

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PELICAN BIOTHERMAL, LLC,
Petitioner,

v.

VA-Q-TEC AG,
Patent Owner.

PGR2021-00085
Patent 10,766,685 B2

Before BARRY L. GROSSMAN, ROBERT A. POLLOCK, and RYAN H.
FLAX, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

FLAX, *Administrative Patent Judge*, Concurs in the Result

POLLOCK, *Administrative Patent Judge*, Concurs in the Result

JUDGMENT

Final Written Decision

Granting Patent Owner's Motion to Amend

Determining Some Challenged Claims

Unpatentable

Denying Patent Owner's Motion to Exclude

35 U.S.C. § 328(a)

I. INTRODUCTION

A. *Background and Summary*

Pelican Biothermal, LLC (“Petitioner”) filed a Petition for post-grant review of claims 1, 2, 4, 7–12, 19–28, 36–38, and 43–48 of U.S. Patent No. 10,766,685 B2 (Ex. 1001, “the ’685 patent”). Paper 1 (“Pet.” or “Petition”). VA-Q-TEC AG (“Patent Owner”) filed a Preliminary Response. Paper 5 (“Prelim. Resp.”). We instituted *inter partes* review of all challenged claims. Paper 9 (“Dec. Inst.”).

Patent Owner did *not* file a response to our Decision to Institute. After institution, however, Patent Owner filed a Non-Contingent Motion to Amend.¹ Paper 13 (“Motion to Amend” or “Mot. Amend.”). Thus, the focus of this proceeding changed from consideration of patentability of the original patented claims to consideration of patentability of the proposed amended claims. Patent Owner also requested preliminary guidance on the Motion to Amend. Mot. Amend. 1 (“Patent Owner requests preliminary guidance from the Board on this non-contingent Motion to Amend” (citing “Notice Regarding a New Pilot Program, 84 Fed. Reg. 9497 (Mar. 15, 2019))).

Petitioner opposed the Motion to Amend. Paper 16 (“Pet. Opp. MTA”).

¹ A non-contingent motion to amend is one in which “the Board provides a final decision on the patentability of substitute claims in place of determining the patentability of corresponding original claims.” Notice Regarding a New Pilot Program Concerning Motion to Amend Practice and Procedures in Trial Proceedings Under the America Invents Act Before the Patent Trial and Appeal Board, 84 Fed. Reg. 9,497 (Mar. 15, 2019) (“Notice Regarding Pilot Program”).

We provided Preliminary Guidance on the Motion to Amend. Paper 19 (“Prelim. Guid.”).

Patent Owner filed a combined Reply to our Preliminary Guidance and Reply to Petitioner’s opposition to the Motion to Amend. Paper 22 (“PO MTA Reply”). Petitioner filed a combined Sur-reply to Patent Owner’s combined Motion to Amend Reply. Paper 29 (“Pet. MTA Sur-reply”).

Patent Owner also filed a Motion to Exclude “the NanoCool 98830-type product as prior art, and further to exclude arguments made by Petitioner and testimony provided by Petitioner relying on the NanoCool 98830-type product being prior art.” Paper 24 (“Motion to Exclude” or “PO Mot. Excl.”). Petitioner filed a Response opposing the Motion to Exclude. Paper 26 (“Mot. Excl. Pet. Resp.”). Patent Owner filed a Reply. Paper 28 (“Mot. Excl. PO Reply”).

A hearing was held on September 19, 2022. Paper 31 (“Transcript” or “Tr.”).

The Chief Administrative Patent Judge determined that good cause existed to extend the one-year period for issuing a Final Written Decision. Paper 32. Accordingly, the time to administer the present proceeding has been extended by up to six months. Paper 33.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a).

We grant the non-contingent Motion to Amend. As a result of amending or cancelling all the originally challenged claims, no originally challenged claim remains. The claims remaining in this proceeding are claims 49, 50, 54–56, 58, 61–65, 67, and 68. *See* PO MTA Reply 36–59

(Substitute Appendix A). Claims 49, 61, 64, 65, and 67 are independent claims.

