.

Petitioner deposed Mr. Gross and Mr. Quinn in this proceeding and the transcripts of these depositions are of record. Ex. 1074; Ex. 1078. Patent Owner deposed Mr. Shiroff in this proceeding (but did not depose Dr. Brienza) and the transcript of this deposition is of record. Ex. 2029.

II. DISCUSSION

A. LEGAL STANDARDS

"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 of persuasion never shifts to Patent Owner.[9] *See Dynamic Drinkware*, 800 F.3d at 1378.

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness set

[9] Although we may refer to Patent Owner's arguments as "not persuasive," this is in the context of assessing the record and the parties' arguments; we do not shift the ultimate burden from Petitioner.

forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The *KSR* Court summarized the four factual inquiries set forth in *Graham* (383 U.S. at 17–18) that are applied in determining whether a claim is unpatentable as obvious under 35 U.S.C. § 103 as follows: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and (4) considering objective evidence indicating obviousness or non-obviousness. *KSR*, 550 U.S. at 406.

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. "[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious," the answer depends on "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.* at 417.

"[O]bjective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis," and "may often be the most probative and cogent evidence in the record." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016); *see also Graham*, 383 U.S. at 36 ("[Objective indicia] may also serve to guard against slipping into use of hindsight, and to resist the temptation to read into the prior art the teachings of the invention in issue." (internal quotation marks and citation omitted)). "In order to accord substantial weight to [objective indicia of non-obviousness, also called] secondary considerations[,] in an obviousness analysis, the evidence of secondary considerations must have a nexus to the claims, *i.e.*, there must be a legally and factually sufficient connection between the evidence and the

patented invention." *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (citations and internal quotation marks omitted). "The patentee bears the burden of showing that a nexus exists." *Id.*

B. ORDINARY SKILL IN THE ART

In determining the level of ordinary skill in the art, we consider, if in evidence, the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends:

> a POSITA,[10] from the timeframe of the invention of the '301 Patent (or around the mid-2016 to fall-2017 period) in the field of foam support surface and cushioning technology would have at least a bachelor's degree in engineering and several years of experience designing foam support surfaces, cushioning products, or an equivalent level of education and experience. A POSITA would have knowledge of the factors pertaining to the interaction between the human body and cushioning products used for bedding or similar applications. A POSITA would be familiar with the materials used in the production of cushioning products used for bedding. A POSITA would be familiar with manufacturing processes used for producing cushioning products used for bedding or similar applications. (Exhibit 1006, Brienza Decl., ¶¶ 23–25). Finally, a POSITA would understand that the processes in the '301 Patent directed to

[10] The parties use the acronym POSITA to reference the person of ordinary skill in the art, or ordinarily skilled artisan.

> pillows may be used to fabricate other foam bedding products such as mattresses. (Exhibit 1006, Brienza Decl., ¶ 28).

Pet. 8–9 (citing Ex. 1006 ¶¶ 23–25, 28). In our Institution Decision, in the absence of an opposing position from Patent Owner at that time, we adopted this definition. *See* DI 9–10.

Patent Owner does not agree with Petitioner's definition and now proposes that:

> A POSITA in the field of bedding materials relating to comfort to the user in 2017 would have experience in product development, material selection, understanding of the manufacturing processes for the input materials (e.g., foam blocks), final assembly, and commercial ramifications as to what will drive consumer and retailer acceptance of the resulting product. (Exhibit 2001, Gross Decl., 20; Exhibit 2013, Quinn Decl., 19).
>
> A POSITA would be familiar with experimentation of product and process combinations for new product development and how to achieve results that will draw consumers to the product. (Exhibit 2001, Gross Decl., ¶¶ 21, 22; Exhibit 2013, Quinn Decl., ¶¶ 20, 21). ***While a bachelor's degree in engineering is helpful, practical, hands-on experience is more critical*** to understand the strengths and weaknesses of certain materials to make bedding products, along with the processes involved to produce bedding products. (Exhibit 2001, Gross Decl., 23; Exhibit 2013, Quinn Decl., 20).

Resp. 5 (emphasis added).

In response to this, Petitioner maintains its position that a "scientific education" is required and argues that, where its initial definition states "an equivalent level of education," that "means at least a Bachelor of Science degree" because, for example, the '301 patent's inventor (Marc Werner) holds a Bachelor of Science Degree. Reply 2–3 (citing Ex. 1026). We note that, in this argument, Petitioner omits the portion of its original definition

immediately following this quoted part that states "and experience." *See* Pet. 8–9.

To this, Patent Owner responds that inventor Marc Werner's degree is a Bachelor of Science *in Accounting* and it was "25 years of practical, hands-on experience" that gave Mr. Werner the knowledge to develop the claimed invention. Sur-reply 1. Patent Owner also points out that the expert witnesses in this proceeding, Mr. Gross and Mr. Shiroff, acquired their credentials to testify here due to actual experience in the bedding industry and that Mr. Shiroff (like inventor Werner) holds a Bachelor of Science in Accounting. *Id.* at 2 (citing Ex. 2031; Ex. 2040; Ex. 2029, 50:1–8).

We still essentially agree with Petitioner's proposed definition of the ordinarily skilled artisan because the claimed invention relates to a process for manufacturing bedding, the materials used in that process, and the steps taken to perform that process, which reasonably relate to engineering principles, foam support surfaces and the materials used therefor, and cushioning products and their use, as asserted by Petitioner. *See* Pet. 8–9 (citing Ex. 1006, ¶¶ 23–25, 28); *see also* Ex. 1001 (describing the invention); *see also* Exs. 1008–1013 (prior art disclosures).

But, we also agree with Patent Owner's point that practical experience in the relevant field can overcome a lack of specific formal education in the field. For example, the named inventor Marc Werner held an accounting degree before developing the invention, but had practical experience working with polymers and working in bedding product manufacturing. *See* Ex. 1026. The education and experience of expert witnesses Mr. Gross (BA and MBA degrees, decades of experience in bedding industry), Mr. Quinn (BA in Communications and Marketing, a decade of experience in bedding

industry), and Mr. Shiroff (BS in Accounting, decades of experience in bedding industry) are not dissimilar. Ex. 1077 (Shiroff CV); Ex. 2002 (Gross CV); Ex. 2014 (Quinn CV). We find these witnesses (as their proffering parties assert) have sufficient experience to overcome their lack of a specific Bachelor of Science degree relating to bedding manufacturing so as to represent at least the level of ordinary skill in the art here.

We disagree, however, with several of Patent Owner's points regarding the person of ordinary skill in the art. It is not apparent why the ordinarily skilled artisan would have had knowledge or experience relating to the "commercial ramifications as to what will drive consumer and retailer acceptance of the resulting product," as asserted by Patent Owner. *See* Resp. 4–5. No claim limitation is directed to or requires a commercial product, production of products on a commercial scale, consumer acceptance of a product, or retailer acceptance of a product. *See* Ex. 1001, 12:35–50 (claims). The '301 patent describes a need for better quality sleep for users, including by providing thermal comfort, but otherwise does not even mention commercial ramifications or consumer/retailer considerations in any way. *See generally id.* Thus, there is no reason these commercial concepts should be included in the definition of the person of ordinary skill in the art.

Therefore, we conclude that the portion of Petitioner's proposed definition referring to "an equivalent level of education and experience" includes sufficient experience in the relevant field to overcome a lack of a Bachelor of Science degree relating in some way to bedding manufacturing. Otherwise, we adopt Petitioner's proposed definition in its entirety as representing the level of ordinary skill in the art as of the invention. It appears that Petitioner's proposed definition comports with the level of skill

in the art reflected in the prior art of record and the '301 patent itself. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) ("the prior art itself [may] reflect[] an appropriate level" as evidence of the ordinary level of skill in the art) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

C. CLAIM CONSTRUCTION

The Board interprets claim terms in an *inter partes* review using the same claim construction standard that is used to construe patent claims in a civil action in federal district court. 37 C.F.R. § 42.100(b). In construing claims here, similar to district courts, we by default give claim terms their ordinary and customary meaning, which 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." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Should claim terms require express construction, sources for claim interpretation include "the words of the claims themselves, the remainder of the specification, the prosecution history [i.e., the intrinsic evidence], and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.* at 1314 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). "[T]he claims themselves [may] provide substantial guidance as to the meaning of particular claim terms." *Id.* However, the claims "do not stand alone," but are part of "'a fully integrated written instrument' . . . consisting principally of a specification that concludes with the claims," and, therefore, the claims are "read in view of the specification." *Id.* at 1315 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 978–79 (Fed.

Cir. 1995) (en banc)). Any special definition for a claim term must be set forth in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Without such a special definition, however, limitations may not be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

"[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner asserts that the claim language "bedding," "phase change material," "solid . . . foam block," "compressed," "compressing," "compressible," "resilient . . . foam block," and "cracking said block," which appear in claims 1 and/or 2, should be expressly construed for this proceeding. Pet. 9–18. Petitioner states that, "except for the claim term 'phase change material' (claims 1 and 2), all the other terms should be construed in accordance with their plain and ordinary meanings." *Id.* at 11. However, Petitioner asserts certain meanings for all these listed claim terms, as we discuss below.

Patent Owner asserts that the term "solid," as used in the language "solid, resilient, compressible foam block" recited in claims 1 and 2, should be expressly interpreted by the Board, and that "[a]side from the interpretation of the term 'solid', Patent Owner does not dispute the Board's preliminary finding of Claim Construction as detailed in [our Institution]

Decision (Paper 7), Section II (C)." Resp. 5–6; *see also* DI 10–17 (preliminary claim construction).

1. "bedding"

The term "bedding" is recited in each of the claims' preambles, which Petitioner asserts are not limiting. Pet. 10. Petitioner asserts that "bedding" means *an item used for sleeping or resting*. *Id.* (citing Ex. 1006 ¶ 42; Ex. 1001, 1:30–31, 2:50–52). As we did in our Institution Decision (DI 12), we find this term is readily understandable on its face and find it unnecessary to expressly interpret this claim language.

2. "phase change material"

The language "phase change material" is recited in claims 1 and 2, and Petitioner asserts it means a substance with a high heat of fusion which, melting and solidifying at a certain temperature, is capable of storing and releasing large amounts of energy. Pet. 11 (citing Ex. 1006 ¶ 44; Ex. 1001, 2:11–14).

The '301 patent's Specification states:

> A phase-change material (PCM) is a substance that has a high heat of fusion and that is capable of storing and releasing large amounts of energy by melting and solidifying at certain temperatures. Heat is absorbed or released when the material changes from solid to liquid and vice versa; thus, PCMs are classified as latent heat storage (LHS) units.

Ex. 1001, 2:11–17; *see also id.* at 4:55–60 (substantially similar statement). The Specification explains the functioning of a PCM as follows:

> Initially, solid-liquid PCMs behave like sensible heat storage (SHS) materials; their temperature rises as they absorb heat. Unlike conventional SHS materials, however, when PCMs reach the temperature at which they change phase (their melting temperature) they absorb large amounts of heat at an almost constant temperature. The PCM continues to absorb

> heat without a significant rise in temperature until all the material is transformed to the liquid phase. When the ambient temperature around a liquid material falls, the PCM solidifies, releasing its stored latent heat. Within the human comfort range between 20-30° C., some PCMs will store five to fourteen times (5-14x) more heat per unit volume than conventional storage materials.

Id. at 4:65–5:10.

For the purposes of this Decision, as in our Institution Decision (DI 12–13), we adopt the definition of PCM provided by the Specification, which is explicit and appears to comport with the definition proposed by Petitioner.

We interpret the claim term "phase change material" to mean *a substance that has a high heat of fusion and that is capable of storing and releasing large amounts of energy by melting and solidifying at certain temperatures, where heat is absorbed or released when the material changes from solid to liquid and vice versa, such that PCMs are latent heat storage units*. *See* Ex. 1001, 2:11–17, 4:55–60. This does not preclude the phase change material from being a mixture. *See id.* at 5:14–18.

3. "solid . . . foam block"

The terms "solid" and "foam block," in the phrase "solid . . . foam block," are recited in claims 1 and 2. Ex. 1001, 12:37, 12:43.

Petitioner asserts that "solid" should be interpreted according to its "plain and ordinary meaning," which is "tending to keep its form rather than to flow or spread out like a liquid or gas." Pet. 11–13 (citing Ex. 1014, 1364; Ex. 1001, 3:15–33, 11:14–25; Ex. 1006 ¶ 45) (alteration in original, emphasis omitted). Further, Petitioner asserts that "solid . . . foam block"

should be understood to mean a "piece of foam that tends to keep its form." *Id.* at 13 (alternation in original, emphasis original).

Patent Owner contends that "solid," as used in the claims, "means 'being without an internal cavity' and 'of uniformly close and coherent texture: not loose or spongy.'" Resp. 5 (citing Ex. 2010).

In our Institution Decision, we found that the term "solid" is readily understandable on its face and that it was not necessary to expressly interpret that claim language. DI 11–12. Petitioner noted this, and argues that Patent Owner's asserted interpretation is fashioned only for the purpose of saving the claims' "validity." Reply 3–4. Petitioner maintains that "solid" refers to a substance that "does not flow" and generally "retains its size and shape," i.e., it refers to the state of matter of solid, as opposed to a liquid or gas. *Id.* (citing Ex. 1074 45:4–46:24 (Patent Owner's witness, Mr. Gross, generally agrees)).

We find nothing in the intrinsic record of the '301 patent supports Patent Owner's position on the meaning of "solid." In fact, the opposite is so—the '301 patent's Specification uses the term "solid" to refer to the state of matter, in line with Petitioner's proposed interpretation. *See* Hr'g Tr. 21:20–21:3 (Petitioner agreeing with this fact). For example, the '301 patent describes that a pillow is manufactured as a "solid, resilient, compressible foam" by starting with a gas and a liquid mixture that is poured into a pillow-shaped mold and then cured to change the liquid to a solid foam. Ex. 1001, 3:16–19, 11:13–25. The '301 patent also, in a different context, describes the PCM material as reversibly changing from solid to liquid to function as a PCM, which again refers to the state of matter. *Id.* at 6:55–64. Nowhere in the intrinsic record do we find that "solid" refers to an

internal texture or density of foam, or any other substance, and Patent Owner directs us to no such persuasive evidence.

Therefore, we decline to adopt the meaning of "solid" asserted by Patent Owner. We maintain that the claim term "solid" is readily understandable on its face (DI 11–12), but to resolve any dispute, we find it refers to *the state of matter—the recited foam block is a solid, rather than a liquid or gas*.