We determine that Petitioner has established by a preponderance of evidence that claim 64 in Patent Owner's non-contingent Motion to Amend, as modified by Patent Owner's Reply, is not patentable.

We also determine that Petitioner has failed to establish by a preponderance of the evidence that claims 49, 50, 54–56, 58, 61–63, 65, 67, 68 in Patent Owner's non-contingent Motion to Amend, as modified by Patent Owner's Reply, are unpatentable.

We deny the Motion to Exclude because such a motion is not the appropriate procedure for challenging the prior art status of an asserted reference, and also because it is moot based on the grounds asserted against the amended claims.

B. Real Parties-in-Interest

Petitioner identifies itself as the real party-in-interest. Pet. 1. Patent Owner also identifies itself as the real party-in-interest. Paper 4, 1.

C. Related Matters

The parties initially informed us that there are no known related matters. Pet. 1; Paper 4, 1. Patent Owner subsequently informed us it filed a reissue application for the '685 patent. Paper 27. The reissue application was filed on September 7, 2022, and assigned Application No. 17/939,536. *Id.* It is awaiting examination.²

² All reissue applications filed are open to inspection by the general public. 37 C.F.R. § 1.11(b). In the reissue application, Applicant states, the “claim amendments for this reissue application reflect changes and additions made to the current form and numbering of the pending claims in the PGR proceedings.” Ex. 3004. The reissue Applicant also states, “[i]t is expected

D. The '685 Patent

The '685 patent issued September 8, 2020, and claims priority to PCT/EP2015/002068, filed October 20, 2015, and a foreign patent application filed October 27, 2014. Ex. 1001, codes (22), (30), (45), (86).³

The '685 patent is titled “Box-Type Transport Container.” Ex. 1001, code (54). In general, the disclosed container is an insulated box for transporting temperature sensitive materials. Ex. 1001, 1:24–29. These temperature sensitive materials may range from pharmaceuticals, donated organs, and blood products, to works of art. *Id.*

The disclosed and claimed container includes two basic parts: an inner part formed by insulated inserts (vacuum insulated panels or “VIPs”); and an outer part composed of corrugated paperboard, or similar material. *Id.* at Abstract, 1:18–19, 2:45–54, 4:1–25.

The '685 patent acknowledges that box-type transport containers suitable for transporting temperature-sensitive goods are known in the prior art. *Id.* at 1:23–42. The patent further acknowledges that “[v]acuum insulation

that prosecution of this reissue application will be suspended pending resolution of the co-pending PGR proceedings and issuance of the certificate.” *Id.*

³ Petitioner contends that the '685 patent is eligible for post-grant review (Pet. 1), and Patent Owner does not oppose this contention. Post-grant review (“PGR”) is available for a patent that issues from an application that contains (or contained at any time) a claim having an effective filing date on or after March 16, 2013. *See Leahy-Smith America Invents Act*, Pub L. No. 112-29 (“AIA”) §§ 3(n)(1), 6(f)(2)(A), 125 Stat. 284, 293, 311 (2011); 35 U.S.C. § 100(i). Based on this record, the '685 patent is PGR-eligible.

panels are known per se and are described in the prior art.” Ex. 1001, 1:49–51. As the patent explains:

In the case of the known box-type transport container . . . the board-like vacuum insulation panels of the side walls are of prismatic design with smooth edges and are each arranged, circumferentially, in the box-type outer container so as to abut at one edge and to project freely at the other edge. It is thereby possible, in the case of a cubic outer container, to produce all the board-like vacuum insulation panels provided on the side walls with the same dimensions, that is to say use in fact just one size of vacuum insulation panel.

Id. at 1:64–2:8. The patent states that, in the prior art, other arrangements for the VIPs on the sidewalls also are known, such as VIPs “with edges mitered at 45° and arranged so as to form an abutting miter joint.” *Id.* at 2:9–13.

In summarizing the invention, the ’685 patent acknowledges that “[i]n principle, the arrangement of the vacuum insulation panels is the same as that which is already known in the prior art.” *Id.* at 4:1–3. “[H]owever,” the patent explains, “it has been recognized that there is significant heat exchange between the interior of the transport container . . . and the external surrounding atmosphere . . . via gaps between the vacuum insulation panels.” *Id.* at 4:3–7. According to the patent, if the VIPs “can be pressed against one another efficiently, so that the gaps become as small as possible or disappear entirely, these thermal bridges are very largely avoided.” *Id.* at 4:8–12. And, the patent states, “[a]s has been recognized according to the invention, the [outer corrugated paperboard] box-type container itself cannot adequately perform this pressing of the vacuum insulation panels against one another.” *Id.* at 4:12–15.

To address the “gap” and “thermal bridge” issue, and to press the vacuum insulation panels against one another, the ’685 patent explains:

According to the invention, an independent coherent frame-type insert is created from the vacuum insulation panels associated with the side walls by clamping these vacuum insulation panels together by means of at least one tensioning means, preferably by means of two encircling tensioning means arranged spaced apart. By means of the tensioning means, the vacuum insulation panels are pressed against one another at the edges, the gaps then become as small as possible and the heat transfer at these bridges is minimized.

Ex. 1001, 4:15–25. Moreover, the patent states, “[t]o ensure that one or more tensioning means do not cut into the sensitive outer layer of the vacuum insulation panels consisting of high barrier foil,” corners of the VIPs “are protected by means of corner protection elements, e.g. angled rails made of paperboard or plastic (metal is also possible in the design).” *Id.* at 4:30–36.

The '685 patent's figures illustrate embodiments of the box-type container, the insert formed from VIPs, and other features discussed above. Figure 1, reproduced below, is an example of an outer box-type container.

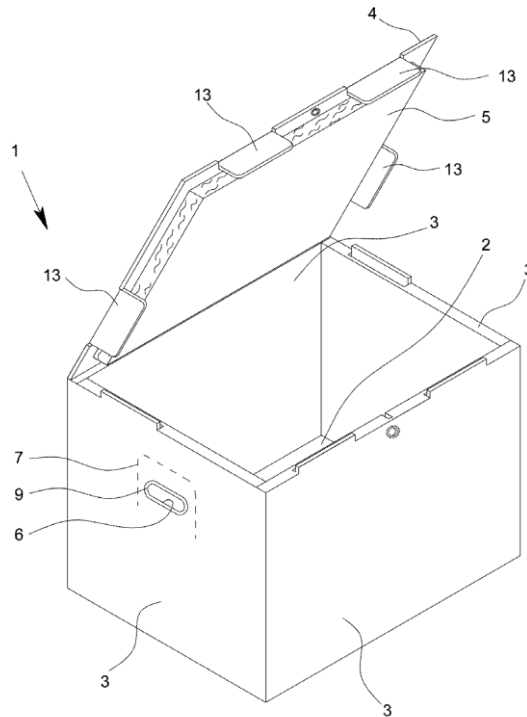


Fig. 1

Figure 1 in the '685 patent is a perspective view of a box-type outer container (1), opened and without contents within the box. Ex. 1001, 6:40–42. As shown, the container has a bottom (2), four side walls (3), and a cover (4) pivotally attached to a side wall. *Id.* at 7:3–13. The container may include other features, such as a VIP (5) on the cover's inner surface, carrying openings (6) in the side walls, and lateral guide tabs (13) that enter guides on the sidewalls when the cover is closed. *Id.* at 7:14–36, 10:5.