4. "compressed"

The term "compressed" is recited in claim 2. Ex. 1001, 12:51.

Petitioner asserts that "compressed" has its plain and ordinary meaning, which is "pressed together, made more compact by pressure." Pet. 13–14 (citing Ex. 1014, 300; Ex. 1001, 2:60–64; Ex. 1006 ¶ 46) (emphasis omitted). Patent Owner does not dispute this. *See* Resp. 5–6.

The Specification of the '301 patent expressly defines the term "compressed" as "*staying at a constant, compressed volume*." Ex. 1001, 2:62–64 (italics added). For the purposes of this Decision, we adopt this definition of "compressed" explicitly provided by the Specification.

5. "compressing"

The term "compressing" is recited in claim 2. Ex. 1001, 12:48.

Petitioner asserts that "compressing" has its plain and ordinary meaning, which is "making more compact by or as by pressure." Pet. 13–14 (citing Ex. 1001, 11:60–64; Ex. 1006 ¶ 46) (emphasis omitted). Patent Owner does not dispute this. *See* Resp. 5–6.

The Specification of the '301 patent expressly defines the term "compressing" as "*while being reduced in volume, as contrasted to 'compressed', which means staying at a constant, compressed volume*."

Ex. 1001, 2:62–64 (italics added). For the purposes of this Decision, we adopt this definition of "compressing" explicitly provided by the Specification.

6. "compressible"

The term "compressible" is recited in claims 1 and 2. Ex. 1001, 12:36, 12:44.

Petitioner asserts that "compressible" has its plain and ordinary meaning, which is "able to be pressed together, made more compact by pressure." Pet. 13–14 (citing Ex. 1001, 11:60–64; Ex. 1006 ¶ 46) (emphasis omitted). Patent Owner does not dispute this. *See* Resp. 5–6.

We find this term is readily understandable on its face and find it unnecessary to expressly interpret this claim language.

7. "resilient . . . foam block"

The terms "resilient" and "foam block," as used in the phrase "resilient . . . foam block," appear in claims 1 and 2. Ex. 1001, 12:36, 12:44.

Petitioner asserts "resilient" has its plain and ordinary meaning, which is "bouncing or springing back into shape, position, etc. after being stretched, bent, or esp. compressed." Pet. 14–15 (citing Ex. 1014, 1220; Ex. 1001, 3:12–14, 4:33–39; Ex. 1006 ¶ 47) (alteration in original, emphasis omitted). Petitioner asserts that the phrase "resilient . . . foam block" should be interpreted to mean "a foam block that springs back to its uncompressed shape after being compressed." *Id.* at 15 (alteration in original, emphasis omitted). Patent Owner does not dispute this. *See* Resp. 5–6.

We find that this term is readily understandable on its face, and we do not find it necessary to expressly interpret this claim language.

8. "cracking said block"

The phrase "cracking said block" is recited in claim 1. Ex. 1001, 12:41.

Petitioner asserts that "cracking" is used according to its plain and ordinary meaning, which is "to break or split, usually without complete separation of parts." Pet. 15–17 (citing Ex. 1014, 337; Ex. 1001, 3:39–50, 5:17–23, 11:26–28; Ex. 1006 ¶ 48) (emphasis omitted). Petitioner asserts that "cracking said block" should be interpreted to mean "opening (breaking) some of the foam block's closed cells, such as by compression, without complete separation of the foam block." *Id.* at 16–17 (emphasis omitted).

Patent Owner neither disputes Petitioner's position nor offers an alternative definition for "cracking," as used in the claim. *See* Resp. 5–6.

In our Institution Decision we found that the Specification of the '301 patent describes that "cracking" is a term of art in the field of foam bedding, stating:

> Cracking a foam block has been found to enhance the comfort and feel in bedding. Cracking is a term for processing a foam block with a roller press. A block of solid, resilient, compressible foam is passed through a roller press twice. While a foam block that has been rolled once has improved compression and resilience characteristics, passing the foam block through the roller twice provides optimal characteristics. The roller press opens some of the closed cells that make up the foam block. A foam block that has been cracked has a compressibility and resilience that allows the resulting pillow to be usable by back, side, and stomach sleepers.

Ex. 1001, 3:39–50. The Specification also states, as directed to an embodiment of the invention: "The foam block is 'cracked' twice to improve

the feel of the pillow. To crack the pillow, the pillow is run between a set of rollers." *Id.* at 11:26–28.

Therefore, without having been directed to more evidence on the matter, we preliminarily interpreted "cracking said block" to mean *the block is passed through a roller to open some of the closed cells that make up the foam block*. DI 15–16. No element of intent was included. *See* Reply 4–5 (Petitioner posits "whether the Board's preliminary construction requires an element of intent).

At trial, Petitioner asserts that this definition is too narrow and that "cracking is a term of art that covers a press in general," rather than only opening closed foam cells with a roller-style press. Reply 4–5. Petitioner proposes that "cracking" should be interpreted "as 'opening some of the closed cells that make up the foam block by a press,' which would align with a POSITA's understanding." *Id.* (citing Ex. 1075 ¶ 74; Ex. 1074, 47:16–48:1); *see also* Ex. 1074, 48:5–49:20 (Mr. Gross testifying that, seemingly, any type of press that sufficiently compresses foam will crack the foam, as claimed).

In response to Petitioner's points, Patent Owner asserts, without expanding thereon in any way, that the inventor was acting as his own lexicographer in this instance and specially defined "'cracking' as 'a term for processing a foam block with a roller press.'" Sur-reply 3 (citing Ex. 1001, 3:39–41, 11:26–28). However, Patent Owner confirmed at oral argument that if a foam block is compressed sufficiently, with a plate (as taught in Ohta) or roller (as in the '301 patent's preferred embodiment and taught in Lievestro), it will result in cracking the foam, i.e., opening some closed cells making up the foam block. Hr'g Tr. 55:21–56:13.

We agree with Petitioner's position and disagree with Patent Owner's position.

There is no evidence in the '301 patent itself that the inventor sought to craft a new meaning for the term "cracking," whether to limit it to use of a roller or otherwise, in the context of foam materials and bedding manufacture. Considering the arguments by Petitioner and the evidence of record, it appears that the '301 patent, in describing passing foam through rollers, once or more, to "open some of the closed cells that make up the foam block," was describing a preferred embodiment of "cracking," not defining the term. *See* Ex. 1001, 3:39–50, 11:26–28.

Patent Owner's own witness, Mr. Gross, explained that the term "cracking" was a term of art in the field of foam bedding, that it meant "breaking down some of the cell walls" in the foam, and that it was understood as accomplished in "many ways," including by using rollers, platen (plate press), or just compressing, generally, even with a vacuum. Ex. 1074, 47:16–50:3. Moreover, regarding the other evidence of record in this proceeding, Mr. Gross testified that Lievestro teaches cracking foam by running it through rollers, Crawford teaches at least one scenario of cracking a foam block by compressing it up to 90% between rollers, and Ohta teaches cracking a foam block by compressing it 95% between plates. *Id.* at 72:23–73:9, 134:13–21, 142:16–143:10. Patent Owner's other witness, Mr. Quinn, also testified (although he professed some uncertainty) as to the industry meaning of "cracking" and provided the even-more-general definition of "pre-compression" for the term (although he testified it was not "clearly defined" in the '301 patent). Ex. 1078, 55:20–56:3, 62:24–63:23, 79:3–80:2. Thus, Patent Owner's witnesses confirm that *cracking*, in the art as of the

relevant time, is not limited to the use of rollers so long as closed cells in the foam are opened by the process.

Having considered the claim language itself, the intrinsic record, and the extrinsic record's confirmation of the ordinary and customary meaning of the disputed claim language, we find that the '301 patent and claim 1 use the term "cracking," individually and in "cracking said block," according to its ordinary and customary meaning as understood by the person of ordinary skill in the art as of the relevant time, which was *the foam block is compressed so as to open some of the closed cells that make up the foam block*.

9. Summary on Claim Construction

We expressly construe only the claim terms noted above, that is, "phase change material," "solid," "compressed," "compressing," and "cracking said block." We determine that no other express construction of any claim term is necessary for purposes of rendering this Decision. *See Nidec Motor Corp.*, 868 F.3d at 1017.

D. PETITIONER'S ASSERTED PRIOR ART

We summarize Petitioner's asserted prior art below. There is no dispute here that Lievestro, Schneider, Crawford, and Ohta are prior art, or that the respective translations of references are accurate. *See generally* Resp.

1. Lievestro (Ex. 1013—we cite the English translation)

Lievestro, titled "Device and method for making holes in deformable foam blocks," is a Netherlands Industrial Property Registration that issued on December 12, 2003. Ex. 1013, codes (19), (45), (54).

Lievestro discloses that its invention relates to a:

> Device for ***creating holes in deformable foam blocks such as mattress bodies***, wherein the device is equipped with a rotatable punch-roll body (3) designed to ***compress the blocks*** (1) and ***thereby punch holes*** (2) in the blocks (1). The invention further relates to a method for creating holes in deformable foam blocks, particularly mattresses, wherein the foam blocks (1) are ***compressed by a rotating punch-roll body*** (3), said punch-roll body being configured ***to punch holes*** (2) in the blocks (1) ***during the compression*** of the blocks (1).

Id. at Abstract (emphasis added).

Lievestro discloses that its invention is a response to challenges presented by prior known devices and methods of forming holes in foam mattress bodies, which used drill bodies to drill holes in foam blocks. *Id.* at 2. Lievestro explains that such drilling processes required a relatively long time, were noisy, required lubricant, and were limited to drilling in one direction. *Id.*

Lievestro's response to such identified disadvantages was to provide a die-rolling body to compress the foam blocks and simultaneously punch holes in them during rotation. Moreover, Lievestro states that

> [a]n additional advantage is that the device ***can also crush the foam blocks during the compression and punching process. This crushing breaks cell walls within the foam of the foam blocks, resulting in a relatively open cell structure that enhances the comfort of the blocks during use***. Since a punching process is used to create the holes, the aforementioned disadvantages of using a drilling device and performing a drilling process are avoided.

Id. at 3 (emphasis added).

Figure 4 illustrates Lievestro's device and its use; we reproduce the figure below:

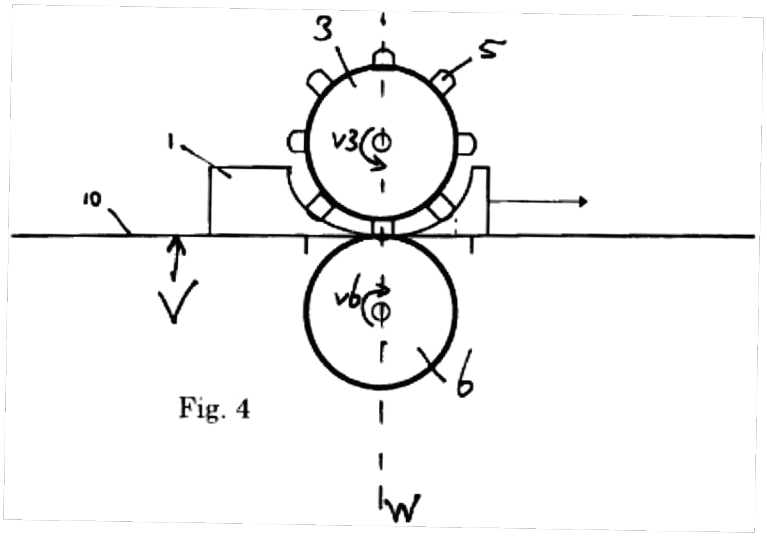


Fig. 4

Id. at 12. "Figure 4 illustrates a second step of creating holes in a foam block," and shows foam block 1, die-roll body 3 having punching sleeves 5, counter-punching body 6 positioned opposite die-roll body 3, which cooperates with die-roll body 3 to compress block 1 and punch holes 2 (not numbered in the figure). *Id.* at 5. The figure shows foam block 1 on block feeder 10 and part-way between die-roll body 3 and counter-punching body 6, which are rotating v3, v6 as foam block 1 passes between them (direction arrows). *Id.* at 5–6. Lievestro states that "cutting edges 7 [of each punching sleeve 5] are designed in such a way that they smoothly punch the holes 2 in the blocks when the blocks 1 are compressed between the die-roll body 3 and the counter-punching body 6." *Id.*

Lievestro states that "[t]he foam blocks 1 can be intended, for example, for making mattresses, heat-insulating and/or sound-insulating

panels. The foam blocks can consist of compressed foam flakes made of a plastic foam." *Id.* at 8.

2. Schneider (Ex. 1010)

Schneider, titled "WASHABLE MATTRESS ASSEMBLY," is a PCT application published on June 9, 2016. Ex. 1010, codes (43), (54).

Schneider states that its invention relates to:

> An encasement to enclose ***a mattress*** base includes a base panel with side panels extendable from the base panel. A first fastener extends around the side panels, and a first panel is fastenable to the side panels by the first fastener to define a first enclosure. The encasement also includes ***absorbent foam (e.g., resilient or viscoelastic foam, which may be reticulated*** and/or attached to a substrate). A second fastener also extends around the side panels, and a second panel is fastenable to the side panels by the second fastener to define a second enclosure to enclose the absorbent foam. The second panel can be constructed from a breathable and at least substantially waterproof material. The absorbent foam can be configured to be received in a front-loading washing machine (e.g., including multiple foam panels arranged in layers).

Id. at Abstract (emphasis added).

Schneider discloses that such a mattress may have several foam layers and that "[o]ne or more of the foam panels 128 can be constructed using a viscoelastic memory foam, which can be reticulated." *Id.* ¶ 18. A variety of foam types are indicated as useful ("viscoelastic foam, resilient polyurethane foam, high resilience polyether foam, high resilience polyester foam, etc."). *Id.* ¶ 13. Schneider discloses that its foam panel 128 can have from fewer than 11 to more than 24 holes (or cells) per centimeter. *Id.* ¶ 19, claims 6, 13, 19.

Schneider illustrates such a mattress, including foam layers and covering, at Figure 8, which we reproduce below:

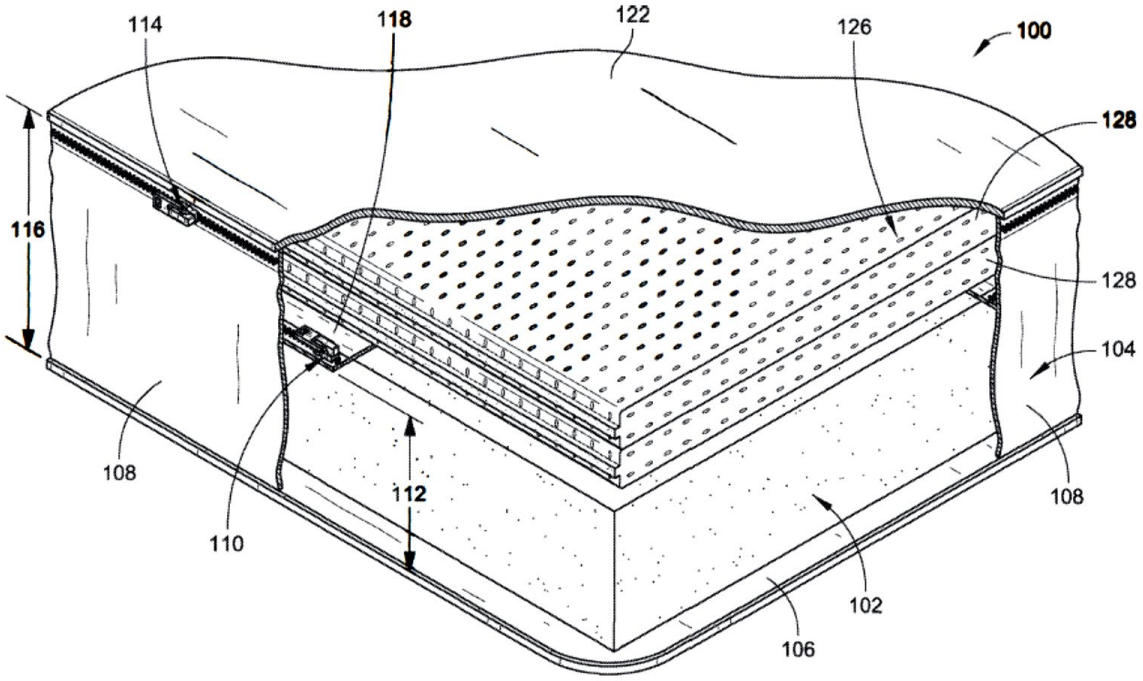


FIG. 8

Figure 8 "is a partial cross-sectional isometric view of the mattress assembly," having a series of stacked foam layers exposed by a cut-away portion of a mattress cover. *Id.* ¶ 12. Specifically, Figure 8 shows mattress assembly 100 with mattress base 102 as a lowest foam layer, foam layer 128 over that base 102, and absorbent foam layer 126 over foam layer 128, and all covered by encasement 104. *See id.* ¶¶ 13–22. Layers 128 and 126 are illustrated as having holes therein.

Schneider further discloses that,

> [i]n some embodiments, ***the washable mattress comprises a microencapsulated phase change material***. For instance, a second eight and one-quarter centimeter (8.25 cm) or three and one-quarter inch (3.25") removable layer of ***memory foam can be coated with a layer of phase change gel***

> ***material***. This phase change gel material may be similar to the phase change gel material described in International Patent Application Number WO2011/107849, which is incorporated herein by reference. The phase change gel comprises extremely small capsules (typically five (5) to forty (40) microns for use in foam production) that permanently contain phase change materials (PCMs) and ***allow the PCM to absorb thermal energy when exposed to heat. Test results demonstrate the ability of Phase Change Gel to provide significant cooling benefits when applied to flexible polyurethane foam***.

Id. ¶ 29 (emphasis added).

3. Crawford (Ex. 1011)

Crawford, titled "SURFACE INFUSION OF FLEXIBLE CELLULAR FOAMS WITH NOVEL LIQUID GEL MIXTURE," is the May 22, 2014 published version of U.S. Patent Application 14/135,143. Ex. 1011, codes (21), (43), (54).

Crawford states that its invention relates to:

> Compositions and methods for making a novel liquid gel mixture comprising at least one flexible polymer carrier, parachlorobenzotrifluoride, optional ***thermally-conductive materials***, and optional performance-enhancing additives; using the liquid gel mixture for making surface-infused layers on layering substrates; and using combinations of surface-infused gel layer and layering substrate in ***cushioning foams and mattresses***. Layering substrates are surface-infused with a liquid gel mixture and may be compressed to increase the penetration depth of liquid gel mixture into the substrate layer surface. Th[ese] compositions may be used in ***mattresses***, ***mattress topper pads***, ***pillows***, ***bedding products***, furniture upholstery, pet beds, medical cushioning foams, seat cushions and backs, automotive foam, sports cushioning, transportation

> cushioning, headrests, arm rests, personal protective equipment, toys, and the like.

Id. at Abstract (emphasis added). Stated more directly, Crawford discloses its "invention relates to methods for making and using at least one surface-infused gel layer located on, under, or in cushioning foams and mattresses." *Id.* ¶ 2. Crawford explains that the foams used for bedding, e.g., open-celled or partially open-celled polyurethane flexible foams, latex foams, and melamine foams, typically have low thermal conductivities, and are compressed under the body in use leading to reduced air flow. *Id.* ¶¶ 3–5, 45. Crawford's invention seeks to mitigate such thermal disadvantages in foam bedding to "provide cooler and more comfortable sleep by using at least one surface-infused gel layer located on, under, or within cushion foam or mattress." *Id.* ¶¶ 8, 44–45.

To this end, Crawford discloses the use of microencapsulated phase change materials (MPCM), where the

> [a]ddition of phase change materials to the liquid gel mixture used for producing surface-infused gel layers allows the construction composite to store or release energy, which is higher than heat absorbed or released by heat capacity of the non-thermally enhanced construction. Heat is stored if the solid phase change material changes to a liquid, and heat is released when the liquid phase change material changes to a solid.

Id. ¶¶ 56, 60. Crawford states that "incorporation of at least one surface-infused gel layer made with ***a liquid gel mixture and located on, under, or in a cushion foam or mattress will improve heat transfer and provide a cooler and more comfortable sleep***." *Id.* ¶ 115 (emphasis added). In more than one embodiment, Crawford discloses creating a laminated cushion by applying liquid material thereto and compressing the cushion between rollers. *Id.* ¶¶ 13, 32–33, 38–41, 68–69, 72–76, 78, Figs. 18, 19, 24–27.

Crawford discloses applying such MPCM to foam in several ways, such as using rollers as illustrated at Figure 19, reproduced below:

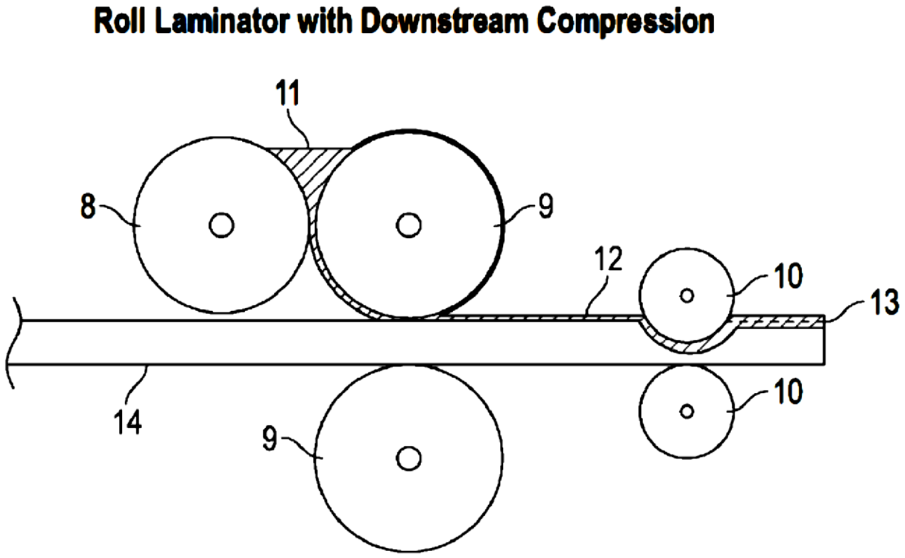


FIG. 19

"FIG. 19 depicts a lamination system with down-stream compression roller," "expected to produce an external surface-infused gel layer infused on the surface of a substrate." *Id.* ¶¶ 33, 70. More specifically, Figure 19 shows (foam) layering substrate 14 in the process of being run through a lamination system consisting of roller 8, rollers 9, and rollers 10, where rollers 8 and 9 (top) form a trough for MPCM liquid gel mixture 11. *Id.*¶¶ 71–72. Liquid gel mixture 11 is applied to layering substrate 14 as roller 9 moves substrate 14 through the process such that an evenly coated product 12 of the liquid gel mixture is applied. *Id.* Then, substrate 14 passes through rollers 10 and is compressed (by 50% in the example) so as to infuse liquid gel mixture 11 into the substrate 14, resulting in "a substrate with a surface-infused gel liquid" product 13. *Id.* ¶ 72.

Figure 27 illustrates a different, but similar, process where MPCM is sprayed onto foam; we reproduce the figure below:

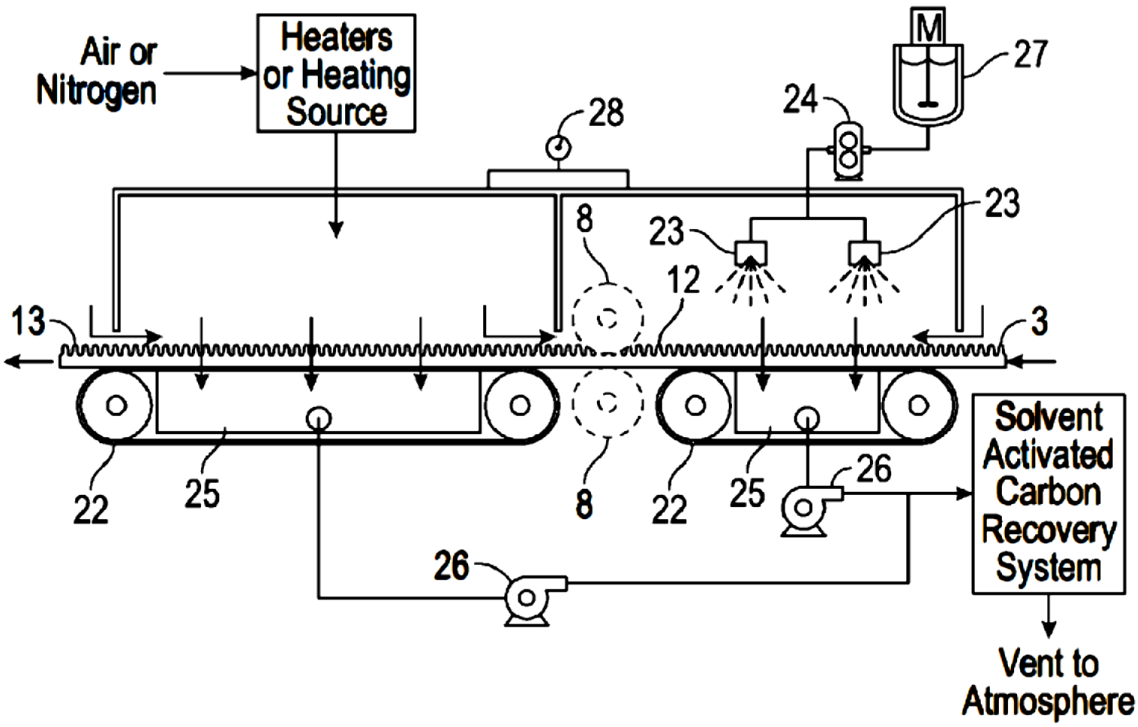


FIG. 27

"FIG. 27 depicts a spraying and drying system used to coat a non-planar substrate 3 with a liquid gel mixture 11," shown in a cross-sectioned schematic of the equipment used in the manufacturing line. *Id.* ¶ 76. More specifically, Figure 27 shows conveyor 22 moving (foam) substrate 3 through a housing (not labeled) in a direction shown by arrows. *Id.* Substrate 3 first passes by two sprayer nozzles 23 that apply MPCM liquid gel mixture 11 onto substrate 3 to form product 12. *Id.* Then, substrate 3 is, optionally, fed through rollers 8 and compressed. *Id.* Then, substrate 3 passes into a heated drying chamber (not labeled), drying the MPCM and forming product 13. *Id.*

4. Ohta (Ex. 1009—we cite the English translation)

Ohta, titled "METHOD FOR THE PRODUCTION OF PERFORATED PILLOWS," is a Japanese Patent that issued on November 16, 2011. Ex. 1009, codes (19), (45), (54).

Ohta states that its "invention pertains to a method for the production of perforated pillows that have through-holes formed therein." *Id.* ¶¶ 1, 8. As background, Ohta states that "[s]ome foam pillows are made of perforated foam that is ***pierced with holes to prevent the oppressive, muggy feeling during use***." *Id.* ¶ 2 (emphasis added). Ohta states that "memory foam [with rebound properties] is used for some of the recently proposed pillows." *Id.* ¶¶ 2, 6.

Ohta discloses that prior methods of forming holes in pillow foam bodies relied on using a die-cutting blade applied to pillows placed on a support platform, or the use of a drill to form through-holes in a foam body one hole at a time. *Id.* ¶¶ 3–5.