Figure 2a in the '685 patent, annotated by Patent Owner's Declarant Dr. Slocum with labels identifying illustrated elements (*see* Ex. 2011 ¶ 23),

is reproduced below and depicts a coherent frame-type insert, formed from multiple VIP panels, for placing in the outer container. Ex. 1001, Fig. 2a.

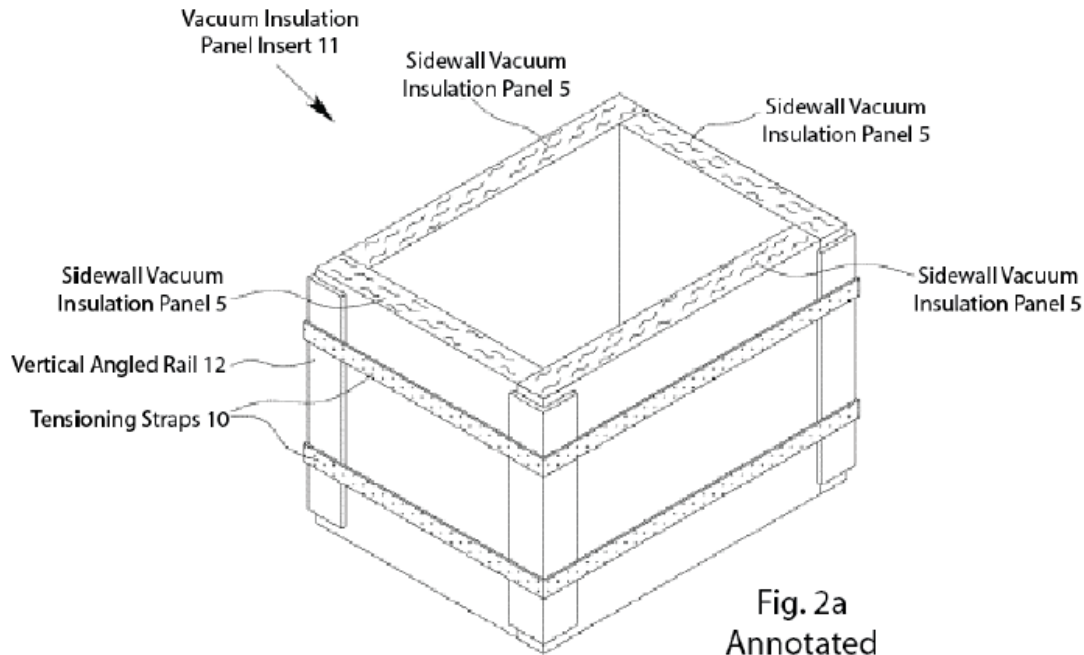


Figure 2a in the '685 patent, annotated by Dr. Slocum with labels identifying illustrated elements (*see* Ex. 2011 ¶ 23), is a perspective view of the insert (11), and shows four board-like VIPs forming the sidewalls (5) in a cuboidal design, where each panel abuts an adjacent panel along one edge and projects freely along the other edge. Ex. 1001, 7:58–62. As shown, this embodiment also includes tensioning straps (10) around the periphery of the insert, and corner protection elements (12) (here depicted as “rails of angled configuration”) disposed between the VIPs and the straps. *Id.* at 8:49–60. The '685 patent explains that straps, cables, shrink film, and other materials can be used to hold the VIP panels together under tension and that such materials are considered “tensioning means.” *See, e.g., id.* at 4:44–56.

Although not shown in Fig. 2a, it is also possible for the insert to include a bottom VIP panel. *See, e.g., id.* at Fig. 3.

Figure 5, annotated by Patent Owner's Declarant, Dr. Slocum (*see* Ex. 2011 ¶ 21) and reproduced below, illustrates the combination of a box-type outer container of Figure 1 and an insert as shown in Figure 2a.