As claim 1, Ohta recites:

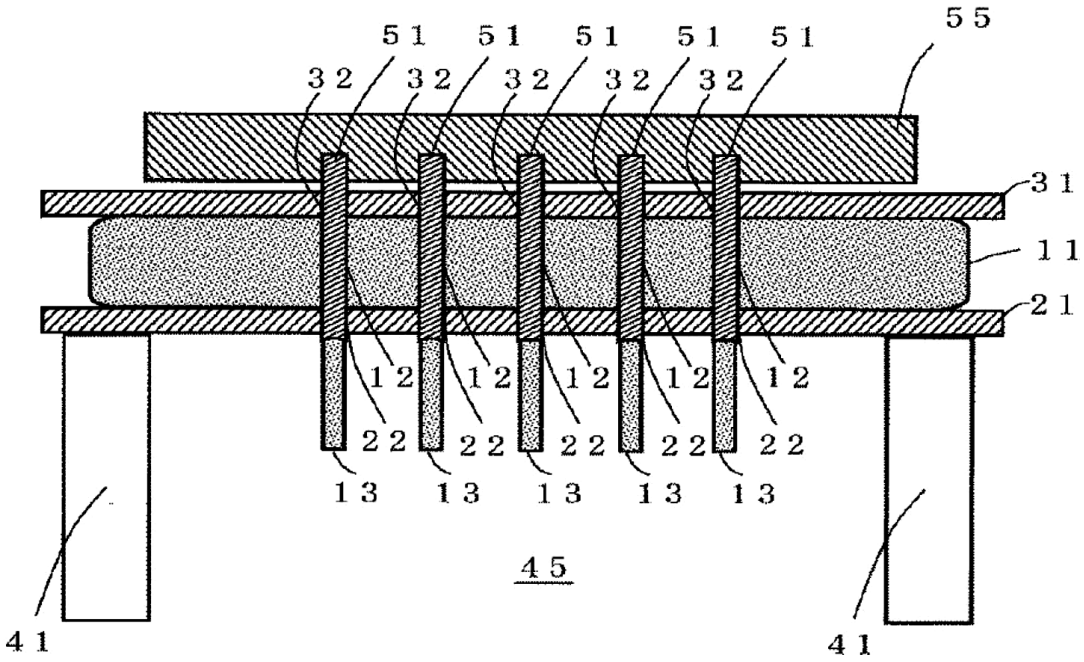
> A method for the ***production of perforated pillows***, said method being characterized by ***producing perforated pillows by forming small through-holes in foam bodies***, producing perforated pillows by forming ***through-holes in foam bodies***, doing so by forming multiple through-holes concurrently through the following steps:
>
> Polyol (A) with an average hydroxyl value of 90 to 250 mg KOH/g and polyisocyanate (B) are caused to react at an isocyanate index of 60 to 90 in the presence of a foaming agent and a catalyst so as to ***form a memory-foam body with a rebound resilience*** of 30% or less and hardness of 80 N or less, said polyol (A) consisting of the following components at the weight ratio of 50:50 to 80:20:

> Polyol (A-1) with a hydroxyl value of 150 to 300 mg KOH/g, with the cardinal number of functional groups being 1.5 to 4.5, and
>
> Polyol (A-2) with a hydroxyl value of 30 to 100 mg KOH/g, with the cardinal number of functional groups being 1.5 to 4.5, followed by the steps below:
>
> A ***compression step***, in which the foam body is placed between two press bodies comprising multiple punching holes and is then compressed between the aforementioned two press bodies,
>
> A ***punching/extrusion step***, in which multiple punching blades are driven into the foam body as they are inserted into the punching holes provided in one of the press bodies and move toward the punching holes provided in the other press body so that the aforementioned ***punching blades punch holes through said foam body situated between the two press bodies while concurrently pushing the punched-out portions out of the aforementioned foam body and extruding them through the aforementioned punching holes provided in the other press body, thus forming through-holes*** in the aforementioned foam body, and
>
> A ***compression release step***, in which the aforementioned two press bodies are caused to move away from each other to thereby release the compression on the foam body.

Id. at 1–2 (original underlining omitted, emphasis added).

Ohta provides Figure 3 to illustrate its invention for providing holes in a foam pillow; the figure is reproduced below:

Figure 3



Id. at 20. Figure 3 represents a step of a process and "shows a schematic cross-sectional view of said embodiment in the state in which holes have been punched through the foam body." *Id.* ¶ 45. The figure shows foam body 11 compressed between two press bodies 21, 31 (occurs prior to hole formation), and ascending/descending plate 55 having hole punching blades 51 that have created holes 12 through foam body 11, from its top to its bottom surface (hole-forming occurs during compression). *Id.* ¶¶ 31–34.

Ohta discloses that "[f]or the compression of foam body 11 between the aforementioned press bodies 21 and 31, the compression rate is preferably 5% to 40%," meaning the foam is compressed up to 90% in

thickness. *Id.* ¶ 33. Subsequent to hole-forming, according to Ohta, ascending/descending plate 55 is lifted, press bodies 21 and 31 move away from one another, the compression of foam body 11 is released, and foam body 11 returns to its original shape and size. *Id.* ¶¶ 34–35, Fig. 5.

E. OBVIOUSNESS OVER LIEVESTRO AND SCHNEIDER (GROUND 1)

Under Ground 1, Petitioner asserts that the combination of Lievestro and Schneider would have rendered claims 1 and 2 obvious and, therefore, unpatentable. Pet. 20–29, 62–68. For the reasons that follow, we agree.

1. Petitioner's Positions

Petitioner asserts that Lievestro discloses every limitation of claims 1 and 2 "except the step of 'applying phase change material to said surface' of the foam block." *Id.* at 20–29, 65–68 (citing Ex. 1013, Abstract, 2, 3, 5–6, Figs. 3–7; Ex. 1006 ¶¶ 52–59); *see also supra* Section II.D.1 (summary of Lievestro's most relevant disclosure).

Regarding Petitioner's contention of obviousness and the teachings of Lievestro respective of the claims, we note at the outset that Patent Owner's witness, Mr. Gross, *agrees with Petitioner*. Ex. 1074, 71:13–74:22 ("Q. So would it be correct, in your view, to say that ***the only step that is missing in Lievestro, with respect to claim 1, is the step of applying phase change material*** to said surface? A [Mr. Gross]. ***Yes***. Q. Would it be fair to say that ***with respect to claim 2, the only step missing in Lievestro is the step of applying phase change material*** to said surface? A. ***Yes***." (emphasis added)). We find such concessions compelling and find the evidence confirms Petitioner's contentions in this regard.

Regarding applying a phase change material to the surface of a foam block for bedding (the element missing from Lievestro), as required by the

challenged claims, Petitioner combines the teachings of Schneider with those of Lievestro, asserting that Lievestro was concerned with a cooling effect for a user of the pillow, providing holes in the pillow for this purpose, which is a reason for the ordinarily skilled artisan to have looked to Schneider's use of PCM for this same user-cooling purpose. Pet. 62–68 (citing, *inter alia*, Ex. 1006 ¶¶ 83–91; Ex. 1010 ¶ 29). Petitioner asserts that including Schneider's disclosed PCM-application to Lievestro's similar bedding product would have yielded the predictable result of enhanced cooling effect for a user. *Id.*

Again, we point out that, regarding Petitioner's contention as to Schneider's teachings (and a reason to combine them with Lievestro), *Mr. Gross agrees with Petitioner that Schneider teaches applying PCM to foam bedding for its cooling effect*. Ex. 1074, 168:23–169:1 ("Q. Do you agree that to the extent Schneider discusses flexible foam, that is not reticulated, ***Schneider also discusses applying PCM material on non-reticulated foam?*** A. ***Yes***, he does discuss applying PCM material." (emphasis added)), *id.* at 180:6–10 (Mr. Gross agreeing that Schneider's PCM is applied to create a beneficial cooling effect). These concessions are again compelling and we find the evidence confirms Petitioner's contentions.

Moreover, regarding this prior art combination, at the final hearing in this proceeding Patent Owner also agreed with Mr. Gross's concession on Lievestro's teachings, and agreed that Schneider teaches a foam mattress with applied PCM. Hr'g Tr. 77:25–78:8 ("JUDGE GROSSMAN: So, but so, yes, the Petitioner's slide says [Mr. Gross] recognizes th[at] Lievestro doesn't apply to PCM and that's why they rely on a secondary reference for

that. But I'm looking just at the context of [whether] you agree with Mr. Gross's deposition testimony where he, it appears he admitted that Lievestro does everything that's in the claim except apply PCM. [PATENT OWNER]: ***I don't dispute that because it's providing, it's punching a hole. It's a compressible block. It's compressing it so I think, you know, it's technically cracking it. So I do agree that the only thing that's limited by Lievestro is the application of a PCM material to the surface***." (emphasis added)), *id.* at 60:12–14 (PATENT OWNER: "So I don't dispute that ***Schneider has gel with PCM***. It's very similar to what Crawford has. They're very similar in that regard. It's a gel with an added, a PCM additive." (emphasis added)). These are additional compelling concessions.

And further, regarding Petitioner's asserted reasons why an ordinarily skilled artisan would have combined Lievestro's and Schneider's teachings (to enhance pillow-cooling), *Mr. Gross again concedes that such motivation existed*. Ex. 1074, 182:14–19 ("Q. So if a person uses Lievestro, knowing that holes improve thermal characteristic of foam, and reading Schneider, ***would a POSITA know adding PCM to Lievestro's block would enhance thermal properties of the block?*** A. ***Reading Schneider, it might suggest that there could be a benefit to PCM***, applied in the right context." (emphasis added)).

The facts discussed above leave little room to question whether the claims would have been obvious over Lievestro and Schneider, because the combined references teach the claimed subject matter and there was a reason for the ordinarily skilled artisan to combine them, as asserted under Petitioner's Ground 1. But, as the burden in this proceeding is upon

Petitioner, we review additional facts below. Even without Patent Owner's and its witness's concessions, Petitioner's showing of obviousness is strong.

Turning to the details of the claims, regarding claim 1's preamble, Petitioner asserts it is not limiting, but also that Lievestro discloses a device and method for efficiently making holes in deformable foam blocks, which is a process for manufacturing bedding. *Id.* at 20, 24 (citing Ex. 1006 ¶ 53; Ex. 1013, code (54), 2); *see also* Pet. at 65–66 (discussing Ground 1).

Regarding claim 1's recited "providing a solid, resilient, compressible foam block, said block having a surface," Petitioner asserts that Lievestro discloses, and illustrates at Figures 3, 4, and 7, a solid, deformable foam block with a surface. Pet. 21, 25, 65–66 (citing Ex. 1006 ¶ 55; Ex. 1013, 3–6, Figs. 3, 4, 7).

Regarding claim 1's "applying phase change material to said surface" of the foam block, Petitioner acknowledges Lievestro does *not* disclose it and points to Schneider's disclosure of coating a foam layer of bedding material with PCM for its cooling effect for a user, which is combined with Lievestro's teachings. *Id.* at 26, 63, 65–66 (citing Ex. 1006 ¶¶ 85–88; Ex. 1010 ¶ 29).

Petitioner asserts that this prior art combination would have been made, and Lievestro's foam coated with PCM as taught and suggested by Schneider, because "both prior art references are in the same art and both deal with enhancing [bedding] comfort, which includes thermal comfort." *Id.* at 66. Further, Petitioner asserts that "claim 1 allows the steps of PCM application, hole making, and cracking to be performed in any order"; therefore, "PCM coating of Lievestro's foam block could be done either prior to or after Lievestro's cracking and hole-making operations," which

"would yield a predictable result of having a bedding product that absorbs heat and provides an enhanced cooling effect to the user."[11] *Id.* (citing Ex. 1006 ¶ 88).

Regarding claim 1's recited "forming a hole into said block and through said surface," Petitioner asserts that Lievestro discloses a rotatable punch-roll body compresses foam blocks and punches holes therein. *Id.* at 20–24, 26, 65–66 (citing Ex. 1006 ¶¶ 52, 55; Ex. 1013, Abstract, 5–6, Figs. 3, 4, 7).

Regarding claim 1's recited "cracking said block," Petitioner asserts that Lievestro discloses crushing the foam block by compression during the hole-punching process, which breaks cell walls within the foam and enhances comfort during use, which Petitioner asserts is cracking. *Id.* at 20–21, 26, 65–66 (citing Ex. 1006 ¶ 54; Ex. 1013, 2, 3).

Thus, we find Petitioner accounts for all elements/steps of claim 1 in the teachings of the prior art combination, which Petitioner reasonably

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[11] In response to Patent Owner's arguments that there would have been technical issues preventing the combination of Lievestro's and Schneider's methods, Petitioner answered in its Reply that "any heat, mechanical stress, and strain produced by Lievestro's roller system could be controlled by ***applying known engineering strategies***, such as slowing the velocity of the foam through the roller press and punch system, varying the radius of the rollers, and/or actively cooling the system." Reply 12 (emphasis added) (citing Ex. 1075 ¶ 96). "A person of ordinary skill is also a person of ordinary creativity, not an automaton," and Dr. Brienza testifies that the combination of Lievestro's and Schneider's techniques would have been technically "***simple for a POSITA to implement***" to achieve the claimed invention. *KSR*, 550 U.S. at 420; Ex. 1075 ¶ 97 (emphasis added). We agree with Petitioner and its witness.

asserts, and supports, would have been combined with a reasonable expectation of success.

Turning to claim 2, it is very similar to claim 1 (where it recites the same steps, Petitioner asserts the same prior art disclosure applies), but does not recite "cracking" the foam block, and instead recites that the foam block is compressed before forming a hole therein and is compressed while forming the hole therein. Ex. 1001, 12:48–51. Regarding the sequence of compression and hole-forming steps, Petitioner asserts that Lievestro has a "compression and punching process" where rollers first begin compressing the foam block and, when the foam is fully compressed, hole-punchers on the rollers form a hole in the foam block through its surface, and then the foam block moves past the rollers and decompresses. *Id.* at 20–29, 66–68 (citing Ex. 1006 ¶¶ 55–57, 59, 89–91; Ex. 1013, 2–6, Figs. 3–7); *see also supra* Section II.D.1 (discussing Lievestro).

Thus, as with claim 1, Petitioner accounts for all steps/elements of claim 2 as taught by the prior art combination.

Based on the evidence cited by Petitioner and the concessions of Patent Owner and Mr. Gross (*see* cites and quotes above), we find little room for dispute that claims 1 and 2 would have been obvious over Lievestro and Schneider. We address Patent Owner's positions and evidence below.

2. Patent Owner's Positions

Objective Indicia of Non-Obviousness

In rebuttal to Petitioner's Ground 1, and each of Petitioner's other grounds for unpatentability, Patent Owner argues that objective indicia of non-obviousness (which Patent Owner refers to as "secondary

considerations") provide evidence of the claims' patentability. Resp. 1–2, 45–59. Patent Owner asserts that commercial success (evidenced by market share, a consumer survey, and lab testing of foam samples), copying, the intervening time between the prior art and the '301 patent, and unexpected results support the claims' non-obviousness.

As an initial matter, Patent Owner's positions regarding objective indicia of non-obviousness foundationally rely on the testimony of Mr. Quinn. *See* Resp. 47–59. We have concerns regarding Mr. Quinn's ability to provide reasoned opinions and conclusions, or reasoned analysis of the facts, on objective indicia of non-obviousness (or secondary considerations) because Mr. Quinn, at deposition, testified that he was unfamiliar with "secondary considerations" and "objective indicia of nonobviousness," nor could he recall having been instructed about the law relating to such matters, which is the focus of his relevant declaration testimony. Ex. 1078, 36:6–19. Moreover, although he testified regarding the concept of nexus in his declaration, which was then cited as a basis for Patent Owner's contentions regarding objective indicia of non-obviousness (*see, e.g.*, Resp. 47, 50, 53–55, 58), Mr. Quinn testified on cross-examination that he was unfamiliar with the concept of "nexus" as it relates to objective indicia of non-obviousness. Ex. 1078, 39:11–13. Furthermore, regarding the subjects of non-obviousness, the claimed invention, and nexus, on cross-examination Mr. Quinn could not accurately identify the subject matter covered by the '301 patent's claims. Ex. 1078, 50:7–12 ("Q. Okay. What is the invention of the '301 Patent? A [Mr. Quinn]. The invention is a molded memory foam pillow with punched holes with a PCM application."). Thus, we have significant doubts whether Mr. Quinn's testimony is reliable

and we, therefore, temper any weight we give to Mr. Quinn's testimony on these issues.

As noted above, a nexus is critical to objective indicia of non-obviousness, and the Federal Circuit instructs that "[t]he patentee bears the burden of showing that a nexus exists." *Fox Factory*, 944 F.3d at 1373 (quoting *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999)). And, the Federal Circuit further instructs that "[t]o determine whether the patentee has met that burden, we consider the correspondence between the objective evidence and the claim scope." *Id.* (quoting *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019)).

A pillar of Patent Owner's contentions regarding commercial success, copying, and unexpected results is Patent Owner's contention that its marketed product, called the GhostPillow by Nature's Sleep ("GhostPillow"), is "created using the '301 Patent process" and thus demonstrates the required nexus with the claimed invention; this alleged nexus underpins Patent Owner's reliance on sales of the GhostPillow, consumer's reasons for favoring the GhostPillow over the competition's products, demonstrated improved "cooling effects" of the GhostPillow compared to foam not manufactured according to the invention, the basis for competitors marketing copied products, and the embodiment of unexpected cooling characteristics in a pillow. Resp. 45–55 (citing Ex. 2011 (website images and description of the GhostPillow); Ex. 2013 ¶¶ 25, 28–34, 36–39, 45–47, 49, 81–83, 87–89, 91–92, 94, 97; Ex. 2015; Ex. 2016; Ex. 2017). For such contentions, Patent Owner relies heavily on the declaration testimony and opinions of Mr. Quinn, i.e., Exhibit 2013, and his review of other evidence of record. Based on the evidence of record, we do not agree

that such a nexus is established and we discuss the issue in more detail below.

Before analyzing the lack evidence of nexus, we find there are *several* additional problems with Patent Owner's evidence of commercial success, copying, and unexpected results. For example: (1) Mr. Quinn created an artificially narrow market definition that he "categorized as a Molded Gel Memory Foam PCM pillow with punched holes"; (2) Mr. Quinn's analysis of such a market was limited to only online sales via Amazon.com and overlooked all other sales online and all sales at brick-and-mortar outlets entirely; (3) Mr. Quinn's direct comparisons of allegedly competing products were limited to only those he believed were "actually infringing" the '301 patent based on potentially infringing companies of which he "was made aware"; (4) Mr. Quinn merely inferred that competitors copied, rather than performing any analysis to confirm it; (5) Mr. Quinn did not perform any analysis as to how alleged competing products were actually manufactured; and (6) the lab-tested foam samples (relied upon for unexpected results) represented neither the GhostPillow product nor the claimed invention's process nor the closest prior art. *See* Ex. 2013 ¶¶ 25–28, 30, 36, 49, 63, 91, 97; Ex. 2017 (Element Laboratory report); Ex. 1078, 97:2–15, 103:14–104:23, 106:4–16, 192:10–20, 209:23–210:4, 222:3–224:17, 217:20–23, 254:3–23, 255:5–226:4; *see also* Ex. 1078, 106:4–16, 122:2–6, 128:17–129:3 (Mr. Quinn's deposition testimony regarding how he established the market definition). Each of these alone is a sufficient reason to give Patent Owner's respective arguments little or no weight; however, none of these issues is as critical to the failure of Patent Owner's position as the lack of evidence of a nexus.

In its Response, Patent Owner emphasizes that the recited elements of claims 1 and 2 endowing patentability thereon were the recited *cracking* and *compressing/hole-forming* limitations. Resp. 3 (citing Ex. 1005). Thus, for a nexus to be established, at least these features must be shown to be/have been present in the product held out to support objective indicia of non-obviousness. Here, there is insufficient evidence of such a nexus.

Patent Owner's witnesses, Mr. Gross and Mr. Quinn, each merely conclude, without sufficient supporting explanation or analysis, that the '301 patent's claims 1 and 2 are embodied in the GhostPillow product. *See* Ex. 2001 ¶ 15 (citing Ex. 2003, which is a copy of a webpage showing images of the GhostPillow and describing its features, but does not identify the presence of any claim elements other than that the product is made of foam having holes and PCM); Ex. 2013 ¶ 14 (also citing Ex. 2003). These witness conclusions constitute Patent Owner's primary evidence of nexus, but there is no clear indication in the record that either witness actually *knows* whether the GhostPillow embodies the claimed invention. *See, e.g.*, Ex. 1074, 195:6–196:15, 227:11–16 (Mr. Gross's cross-examination testimony demonstrating that he did not have direct knowledge as to how the GhostPillow was manufactured); Ex. 1078, 75:23–76:20, 84:2–85 (Mr. Quinn's cross-examination testimony demonstrating that he, too, did not have direct knowledge as to how the GhostPillow was manufactured).

Patent Owner's other support that the GhostPillow embodies the claims is mere attorney argument, and Exhibit 2022 is a series of photographs and some accompanying text alleged to depict the fabrication process of a GhostPillow. *See* Sur-reply 14–15; *see also Elbit Systems of America, LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1359 (Fed. Cir. 2018)

("'[a]ttorney argument is not evidence' and cannot rebut other admitted evidence" (quoting *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017)); *Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) (unsworn attorney argument is not evidence); *see also* Hr'g Tr. 47:25–48:12 (conceding, at least in part, that support for nexus was only attorney argument). Patent Owner argues that Exhibit 2022 proves that the GhostPillow is fabricated using the claimed method(s), but we find it is not possible to discern from the evidence whether the required claim steps (i.e., cracking, and compressing the foam before and then during hole formation) occurs during such manufacturing. *See, e.g.*, Ex. 1074, 56:13–59:3 (Mr. Gross testifying Exhibit 2022 cannot confirm that cracking or the claimed compressing occurs). Moreover, several other steps that are not claimed are expressly identified in Exhibit 2022 as occurring during GhostPillow manufacture, such as applying a lavender scent, twice polishing the foam, and air drying. Ex. 2022. None of these additional, unclaimed steps are explained from the perspective of potential impact on the asserted objective indicia of non-obviousness.

We find neither Patent Owner's witnesses' conclusions nor Exhibit 2022, or any other identified evidence, establishes the nexus required to support objective indicia of non-obviousness.[12] Because there is no

[12] Other of Patent Owner's evidence may even tend to refute the existence of a nexus. For example, although Exhibit 2022 indicates the GhostPillow's holes are punched, Patent Owner's Exhibit 2024 describes the GhostPillow as being fabricated by "a process of ***drilling*** multiple holes completely thru the pillow" (emphasis added). Punching and drilling holes are not the same process and it is unclear whether any compression steps are required to drill

established nexus between the claimed invention and Patent Owner's asserted commercial success, copying, and unexpected results, we give such arguments little weight. *In re Affinity Labs of Texas, LLC*, 856 F.3d 883, 901 (Fed. Cir. 2017).

It is also worth noting that, "[t]o be particularly probative, evidence of *unexpected results* must establish that there is a difference between the results obtained and those of the closest prior art, and that the difference would not have been expected by one of ordinary skill in the art at the time of the invention." *Bristol-Myers Squibb Co. v. Teva Pharms. USA, Inc.*, 752 F.3d 967, 977 (Fed. Cir. 2014) (citation omitted, emphasis added). Patent Owner argues "[t]he results of the [Element Materials Technology] testing further prove the significance of the cooling features claimed by the process disclosed in the '301 Patent compared to the asserted prior art," "indicating an unexpectedly high value for the Q-MAX score." Resp. 58–59 (citing Ex. 2013 ¶¶ 87, 88, 94; Ex. 2017); *see also* Ex. 2013 ¶¶ 47–88 (discussing the testing). As explained in Mr. Quinn's testimony and the Element Materials Technology ("Element") report, foam samples were provided to and tested by Element to determine their thermal (and moisture dissipation) characteristics. These foam samples were called either "GB punched PCM foam," which we understand Patent Owner alleges represents the invention here, or "GB solid foam," which we understand Patent Owner alleges represents the prior art. Ex. 1078, 181:3–23.

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holes. *See, e.g.*, Ex. 1009 ¶¶ 5, 9, 14 (describing compressing to punch holes improving over a hole-drilling process); Ex. 1013, 3 (compressing to form holes improving over a hole-drilling process).

We find insufficient evidence here, however, that the foam samples tested by Element represent either the claimed invention or the closest prior art. Ex. 1078, 224:12–17; Ex. 2013 ¶¶ 49, 63, 85. There is no evidence from which we may conclude that any foam samples tested were cracked foam or had holes formed therein after a foam compression step and during a foam compression step, as required by claims 1 and 2, respectively. *See, e.g.*, Hr'g Tr. 82:1–8 ("JUDGE FLAX: How do I know from the evidence of record that the tested foam samples correspond to the claim limitations? You telling me right now does not suffice. I need something in the record that explains that the foam that was tested meets the claim limitations. [PATENT OWNER]: The only thing I can point to is the fact that the title of these foam pieces is GB Punched PCM. And the only way it can be punched is if it's compressed. There's no other way to do it. The title from the reports from Element have those labels on it.").

Furthermore, we know that foam made according to the closest prior art, which would be processing according to at least one of Lievestro, Schneider, Crawford, and Ohta, would not be just foam without holes and without applied PCM, but would include cracked foam with holes formed after and during compression, or foam with holes and PCM, or cracked foam with PCM without holes. *See supra* Section II.D. The tested samples called GBsolid represented none of these types of foam and, so, no comparison was made with the closest prior art. *See* Hr'g Tr. 83:3–84:1 ("JUDGE FLAX: But you did not test any foam that only had holes or only had PCM. Is that correct? [PATENT OWNER]: That is correct. JUDGE FLAX: So how do any of these tests [relate] to the closest prior art is my question. I think [they] don't. Am I right? [PATENT OWNER]: I understand from the test

results, you know, it's not connected directly because it doesn't have only one of those elements. I understand, I agree with that. I can't dispute that.").

For this reason also, we find that Patent Owner's arguments directed to unexpected results are entitled to no weight.

Regarding the passage of time between the publication of the asserted prior art and the '301 patent, Patent Owner's argument is not persuasive. Absent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention is not evidence of non-obviousness. *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2005) (citing *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977)). Here, there is no evidence or argument that a long-felt need existed or of any failures of others.

For all these reasons, Patent Owner's arguments and evidence concerning objective indicia of non-obviousness are unpersuasive. In any event, even if Patent Owner's alleged objective indicia of non-obviousness were entitled to some weight, we find that the evidence of obviousness on this record is quite strong and substantially outweighs any indicia of non-obviousness on this record. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007) ("Although secondary considerations must be taken into account, they do not necessarily control the obviousness conclusion."); *see also Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1371 (Fed. Cir. 2011) ("A strong case of *prima facie* obviousness, such as that presented here, cannot be overcome by a far weaker showing of objective indicia of nonobviousness.").

Our determinations and conclusions on objective indicia of non-obviousness also apply to Petitioner's other grounds for unpatentability discussed below. We do not, however, repeat our analysis below.

Patent Owner's Allegations that Lievestro Teaches Away

Patent Owner argues that Lievestro "teaches away from many of the fundamental technical requirements of the process described in [c]laims 1 and 2," because it does not teach forming holes in bedding for cooling a user, in part, because Lievestro's foam is disclosed as used for a mattress body, which is allegedly not a "comfort layer" of bedding, like a pillow or mattress topper. Resp. 25–27. Patent Owner further argues that Lievestro teaches away from the recited "cracking" element because it does not teach the benefits of crushing foam to open its cell wall structure. *Id.* at 27–28. Patent Owner also argues that Lievestro teaches away from punching holes in PCM-laminated foam because there would be a risk of damaging the PCM layer and Lievestro's rollers may cause high temperatures that might jeopardize the integrity of the foam or PCM coating. *Id.* at 28.

A reference teaches away from a claimed invention if it "criticizes, discredits, or otherwise discourages" modifying a reference to arrive at the claimed invention. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We are not persuaded that Lievestro teaches away from either the claimed invention or its own combination with Schneider (or other asserted prior art here).

Regarding Patent Owner's first point, the claims do not recite or require that manufactured bedding exhibit a cooling effect because of formed holes or applied PCM, or for any reason. *See* Ex. 1001, 12:35–51 (claims); *see also* Hr'g Tr. 45:15–18 ("JUDGE FLAX: So one question I

have. I saw a lot of this discussion in the record about the cooling effects. It's not a claim limitation in any way. [PATENT OWNER]: It is not a claim limitation."). Therefore, whether Lievestro teaches its hole-forming is for providing a cooling effect is not determinative and, even if it does not, that does not teach away because it would not discourage from practicing the invention or combining Lievestro with Schneider (or Crawford).

Patent Owner's second point, that Lievestro does not explain that its process crushes foam to crack it, is not persuasive because both Patent Owner and Mr. Gross agree that Lievestro's process of forming holes in foam cracks the foam. Hr'g Tr. 78:2–8 (Patent Owner conceding that Lievestro teaches all claim elements, including "technically cracking" foam, other than applying PCM material to foam's surface); Ex. 1074, 9:1–6 (Mr. Gross conceding that Lievestro explicitly discloses compressing foam to open its cell structure to improve comfort, i.e., cracking, which he also conceded he ignored, in error, in his original declaration).

Regarding compressing foam to crack it, Lievestro states:

> By configuring the die-roll body to compress the foam blocks and simultaneously punch holes in them during rotation, the die-roll body can efficiently create the holes in the blocks while compressing them. Therefore, this device can provide a relatively large quantity of foam blocks with holes within a given time period. ***An additional advantage is that the device can also crush the foam blocks during the compression and punching process. This crushing breaks cell walls within the foam of the foam blocks, resulting in a relatively open cell structure that enhances the comfort of the blocks during use***. Since a punching process is used to create the holes, the aforementioned disadvantages of using a drilling device and performing a drilling process are avoided.

Ex. 1013, 3 (emphasis added). This single quote from Lievestro teaches: the compression and crushing steps of challenged claims 1 and 2; compressing foam for the express purpose of cracking it; and that the Lievestro compression-hole-punching process is in lieu of known hole-drilling methods (a known alternative to compressing and forming holes).