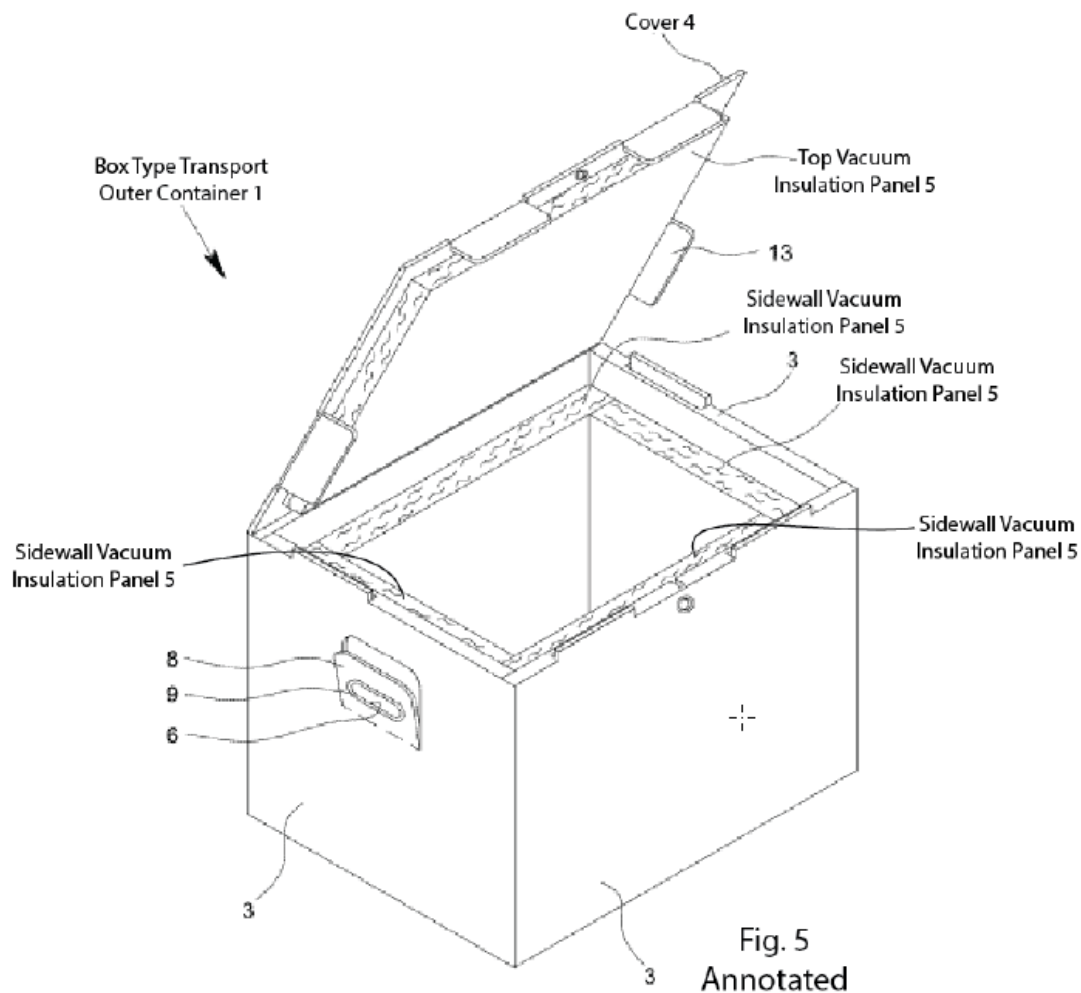


Figure 5 in the '685 patent, annotated by Dr. Slocum with labels identifying illustrated elements (*see* Ex. 2011 ¶ 21), is a perspective view that depicts the insert now placed in the interior of box-type container (1). Ex. 1001, 6:53–56.

E. Illustrative Claim

Before choosing an illustrative claim, we first summarize the claims that remain at issue in this proceeding.

The Petition challenged “[c]laims 1–2, 4, 7–12, 14, 19–28, 36–38, and 43–48. Pet. 2. None of these original claims remain in this proceeding. *See* PO MTA Reply 36–59 (Substitute Appendix A); *see also*, Ex. 3005 (Summary of claims remaining and asserted grounds).