Regarding Patent Owner's third point, that Lievestro's process might disturb a PCM layer or generate unwanted heat so as to introduce technical problems that would have taught away from the claimed invention or Lievestro's combination with Schneider (or Crawford), we are unpersuaded. This argument supposes ordinary stupidity rather than ordinary skill in those endeavoring in the relevant field. *In re Sovish*, 769 F.2d 738, 743 (Fed. Cir. 1985) (rejecting an argument that "presumes stupidity rather than [ordinary] skill"). The obviousness analysis "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ" because "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421. The claims do not require that cracking or compressing/hole forming be performed in any specific order with respect to applying PCM, just that both occur, and we agree with Petitioner and Dr. Brienza that the ordinarily skilled artisan would have been able to design the equipment used and the process undertaken to predictably succeed in all claimed steps. *See* Ex. 1075 ¶¶ 90–92, 96–98; Pet. 65–68; Reply 11–12.

Patent Owner's Allegations that Schneider Teaches Away

Patent Owner argues also that Schneider teaches away from punching holes in foam because the reference teaches using only reticulated foam. Resp. 28–33. This is not a persuasive argument. This argument is premised

entirely on the contention that Schneider's foam must be reticulated, which Patent Owner argues is not conducive to the hole punching, and other aspects of the invention and the teachings of Lievestro (and other references). However, in cross-examination testimony Mr. Gross conceded that Schneider's teachings were not limited to reticulated foam. Ex. 1074, 160:9–14, 168:23–1. Patent Owner also agreed to this fact at oral argument. Hr'g Tr. 59:14–17. Thus, this argument is without sufficient merit.

Motivation to Combine Lievestro and Schneider

Patent Owner argues that the ordinarily skilled artisan would not have had a reason (no motivation) to combine Lievestro's and Schneider's teachings because there would have been no reasonable expectation of success to "provide the limitation of application of a PCM on the surface of a foam block." Resp. 34–38 (citing, *inter alia*, Ex. 2001 ¶¶ 33, 34, 76, 104–109, 111–116, 120, 124–127).[13] Patent Owner argues that Schneider's

[13] Patent Owner relies on Mr. Gross's direct testimony to support this and every contention that there was a lack of motivation to combine Petitioner's asserted prior art. Resp. 33–45. We find that Mr. Gross's testimony and his conclusions and opinions on this and other patentability issues to be flawed because he approaches the issues solely from the perspective of manufacturing a "commercially viable" product, rather than considering whether the prior art's teachings would have been combined by the person of ordinary skill in the art (*see supra* Section II.B) to achieve the claimed invention with a reasonable expectation of success, which does not require considering commercial viability or the production of any specific product. *See* Ex. 1074, 13:19–14:9, 16:10–17:19, 22:12–26:1, 46:6–9, 54:13–25, 82:2–19, 136:2–137:8, 144:17–25, 147:8–13, 162:24–163:17; 164:7–11, 181:14–15, 192:5–9, 193:20–24; *see also* Ex. 2001 ¶ 20; *see also supra* Section II.B (ordinary skill in the art). Mr. Gross's opinions and testimony concern "business ramifications," "consumer acceptance," product "quality," "cost[s]," product "sustainab[ility]," "retailers," "price," "ability to

disclosure is limited to reticulated foam; this is conceded as incorrect as discussed above, and thus we will not further discuss the point.

Patent Owner also argues that Schneider teaches using PCM as a waterproofing material, which would negate airflow through bedding, and would not yield "the demonstrable cooling effect created by [c]laims 1 and 2." *Id.* at 35–36. Patent Owner argues Lievestro does not disclose a cooling effect, either. *Id.* at 36. Patent Owner again argues that Lievestro's rolling process would potentially cause excessive heat or damage the PCM; again, this is discussed above as unpersuasive and we will not further discuss the point. *Id.* at 37–38.

Regarding Patent Owner's point about Schneider's disclosed use of PCM, it is not persuasive. Schneider states:

> In some embodiments, ***the washable mattress comprises a microencapsulated phase change material***. For instance, a second eight and one-quarter centimeter (8.25 cm) or three and one-quarter inch (3 .25") removable layer of ***memory foam can be coated with a layer of phase change gel material***. This phase change gel material may be similar to the phase change gel material described in International Patent Application Number WO2011/107849, which is incorporated herein by reference. The phase change gel comprises extremely small capsules (typically five (5) to forty (40) microns for use in foam production) that ***permanently contain phase change materials***

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manufacture a product consistently," and manufacturing "repeatab[ility]," among other purely commercial matters, none of which are relevant to whether the challenged claims are unpatentable as obvious over the prior art. *See generally* previous cites to Ex. 1074. Therefore, although Mr. Gross's testimony may shed light upon certain fact issues and he is a person of at least ordinary skill in the art, his testimony considers the prior art, claims, and patentability issues from an irrelevant perspective, and we respectively give it little or no weight.

> ***(PCMs) and allow the PCM to absorb thermal energy when exposed to heat***. Test results ***demonstrate the ability of Phase Change Gel to provide significant cooling benefits when applied to flexible polyurethane foam***.

Ex. 1010 ¶ 29 (emphasis added). This statement is very clear that PCM is useful in bedding to "provide significant cooling benefits."

Dr. Brienza testified that, "[c]oncerning the holes formed in Lievestro's foam block and through the block's surface, a POSITA would have understood that the holes provide a cooling effect to the user via circulating air to the user interface when the block is compressed during use." Ex. 1006 ¶ 86. Mr. Gross testified on cross-examination that a person of ordinary skill in the art following Lievestro's teachings for manufacturing bedding would look to Schneider for its suggestion that applying PCM to foam bedding would enhance its thermal properties—a benefit. Ex. 1074, 182:14–19 ("Q. So if a person uses Lievestro, knowing that holes improve thermal characteristic of foam, and reading Schneider, would a POSITA know adding PCM to Lievestro's block would enhance thermal properties of the block? A. Reading Schneider, it might suggest that there could be a benefit to PCM, applied in the right context.").

Moreover, Patent Owner's argument presumes a requirement of bodily incorporation of Schneider's disclosure into Lievestro's, which is incorrect as a matter of law. Our reviewing court has held:

> "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference," *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). *See also In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d at 425), but rather whether "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the

> claimed invention," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007).

Allied Erecting & Dismantling Co., Inc. v. Genesis Attachments, LLC, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Once it is recognized that Schneider's mattress or foam blocks need not be bodily incorporated into Lievestro's methods, and that only the *concept* of applying PCM to bedding foam's surface for a cooling effect is required, Patent Owner's argument fails.

For the above reasons, we are unpersuaded by Patent Owner's arguments as to motivation to combine.

3. Summary

We find that Petitioner has persuasively mapped every limitation/step of challenged claims 1 and 2 to the disclosures of Lievestro and Schneider, identified a reason with rational underpinning why the ordinarily skilled artisan would have combined the teachings of the references, and identified that there would have been a reasonable expectation of success. No evidence or argument presented by Patent Owner, including evidence and argument regarding objective indicia of non-obviousness, persuades us otherwise. Based on a preponderance of the evidence, Petitioner has shown under Ground 1 that the '301 patent's claims 1 and 2 would have been obvious over Lievestro and Schneider.

This conclusion, without more, is sufficient to find in favor of Petitioner in this proceeding. For completeness we address Grounds 2, 3, and 4 below.

F. OBVIOUSNESS OVER CRAWFORD AND LIEVESTRO (GROUND 2)

1. Petitioner's Positions

Under Ground 2, Petitioner asserts that the '301 patent's claims 1 and 2 would have been obvious over Crawford and Lievestro and, so, are

unpatentable. Pet. 20–29, 45–62 (citing, *inter alia*, Ex. 1006 ¶¶ 52–59, 61–70, 74–85, 92–109; Ex. 1011, Abstract, ¶¶ 2, 8, 56, 60–62, 72, 108, 115, Figs. 16, 17, 19, 27, claim 43; Ex. 1013, Abstract, 2–3, 5–6, Figs. 3–7). In summary, Petitioner relies on the teachings of Lievestro identically as discussed above for Ground 1 (for teaching all claim elements except the application of PCM, which is taught by Crawford), and relies on Crawford for teaching all the claim elements except for hole formation (which is taught by Lievestro), especially compressing a foam cushion and application of PCM (similar to that taught by Schneider). *Id.* at 68–71 (citing Ex. 1006 ¶¶ 92–97).

Petitioner identifies (we find, accurately) that each of Lievestro and Crawford is directed to manufacturing bedding and each addresses ways of improving cooling for a user, Lievestro via provision of holes for airflow and Crawford via provision of PCM on the bedding's surface. Pet. 68, 70–71 (citing Ex. 1006 ¶¶ 92–93). Petitioner asserts that, "[g]iven that Crawford and Lievestro are in the same art and both deal with enhancing comfort, which includes thermal comfort, a POSITA would have been motivated to perforate the surface of the foam block of Crawford as taught by Lievestro." *Id.* at 69. Petitioner asserts that the ordinarily skilled artisan would have predictably achieved this by modifying Crawford's rollers to cut holes as taught by Lievestro or adding additional rollers as taught by Lievestro at any point along Crawford's manufacturing line. *Id.* (citing Ex. 1006 ¶¶ 94, 97). We find this to be an accurate description of the references and a reason with rational underpinning why their teachings would have been combined by the ordinarily skilled artisan.

Regarding claim 1's preamble, Petitioner asserts it is taught by Lievestro as discussed above regarding Ground 1 (this also applies for every respective limitation), and also by Crawford's methods of making mattresses. *Id.* at 49 (citing Ex. 1011 ¶ 2); *see also* Ex. 1074, 117:6–9 (Mr. Gross concedes this fact).

Regarding claim 1's recited step of providing a solid, resilient, compressible foam block with a surface, Petitioner further asserts that Crawford teaches this in disclosing using flexible foams, e.g., high-resiliency polyether polyurethane, for making mattresses. Pet. 50–52 (citing, *inter alia*, Ex. 1011 ¶¶ 8, 72, 76, 108, Figs. 16, 17, 19, 27); *see also* Ex. 1074, 117:23–118:3 (Mr. Gross concedes this fact).

Regarding the limitation directed to applying PCM to the foam's surface, Petitioner asserts Crawford teaches this in disclosing adding PCM as a liquid gel mixture to the surface of the foam as an even coating, followed by infusion by roller compression. Pet. 53–54 (citing Ex 1011 ¶¶ 60, 72, 76, Figs. 19, 27); *see also* Ex. 1074, 118:4–16 (Mr. Gross concedes this fact).

Again, concerning claim 1's limitation directed to forming a hole, Petitioner relies on Lievestro's teachings (as for Ground 1, discussed above). *See supra* Section II.E.1 (discussing Petitioner's reliance on Lievestro).

Concerning claim 1's cracking limitation, Petitioner asserts that each of Lievestro and Crawford teaches such a step. Pet. 69; *see also id*. at 20–21 (discussing Lievestro, Ex. 1013, 2), 46–47, 49, 55 (discussing Crawford, Ex. 1011 ¶ 72; Ex. 1006 ¶¶ 76, 79–80); *see also* Ex. 1074, 131:2–9 (Mr. Gross concedes that Crawford discloses cracking the foam block while it is still wet with PCM, then curing).

Turning to claim 2, again, it is similar to claim 1 and where it recites similar steps, Petitioner asserts the same prior art disclosure applies, but, regarding claim 2's requirement that the foam block is compressed before forming a hole therein and is compressed while forming the hole therein, Petitioner asserts it is taught by Lievestro, as with Ground 1. Pet. 69–70 (citing Ex. 1006 ¶¶ 95–96); *see also supra* Section II.E.1 (discussing claim 2).

As was the case with Ground 1, relating to Ground 2, Mr. Gross concedes that, with respect to both challenged claims 1 and 2, Crawford discloses all their limitations except for forming a hole (claim 1) and the compression/hole-forming steps (claim 2), stating:

> Q. So do you agree that the ***only limitation that's missing in Crawford with respect to claim 1 is forming a hole*** into said block and through said surface?
>
> A. *Yes*.
>
> Q. Okay. . . . Do you agree that the ***sole steps missing in Crawford with respect to claim 2 is compressing said block by pressing on said surface before the forming of the hole and performing the forming of the hole while said block is compressed***?
>
> A. ***Yes***.

Ex. 1074, 134:24–135:12 (emphasis added). And, as discussed above, Mr. Gross also concedes that Lievestro teaches all limitations of claims 1 and 2 except for applying PCM. *Id.* 74:14–22; *see also* Hr'g Tr. 78:2–8 (Patent Owner agreeing with its witness's concession); *see also supra* Section II.E. (discussing Ground 1). Thus, combined, the two references teach all limitations of claims 1 and 2.

We find that Petitioner asserts a reason, with rational underpinning, why the ordinarily skilled artisan would have combined the teachings of Lievestro and Crawford with a reasonable expectation of success. Further, Petitioner has accounted for the teaching of all claim elements by the Crawford-Lievestro combination. Again, the facts discussed above leave little room to question whether the challenged claims would have been obvious over Lievestro and Crawford, as asserted under Petitioner's Ground 2.

We address Patent Owner's positions below.

2. Patent Owner's Positions

We have addressed Patent Owner's arguments concerning objective indicia of non-obviousness, as well as the teachings of Lievestro, above and will not revisit these issues as they pertain to Ground 2, but we maintain our conclusions and apply them to Petitioner's Ground 2 as well.

Patent Owner argues that Crawford does not teach the claimed "applying phase change material to [the foam block's] surface," as recited by claims 1 and 2, because Crawford discloses the PCM material is infused into the foam. Resp. 12–15 (citing Ex. 1011, Abstract, ¶¶ 59–61, 69, 72, Figs. 19, 27; Ex. 2001 ¶¶ 83–89). Patent Owner argues that because Crawford's application of PCM penetrates the foam it is not applied to its surface. *Id.* Also, Patent Owner argues that Crawford's PCM gel is a mixture of PCM and other components, not simply PCM, and this does not teach applying PCM, as claimed. *Id*.

These arguments are not persuasive.