In its Non-Contingent Motion to Amend (Paper 13), Patent Owner either (1) cancels certain original challenged claims and proposes new substitute claims, or (2) cancels certain original challenged claims without presenting corresponding substitute claims. *See* Mot. Amend. 3–4 (“Patent Owner asks the Board to cancel original claims 1–17, 19–28, 36–38, and 43–48. . . . Claims 4, 7, 14, 16–17, 22–28, 43–45, and 48 are cancelled without presenting corresponding substitute claims”); *see also* Mot. Amend., App. A (listing the status and correspondence between all original and substitute claims); Ex. 3005.

Subsequently, in Patent Owner’s Reply to the Board’s Preliminary Guidance (Paper 19) and to Petitioner’s opposition to the Motion to Amend, Patent Owner withdraws its requests to: (i) cancel non-challenged claims 3, 5, 6, 13, and 15–17; and (ii) add corresponding substitute claims 51–53, 59 and 60. PO MTA Reply 1. Patent Owner also cancels instituted claims 11 and 38, and withdraws corresponding substitute claims 57 and 66. *Id.* at 1, 36–59 (Substitute Appendix A, Listing of Claims).⁴ The result of all the

⁴ The Non-Contingent Motion to Amend (Paper 13) is thirty-five pages, numbered 1–35. Patent Owner numbered the pages of *original* Appendix A, filed as an appendix to Paper 13, with the consecutive page numbers 36–61.

amending and cancelling of claims is summarized in Board Exhibit 3005, which provides a summary and concordance of the status of the original, unchallenged, cancelled, and amended claims. Ex. 3005 also includes the grounds asserted against the claims remaining in this proceeding. Ex. 3005, 3–4.

As shown in Exhibit 3005, the claims remaining in this proceeding are claims 49, 50, 54–56, 58, 61–65, 67, and 68. *Id.*; *see also* PO MTA Reply 36–59 (Substitute Appendix A). Claims 49, 61, 64, 65, and 67 are independent claims.

Proposed substitute independent claim 49, replacing cancelled original independent challenged claim 1, is illustrative of the claimed subject matter and is reproduced below, with additions to original claim 1 underlined, and deletions from original claim 1 having a strikethrough.

49. A box-type transport container comprising:

a box-type outer container having a bottom, four side walls, and a cover, wherein the cover is pivotally attached to one of the side walls; and

Patent Owner’s Motion to Amend Reply (Paper 22) is thirteen pages, numbered 1–13. It includes a “Substitute Appendix A” to replace the “Appendix A” filed with Patent Owner’s Non-Contingent Motion to Amend (Paper 13). Patent Owner, however, numbered the pages of the *Substitute Appendix A* with page numbers 36–59, similar to the original Appendix A. Neither the *original* Appendix A nor the *Substitute Appendix A* exist as an independent filed document or exhibit in this proceeding. Thus, Patent Owner’s Motion to Amend Reply (Paper 22), containing the Substitute Appendix, has page numbers 1–13 for the Reply itself, and continues after page 13 with page numbers 36–59 for the Substitute Appendix A. We will cite to the actual page numbers appearing at the bottom of each page, calling attention to the fact that the Reply (Paper 22) includes pages 1–13 and 36–59. The Reply does *not* include any pages numbered 14–35.

sidewall board-like vacuum insulation panels and a bottom board-like vacuum insulation panel disposed in the outer container and covering surfaces of the side walls and the bottom of the outer container, and a top board-like top vacuum insulation panel;

wherein the sidewall vacuum insulation panels have a design that is selected from a group consisting of:

~~a prismatic design having smooth edges and being arranged in pairs opposite one another and having edges abutting or edges projecting freely;~~

a prismatic design having smooth edges and faces and ~~being~~ are arranged circumferentially, so as to abut at one vertical edge of one sidewall vacuum insulation panel to a face of another sidewall vacuum insulation panel and to project freely at an opposite vertical edge, ~~and~~