The claims require "applying phase change material to [the foam block's] surface," which happens in Crawford's method, even if that step is

followed by a compression step to infuse the PCM into the foam. *See supra* Section II.D.3 (discussing Crawford's Figures 19 and 27). Mr. Gross concedes this fact: "Q. . . . You're saying ***it applies a mixture that includes phase change material?*** A. ***Yes***. Q. Okay. So under that understanding of Crawford, ***does that meet the claim limitation of applying a phase change material to said surface?*** A. ***Yes***." Ex. 1074, 118:8–16 (emphasis added); *see also* Hr'g Tr. 41:13–42:18 (Patent Owner, in arguing that the prior art's infusing PCM is different than applying PCM, explaining that infusion merely occurs subsequent to applying PCM to a surface, as an added step). Moreover, the claims are written as "comprising" claims and do not exclude a step of infusing PCM into foam after a step of applying it to the surface; Patent Owner *expressly* makes no claim construction argument to the contrary. Hr'g Tr. 40:3–24; *see also* Resp. 5–6 (claim construction).

Mr. Gross also concedes that Crawford's PCM mixture applied to Crawford's foam is not different from the '301 patent's described methods of applying PCM to foam. Ex. 1074, 133:24–134:6. Patent Owner argues that Crawford's PCM is not pure PCM, but is a mixture; however, the '301 patent describes its PCM as being microcapsules of PCM in a powder mixed with polyurethane foam to create a durable PCM mixture, which is applied to the surface of the foam block. Ex. 1001, 5:14–22. The '301 patent does not describe applying PCM to foam other than as such a mixture and we discern no difference between Crawford's applied PCM (mixture) and the PCM (mixture) of the '301 patent's disclosure and claims. Moreover, Patent Owner does not assert a claim construction of phase change material that would limit that element to exclude Crawford's PCM. *See generally* Resp.

Patent Owner argues the ordinarily skilled artisan would have had no motivation to combine Crawford and Lievestro, and no reasonable expectation of success, because: (1) Crawford does not compress its foam to crack it, but rather to infuse the PCM; (2) Crawford applies PCM for a passive cooling effect for a user whereas the method of claims 1 and 2 provides an active cooling effect (because of the added hole); (3) Crawford's foam is open-celled and there would be no reason to add Lievestro's holes to further increase airflow; and (4) there would have been manufacturing concerns in combining the method of Crawford with Lievestro's like there would have been in combining Schneider's with Lievestro's (as argued over Ground 1) and it would not be feasible to commercially manufacture a product using the method of combined Crawford and Lievestro at "the rate needed." Resp. 38–41 (citing, *inter alia*, Ex. 2001 ¶¶ 129–144, 146).

These arguments are not persuasive.

Crawford need not teach compressing its foam for the purpose of cracking it (as in claim 1's limitation), because there is no dispute now that Lievestro teaches cracking foam by compression. Mr. Gross conceded during cross-examination that the compression disclosed in Crawford would crack its foam. Ex. 1074, 119:7–120:5 (Crawford's disclosed 90% compression "would most likely crack the foam"), 120:2–8 (comparing Crawford's disclosure to claim 1, Crawford teaches applying PCM and cracking the foam while still wet, then curing). Thus, whether the ordinarily skilled artisan have looked to Crawford or Lievestro for cracking bedding foam, either would have supplied the teaching.

Whether Crawford's (or Lievestro's) cooling effects, achieved via application of PCM to bedding foam (or forming holes therein in Lievestro's

case), are considered active or passive cooling is irrelevant to the patentability of the challenged claims. Cooling and cooling effects are not claim limitations. Hr'g Tr. 45:15–46:4 (Patent Owner confirming this). There was ample motivation for the ordinarily skilled artisan to have combined Crawford and Lievestro because, for example, each is directed to very similar processes for manufacturing foam bedding and each includes processing steps that enhances user comfort—forming holes in Lievestro and providing PCM in Crawford, which would supplement one another. Pet. 68–69; Reply 13; Ex. 1006 ¶¶ 94, 97. The record supports that neither process nor combining them would have required any significant technical leap beyond ordinary skill and either would have been understood to enhance the other. *See* Ex. 1006 ¶¶ 94, 97.

Crawford's foam being potentially open-celled would not have dissuaded an ordinarily skilled artisan from combining its teachings with those of Lievestro. As an initial matter, Crawford does not disclose its foam is restricted to only open-celled foam; it also discloses partially open-celled foam, reticulated foam, high-resiliency foam, viscoelastic foam, and any combinations of such. Ex. 1011 ¶¶ 8, 11. Furthermore, Lievestro expressly discloses compressing/crushing its own foam blocks to break cell walls to result in "a relatively open cell structure that enhances the comfort of the blocks during use." Ex. 1013, 3. Thus, Patent Owner's argument is without sufficient merit.

Concerning Patent Owner's argued manufacturing concerns resulting from the combination of Lievestro and Crawford, we are of the same opinion on this argument as for the similar argument over Ground 1. This argument again supposes ordinary stupidity rather than ordinary skill in those

endeavoring in the relevant field and we "take account of the inferences and creative steps that a person of ordinary skill in the art would employ" because "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421; *Sovish*, 769 F.2d at 743. We agree with Petitioner's assertion that the ordinarily skilled artisan would have been able to use Lievestro's hole-forming process at any point in Crawford's manufacturing line, e.g., during Crawford's application of PCM, before that step, or after that step. Pet. 69–71; Ex. 1006 ¶¶ 94, 97; *see also* Reply 13–15 (citing Ex. 1075 ¶¶ 103–108 (illustrating potential manufacturing lines based on such combinations)). Moreover, the claims are not directed to fabricating a commercial product, commercializing a product, or a rate of production; therefore, such issues are irrelevant to whether the combination of the prior art references is proper or obvious.

In summary, we are not persuaded by any of Patent Owner's arguments over Petitioner's Ground 2.

3. Summary

We find that Petitioner has persuasively mapped every limitation/step of the claims to the disclosures of Lievestro and Crawford, identified a reason with rational underpinning why the ordinarily skilled artisan would have combined the teachings of the references, and identified that there would have been a reasonable expectation of success. No evidence or argument presented by Patent Owner persuades us otherwise. Based on a preponderance of the evidence, Petitioner has shown under Ground 2 that the '301 patent's claims 1 and 2 would have been obvious over Lievestro and Crawford and are, therefore, unpatentable.

G. OBVIOUSNESS OVER OHTA AND SCHNEIDER (GROUND 3)

Although we have already found, in our discussion above, that Petitioner has carried its burden of proof to show that challenged claims 1 and 2 would have been obvious over other prior art combinations, we address Petitioner's Ground 3 below. We have not yet discussed the significance of the Ohta reference, which is central to this and the last ground for unpatentability.

1. Petitioner's Positions

Under Ground 3, Petitioner asserts that the '301 patent's claims 1 and 2 would have been obvious over Ohta and Schneider and, so, are unpatentable. Pet. 29–45, 62–64, 71–73 (citing, *inter alia*, Ex. 1006 ¶¶ 61–72, 83–85, 98–103; Ex. 1009 ¶¶ 1–2, 4–6, 15, 18, 31, 33–35, Figs. 1–6; Ex. 1010 ¶ 29). In summary, Petitioner relies on the teachings of Schneider identically as discussed above for Ground 1 (primarily for teaching applying PCM to bedding foam), and relies on Ohta for teaching all the claim elements except for application of PCM (which is taught by Schneider). *Id.* at 71–73 (citing Ex. 1006 ¶¶ 98–103).

We have identified above that significant concessions have been made by Patent Owner and Mr. Gross as to facts relating to Schneider's teaching of applying PCM to bedding foam for its cooling benefits. *See supra* Section II.E. Patent Owner and Mr. Gross make similarly significant concessions regarding Ohta's teachings with respect to challenged claims 1 and 2. Mr. Gross agreed during cross-examination that Ohta teaches every limitation of challenged claims 1 and 2 except for the step of applying phase change material to the surface of the foam block. Ex. 1074, 140:14–141:11 (regarding claim 2), 142:5–143:10 (regarding the limitations of claim 1,

including that Ohta's 95% compression of foam cracks the foam). Furthermore, Patent Owner concedes that Ohta's disclosure of compressing foam up to 95% cracks the foam, and also that PCM would be used with Ohta's disclosed bedding so a user was cooler when they sleep. Hr'g Tr. 56:7–13, 66:22–67:3.

As was the case with the previously discussed grounds for unpatentability, the conceded facts as to Ground 3 leave little room to doubt Petitioner's case for obviousness over Ohta and Schneider. We review Petitioner's assertions below.

As noted, Petitioner asserts that Ohta teaches all elements of claims 1 and 2 other than the application of PCM. Pet. 71–73. Regarding the preambles of claims 1 and 2, Petitioner asserts that Ohta teaches the same because its invention relates to producing perforated pillows with through-holes. *Id.* at 35, 40 (citing Ex. 1009 ¶ 1); *see also* Ex. 1074, 140:16–19, 142:7–9 (Mr. Gross conceding this fact).

Regarding claims 1 and 2's limitations requiring providing a solid, resilient, compressible foam block with a surface, Petitioner asserts Ohta teaches this in disclosing providing a compressible and resilient foam body, as shown in its Figures 1, 2, and 5, for example. Pet. 36–37, 41–42 (citing Ex. 1009 ¶¶ 15, 18, Figs. 1, 2, 5); *see also* Ex. 1074, 140:20–22, 142:10–12 (Mr. Gross conceding this fact).

Regarding the challenged claims' requirement that PCM be applied to the surface of the foam, Petitioner asserts that the ordinarily skilled artisan would have combined Schneider's teachings with Ohta's so that PCM would be applied to Ohta's foam's surface. Pet. 37, 42, 71–73 (citing Ex. 1006 ¶¶ 98–103). Petitioner asserts that the person of ordinary skill in the art

would have had reason to make this prior art combination and the proposed modification to Ohta's methods because Ohta identifies that its invention provides holes in a foam pillow to prevent the user from experiencing an oppressive, muggy feeling in use and that this objective to provide a cooler experience for a user would be advantaged by adding Schneider's disclosed application of PCM to the surface of the foam pillow to further enhance cooling. *Id.* at 71–73 (citing Ex. 1006 ¶¶ 98–103); *see also* Ex. 1009 ¶ 2 (Ohta identifying the mitigation of "oppressive, muggy feeling during [foam pillow] use" as an objective); *see also* Ex. 1010 ¶ 29 (Schneider disclosing applying PCM to foam bedding for this purpose); *see also* Hr'g Tr. 77:20–24 (Patent Owner agreeing that Ohta provides holes in its pillow to prevent mugginess); Ex. 1074, 154:4–6 (Mr. Gross agreeing that Ohta provides holes in its pillow to prevent mugginess). Petitioner asserts that the claims do not require any specific order to their compression/hole-forming and PCM-applying steps and, so, an ordinarily skilled artisan would have added Schneider's PCM-application step either before Ohta's cracking/compression/hole-forming steps or after them, to predictably achieve the result of having bedding with the thermal advantages of holes and a PCM coating. Pet. at 71–73. Petitioner asserts that "there is nothing in the Ohta disclosure to suggest that applying PCM on Ohta's foam block would be not possible or [would have been] undesirable." Reply 16 (citing Ex. 1075 ¶¶ 57, 118). Mr. Gross generally concedes this. Ex. 1074, 156:15–19.

Regarding challenged claims 1 and 2's common forming a hole limitation, Petitioner asserts Ohta teaches this in disclosing forming holes in its foam block, as shown in its Figure 3. Pet. 38 (citing Ex. 1009 ¶ 18,

Fig. 3); *see also* Ex. 1074, 140:23–25, 142:13–15 (Mr. Gross conceding this fact).

Regarding challenged claim 1's cracking limitation, Petitioner asserts that Ohta teaches cracking its foam block in disclosing compressing it down to 5% (or 95% compression), as shown in its Figures 1 and 2. Pet. 39, 43 (citing Ex. 1006 ¶ 71; Ex. 1009 ¶¶ 31, 33, Figs. 1–2); *see also* Ex. 1074, 143:2–10 (Mr. Gross conceding Ohta's compression most likely cracks the foam); *see also* Hr'g Tr. 56:7–11 (Patent Owner conceding this fact).

Regarding challenged claim 2's recited compressing before and during hole-forming steps, Petitioner asserts this sequence of steps is taught by Ohta's disclosure of compressing foam between plates and then punching holes in the foam while it is still compressed. Pet. 44–45 (citing Ex. 1009 ¶ 18, Figs. 1–3); *see also* Ex. 1074, 141:1–6 (Mr. Gross conceding this fact).

We find that Petitioner asserts a reason, with rational underpinning, why the ordinarily skilled artisan would have combined the teachings of Ohta and Schneider with a reasonable expectation of success. Further, Petitioner has accounted for the teaching of all claim elements by the Ohta-Schneider combination. Again, the facts above leave little room to question whether the claims would have been obvious over Ohta and Schneider, as asserted under Petitioner's Ground 3.

2. Patent Owner's Positions

Patent Owner argues there would have been no motivation to combine Ohta and Schneider because Schneider is restricted to reticulated foam, which may get caught during Ohta's hole-forming, and because Schneider applies PCM as a water barrier material. Resp. 41. Patent Owner argues

this forecloses any reasonable expectation of success in the combination. *Id.* at 41–42 (citing Ex. 2001 ¶¶ 150, 155).

This argument is not persuasive.

Schneider is not limited to reticulated foam; thus, a foundational point of Patent Owner's argument is meritless. *See supra* Section II.D.2 (discussing Schneider), Section II.E (analyzing Ground 1). Patent Owner and Mr. Gross concede this fact. Hr'g Tr. 59:14–17; Ex. 1074, 168:23–169:1 (Mr. Gross conceding Schneider discloses applying PCM to non-reticulated foam).

We also find that whether the PCM applied to foam provides some waterproofing function as Patent Owner alleges of Schneider's teachings is irrelevant because Schneider is very clear that phase change materials (PCMs) "absorb thermal energy when exposed to heat. Test results demonstrate the ability of Phase Change Gel to provide significant cooling benefits when applied to flexible polyurethane foam." Ex. 1010 ¶ 29. We agree with Petitioner that the ordinarily skilled artisan, reading this, and also reading Ohta's statement regarding mitigating an oppressive, muggy feeling for users of pillows by providing holes in the pillows, would have had ample reason to add Schneider's PCM coating application step to Ohta's pillow manufacturing process to further enhance user comfort in the way disclosed by each reference.

3. Summary

We find that Petitioner has persuasively mapped every limitation/step of the claims to the disclosures of Ohta and Schneider, identified a reason with rational underpinning why the ordinarily skilled artisan would have combined the teachings of the references, and identified that there would

have been a reasonable expectation of success. No evidence or argument presented by Patent Owner persuades us otherwise. Based on a preponderance of the evidence, Petitioner has shown under Ground 3 that the '301 patent's claims 1 and 2 would have been obvious over Ohta and Schneider and are, therefore, unpatentable.