~~a prismatic design having edges mitered at 45 degrees and being arranged with respect to each other so as to form an abutting miter joint;~~

wherein the sidewall vacuum insulation panels are fixed in position relative to one another by at least one horizontally extending tensioning means strap and corner protection elements and can thus be handled as a coherent frame-type insert with a top opening, the transport container further comprising wherein the corner protection elements comprise angled rails that extend vertically over vertical corners of the coherent frame-type insert and extend laterally beyond the respective abutting vertical edge, and said angled rails are disposed between the vacuum insulation panels and the at least one tensioning strap means.

Mot. Amend 5–6, 48–49. For convenience, a clean version of this claim, implementing Patent Owner’s amendments, is set forth below:

49. A box-type transport container comprising:

a box-type outer container having a bottom, four side walls, and a cover, wherein the cover is pivotally attached to one of the side walls; and

sidewall board-like vacuum insulation panels and a bottom board-like vacuum insulation panel disposed in the outer container and covering surfaces of the side walls and the bottom of the outer container, and a top board-like top vacuum insulation panel;

wherein the sidewall vacuum insulation panels have a prismatic design having smooth edges and faces and are arranged circumferentially, so as to abut at one vertical edge of one sidewall vacuum insulation panel to a face of another sidewall vacuum insulation panel and to project freely at an opposite vertical edge;

wherein the sidewall vacuum insulation panels are fixed in position relative to one another by at least one horizontally extending tensioning strap and corner protection elements and can thus be handled as a coherent frame-type insert with a top opening, wherein the corner protection elements comprise angled rails that extend vertically over vertical corners of the coherent frame-type insert and extend laterally beyond the respective abutting vertical edge, and said angled rails are disposed between the vacuum insulation panels and the at least one tensioning strap.

Independent claim 49 is directed to a “box-type transport container,” which includes vacuum insulation panels. *See, e.g.*, Ex. 1001, Fig. 5.

Independent claim 61 is similar to claim 49 but is directed to a “coherent frame-type insert for a box-type outer container,” without reciting structure of the outer container. *See, e.g., id.*, Fig. 2a.

Independent claims 64 and 65, like claim 49, each are directed to a “box-type transport container,” but each also states that the vacuum insulation panels may be arranged in any one of three different “prismatic”⁵

⁵ The word “prismatic” is used extensively in the ’685 patent. It is an adjective that means “relating to, resembling, or constituting a prism.”

designs. This type of alternative claim format is generally known as a “Markush” claim.⁶ A Markush claim “lists alternative species or elements that can be selected as part of the claimed invention.” *Bracco Diagnostics Inc. v. Maia Pharms., Inc.*, 839 F. App’x 479, 482 (Fed. Cir. 2020) (citing *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 (Fed. Cir. 2016) (citing *Abbott Labs. v. Baxter Pharm. Prods., Inc.*, 334 F.3d 1274, 1280 (Fed. Cir. 2003))); *see also Shire Dev., LLC v. Watson Pharms., Inc.*, 848 F.3d 981, 984 (Fed. Cir. 2017) (also quoting *Multilayer Stretch*). Claim 65 also adds “lateral guide tabs” on the cover, which are not included in claim 64.

Independent claim 67, like claim 61, also is directed to a “coherent frame-type insert for a box-type outer container.” Claim 67, however, uses a Markush claim format to provide two alternative options for the prismatic arrangement of the vacuum insulation panels.

F. Prior Art and Asserted Grounds

Petitioner initially contended that the challenged *original* claims of the ’385 patent are unpatentable based on the twelve grounds identified in the chart below.⁷ These *original* claims are no longer in the case, based on

“prismatic,” Merriam-Webster.com Dictionary, <https://www.merriam-webster.com/dictionary/prismatic>. Accessed 6/15/2023.