H. OBVIOUSNESS OVER OHTA AND CRAWFORD (GROUND 4)

We now turn to Petitioner's final asserted ground for unpatentability in this proceeding, which is based on obviousness over the combination of Ohta and Crawford, two references we have already discussed above regarding Petitioner's Grounds 2 and 3. More need not be said about the teachings of these references rendering obvious the challenged claims and the concessions of Patent Owner and its expert witness relating thereto, but for completeness we analyze the parties' positions below.

1. Petitioner's Positions

Under Ground 4, Petitioner asserts that the '301 patent's claims 1 and 2 would have been obvious over Ohta and Crawford and, so, are unpatentable. Pet. 29–62, 73–76 (citing, *inter alia*, Ex. 1006 ¶¶ 61–72, 74–80; Ex. 1009 ¶¶ 1–2, 4–6, 15, 18, 31, 33–35, Figs. 1–6; Ex. 1011 ¶¶ 2, 8, 56, 60–62, 72, 76, 108, 115, Figs. 16, 17, 19, 27, claim 43). In summary, relative to challenged claims 1 and 2, Petitioner relies on the teachings of Ohta as discussed above for Ground 3 (all claim limitations other than applying PCM) and relies on Crawford as discussed above for Ground 2 (for also teaching all the claim elements except for forming holes and related compression steps). *Id.*; *see also supra* Sections II.D.3, II.D.4, II.F and II.G (addressing Ohta's and Crawford's teachings).

Petitioner asserts that Crawford and Ohta (like the other asserted prior art) "are in the same art [(bedding manufacture)] and both deal with enhancing thermal comfort"; thus, "a [person of ordinary skill in the art] would have been motivated to coat the surface of [the] perforated foam block of Ohta with PCM as taught by Crawford." Pet. 74–76 (citing Ex. 1006 ¶¶ 106, 109). Petitioner further asserts that coating Ohta's foam at any point, either before or after the foam-compressing hole-forming steps, "would yield a predictable result of having a bedding product that absorbs heat and provides an enhanced cooling effect to the user." *Id.*

It is worth again identifying that Patent Owner's expert witness, Mr. Gross, testified and concedes as follows:

> Q. So ***do you agree that the only limitation that's missing in Crawford with respect to claim 1 is forming a hole*** into said block and through said surface?
>
> A. ***Yes***.
>
> Q. Okay. . . . ***Do you agree that the sole steps missing in Crawford with respect to claim 2 is compressing said block by pressing on said surface before the forming of the hole and performing the forming of the hole while said block is compressed?***
>
> A. ***Yes***.

and further:

> Q. Okay. So would you agree that ***the only limitation not disclosed in Ohta with respect to claim 2, is the step of applying phase change material*** to said surface of the block?
>
> A. ***Yes***.

and further:

> Q. Let's go to claim 1 of the '301 patent.
>
> A. Um-hum.

> Q. You agree that Ohta discloses a process for manufacturing bedding?
>
> A. Yes.
>
> Q. You agree that Ohta discloses providing a solid, resilient, 11 compressible foam block, said block having a surface?
>
> A. Yes. With some parameters associated with that.
>
> Q. You agree that Ohta discloses forming a hole into said block and through said surface?
>
> A. Yes.
>
> Q. Do you agree that Ohta discloses compressing the foam block up to 95 percent?
>
> A. Well we'll have to go back and look at the patent. It does talk about up to 95 percent . . .
>
> Q. Okay. Now, ***compressing by 95 percent, would that be sufficient to break some cell walls*** of the foam?
>
> A. Most likely, ***yes***.

Ex. 1074, 134:24–135:12, 142:5–19, 143:8–10 (emphasis added).

Moreover, specific to Petitioner's Ground 4, Mr. Gross further testified as follows:

> Q. Would coating a surface of the foam block in Ohta with a PCM material, as taught by Crawford, result in a method of claim 2 of the '301 patent, as applied to Ohta?
>
> A. It could, assuming that the Crawford invention was relevant to the foam technology at the time line.
>
> Q. And would your answer be the same with respect to claim 1?
>
> A. Yes.

Id. at 209:25–210:6. Mr. Gross also testified on cross-examination that there was nothing preventing those of skill in the art from using Crawford's PCM application process on Ohta's foam block. *Id.* at 206:1–3.

We find that, considering the entire record and Petitioner's assertions in the Petition, Petitioner asserts a reason, with rational underpinning, why the ordinarily skilled artisan would have combined the teachings of Ohta and Crawford with a reasonable expectation of success. Further, Petitioner has accounted for the teaching of all claim elements by the Ohta-Crawford combination. Again, the facts above leave little room to question whether the claims would have been obvious over Ohta and Crawford, as asserted under Petitioner's Ground 4.

2. Patent Owner's Positions

Similar to Patent Owner's arguments over Petitioner's other grounds, Patent Owner argues that the ordinarily skilled artisan would have had no motivation to combine Ohta and Crawford. Resp. 43–45. Patent Owner argues that Crawford's PCM application process is only for "open cell" memory foam, which assumedly already has strong air flow properties, and, thus, that adding holes to such a foam would have been unnecessary. *Id.* at 43–44 (citing Ex. 2001 ¶¶ 160–164). Patent Owner also argues that Ohta does not disclose cracking foam in relation to PCM, does disclose forming its pillows in a mold (which would, maybe, create an outer crust), and does not disclose open cells. *Id.* Finally, Patent Owner argues that it is unclear whether Crawford's foam would be amenable to hole-punching even after curing the PCM, and the liquid gel of Crawford may clog Ohta's hole-punching apparatus. *Id.* at 44–45 (citing Ex. 2001 ¶¶ 170–172).

These arguments are not persuasive.

First, we disagree with Patent Owner's contention that Crawford's disclosed application of PCM is limited to only open-celled foam because, as discussed above, Crawford discloses using open-celled and partially open-celled foams, reticulated foam, high-resiliency foam, and combinations thereof. Ex. 1011 ¶¶ 8, 11. Thus, this argument is without sufficient merit.

Further, Petitioner's proposed combination of Ohta's and Crawford's teachings is simply to manufacture a pillow as taught by Ohta, including cracking, and a pre-compressing and hole-punching/compressing step, with the addition of applying PCM to that pillow as suggested by Crawford. Pet. 73–76. We find the record supports that such a modification to Ohta's process would not require more than ordinary skill in the art and would be predictably accomplished by the ordinarily skilled artisan. Ex. 1006 ¶¶ 106, 109; Ex. 1075 ¶¶ 131–134.

Patent Owner's argument again supposes ordinary stupidity rather than ordinary skill in those endeavoring in the relevant field and, in analyzing obviousness over Ohta and Crawford here, we "take account of the inferences and creative steps that a person of ordinary skill in the art would employ" because "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421; *Sovish*, 769 F.2d at 743. We agree with Petitioner's assertion that the ordinarily skilled artisan would have been able to, and would have, added a PCM application step as taught and suggested by Crawford to Ohta's manufacturing process to further mitigate the oppressive, muggy feeling some pillow users experience.

3. Summary

We find that Petitioner has persuasively mapped every limitation/step of the claims to the disclosures of Ohta and Crawford, identified a reason with rational underpinning why the ordinarily skilled artisan would have combined the teachings of the references, and identified that there would have been a reasonable expectation of success. No evidence or argument presented by Patent Owner persuades us otherwise. Based on a preponderance of the evidence, Petitioner has shown under Ground 4 that the '301 patent's claims 1 and 2 would have been obvious over Ohta and Crawford and are, thus, unpatentable.

III. PARTIES' MOTIONS TO EXCLUDE

As noted above, each party filed a respective motion to exclude the other's evidence, and each party responded with a respective opposition and then a reply. Pet. Mot.; PO Mot.; Pet Opp.; PO Opp.; PO Reply; Pet. Reply.

Petitioner moves to exclude Patent Owner's Exhibit 2013 (the Declaration of Jeff Quinn), Exhibit 2015 (Mr. Quinn's presentation on secondary considerations), Exhibit 2016 (market survey summary of results data), and Exhibit 2017 (Element Materials Technology test results) under Federal Rule of Evidence ("FRE" or "Fed. R. Evid.") 702.[14] Pet. Mot.

Petitioner's Motion is premised on the contention that Mr. Quinn, proffered by Patent Owner as an expert, whose declaration testimony is cited by Patent Owner to support its positions on non-obviousness, is not himself

[14] Petitioner also moves to exclude Exhibits 2022, 2041, and 2043–2045; however, these exhibits have been stricken from the record. Paper 48. Thus, the portion of Petitioner's Motion directed to these Exhibits is moot.

a person of ordinary skill in the art. We have discussed the level of ordinary skill in the art above (*see supra* Section II.B) and find that Mr. Quinn qualifies as such a person, based on the evidence of record. *See* Ex. 2013 ¶¶ 2–3, 8–12, 16; Ex. 2014 (Quinn CV). As to the materials Mr. Quinn considered in forming his conclusions or opinions expressed in his direct testimony, whether or not such testimony is credible or deserving of significant weight, Federal Rule of Evidence 703 provides wide latitude as to the materials an expert may consider in forming such conclusions and opinions, and "[i]f experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted." There is no jury in Board proceedings and, therefore, we need not be concerned with the potential prejudicial effects of Patent Owner's evidence. Moreover, we can determine the proper weight that should be given any such evidence.

Patent Owner moves to exclude Petitioner's Exhibit 1031 (US Patent 9,538,855 to Mr. Gross), Exhibit 1037 (hand drawing by Mr. Gross), Exhibit 1047 (2022 article by David Perry), Exhibit 1050 (2024 article by Fortune), Exhibit 1057 (Brooklyn Bedding product webpage), Exhibit 1058 (Kickstarter webpage for Fohm product), Exhibit 1059 (Kickstarter webpage for shipping of Fohm product), Exhibit 1075 (Second Declaration of Dr. Brienza), Exhibit 1076 (Declaration of Mr. Shiroff), Exhibit 1079 (picture/website of a Boers Technik drilling machine), Exhibit 1080 (screenshot/video of a Boers Technik drilling machine), Exhibit 1081 (website of a Boers Technik drilling machine), Exhibit 1083 (video/screenshot regarding a Fohm memory foam pillow), Exhibit 1084 (video/screenshot regarding a Fohm memory foam pillow), and Exhibit 1086

(email re "US/UP/Foam"), under 37 C.F.R. § 42.65 and Fed. R. Evid. 106, 602, 702/703, 801–803, 901, 1002, and 1003. PO Mot.

Some of the evidence Patent Owner seeks to exclude has not been and need not be relied upon in rendering our Final Decision in this proceeding.[15] Thus, to that extent, Patent Owner's Motion is moot.

For other evidence Patent Owner seeks to exclude, we find it, like those materials addressed in Petitioner's Motion, to be materials considered by Petitioner's expert witnesses in forming their conclusions and opinions and, therefore, admissible here pursuant to Fed. R. Evid 703. As noted, there is no jury to be potentially prejudiced in this proceeding and we can determine the weight to give any such evidence.

The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence. *See* 37 C.F.R. §§ 42.20(c), 42.62(a) (2023). As noted, in considering the parties' motions, "[w]here, as here, the decision is by an administrative agency, rather than a jury, there is a diminished concern that [ ] exhibits [will] be prejudicial." *Eli Lilly and Co., v. Teva Pharms. Int'l GMBH*, IPR2018-01710, Paper 69 at 161 (PTAB Mar. 31, 2020) (citing *Corning Inc. v. DSM IP Assets B.V.*, IPR2013-00053, Paper 66 at 19 (PTAB May 1, 2014)). The Board, in *inter partes* review and post-grant review proceedings, acts as both the gatekeeper of evidence and as the weigher of evidence. Similar to a

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[15] Exhibits 1031, 1037, 1047, 1050, 1057, 1058, 1059, 1079, 1080, 1081, 1083, 1084, and 1084 fall into this category of exhibits that have not and need not have been relied upon in rendering this Final Decision (on patentability). *See generally supra* Decision.

district court in a bench trial, the Board, sitting as a non-jury tribunal with administrative expertise, is well positioned to determine and assign appropriate weight to evidence presented, including giving it no weight. *See, e.g.*, *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941).

Moreover, in *inter partes* review proceedings, "there is a strong public policy for making all information filed in an administrative proceeding available to the public." *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00010, 40 (PTAB Feb. 24, 2014) (Paper 59). Rather than excluding evidence that is allegedly hearsay, confusing, misleading, untimely, and/or irrelevant, we will simply not rely on it or give it little or no probative weight, *as appropriate*, in our analysis. "In an *inter partes* review, we regard it as the better course to have a complete record of the evidence to facilitate public access, as well as appellate review." *Sony Computer Entm't Am. LLC v. Game Controller Tech. LLC*, IPR2013-00634, slip op. at 31 (PTAB Apr. 14, 2015) (Paper 32); *see also Gnosis S.p.A. v. S. Alabama Med. Sci. Found.*, IPR2013-00118, 43 (PTAB June 20, 2014) (Paper 64) (citing *Donnelly*, 123 F.2d at 224 ("If the record on review contains not only all evidence which was clearly admissible, but also all evidence of doubtful admissibility, the court which is called upon to review the case can usually make an end of it, whereas if evidence was excluded which that court regards as having been admissible, a new trial or rehearing cannot be avoided.")).

Thus, in this *inter partes* review proceeding, we find the best course is to have a complete record of the evidence to facilitate public access as well

as appellate review. We have considered the parties' Motions, the related briefing and arguments and, for the reasons above, we *deny* each Motion.

IV. CONCLUSION[16]

On the record before us, Petitioner demonstrates by a preponderance of the evidence that claims 1 and 2 of the '301 patent would have been obvious over the asserted prior art, under each asserted ground. Accordingly, claims 1 and 2 of the '301 patent are unpatentable under 35 U.S.C. § 103.

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

Our final decision is summarized as follows:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 2	103	Lievestro, Schneider	1, 2	
1, 2	103	Crawford, Lievestro	1, 2	
1, 2	103	Ohta, Schneider	1, 2	
1, 2	103	Ohta, Crawford	1, 2	
Overall Outcome			1, 2	

ORDER

Accordingly, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314, per *inter partes* review of claims 1 and 2 of U.S. Patent 10,842,301 B2, they are unpatentable;

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

FURTHER ORDERED that each party's Motion to Exclude is *denied*.

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