⁶ Claims that set forth a list of alternatives from which a selection is to be made are typically referred to as Markush claims, after the appellant in *Ex parte Markush*, 1925 Dec. Comm’r Pat. 126, 127 (1924).

⁷ The Petition refers to “seven” grounds. *See, e.g.*, Pet. iii–vi (Table of Contents, identifying seven grounds). Many of the asserted seven grounds, however, are stated in the alternative. *See, e.g., id.* at iv (identifying “Ground 3” as “Smith in View of Either: Wood or Goncharko/Combs.”)

the non-contingent Motion to Amend. We provide the following chart of the grounds asserted initially against the *original* claims for context and because, as we discuss below, many of these same references and grounds are asserted against the *amended* proposed substitute claims.

Original Claim(s) Initially Challenged	35 U.S.C. §⁸	Reference(s)/Basis
2, 20–23, 43–45	112(b)	Indefinite
1, 2, 4, 7–12, 14, 19–28, 36–38, 43–48	102(a)	NanoCoolProducts ⁹
1, 2, 4, 7, 8, 14, 19, 20, 24, 25	103	Smith, ¹⁰ Wood ¹¹
1, 2, 4, 7, 8, 14, 19, 20, 24, 25	103	Smith, Goncharko, ¹² Combs ¹³
12, 38	103	Smith, Wood, Frysinger ¹⁴

Thus, in fact, the asserted “seven” grounds, are twelve separate and distinct grounds of unpatentability.

⁸ The AIA took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding has an effective filing date (Oct. 27, 2014, *see* Ex. 1001, code (30)) *after* March 16, 2013, we refer to the AIA version of the statute.

⁹ Petitioner argues that multiple products were “on sale” under § 102 before the earliest possible priority date of the ’685 patent (October 14, 2014). Pet. 3, 9–20; Ex. 1001, code (30). These products, which are discussed in more detail below, are referred to collectively herein as the “NanoCoolProducts.”

¹⁰ Smith et al., US 6,701,724 B2, issued Mar. 9, 2004 (Ex. 1011, “Smith”).

¹¹ Wood et al., WO 2013/144621 A2, publ. Oct. 3, 2013 (Ex. 1013, “Wood”).

¹² Goncharko, et al., US2008/0006628 A1, publ. Jan. 10, 2008 (Ex. 1012, “Goncharko”).

¹³ Combs et al., US 4,576,017, issued Mar. 18, 1986 (Ex. 1014, “Combs”).

¹⁴ Frysinger et al., US 6,244,458 B1, issued June 12, 2001 (Ex. 1018, “Frysinger”).

Original Claim(s) Initially Challenged	35 U.S.C. §⁸	Reference(s)/Basis
12, 38	103	Smith, Goncharko, Combs, Frysinger
1, 2, 4, 7, 8, 14, 19, 20, 24, 25	103	Goncharko, Wood
1, 2, 4, 7, 8, 14, 19, 20, 24, 25	103	Goncharko, Combs
10, 26, 27, 36, 46, 47	103	Goncharko, Wood, Sawaki ¹⁵
10, 26, 27, 36, 46, 47	103	Goncharko, Combs, Sawaki
12, 38	103	Goncharko, Wood, Frysinger
12, 38	103	Goncharko, Combs, Frysinger

Petitioner consolidates these twelve bases into seven grounds, generally organized as follows: Ground 1 (indefiniteness); Ground 2 (anticipation by NanoCool Products); Grounds 3–4 (obviousness based on Smith as the lead reference); Grounds 5–7 (obviousness based on Goncharko as the lead reference). *See* Pet. iii–vi (Table of Contents).

We also provide a chart below of the prior art and asserted grounds for the proposed *amended* claims remaining in this proceeding.¹⁶

¹⁵ Sawaki, US 8,348,087 B2, issued Jan. 8, 2013 (Ex. 1016, “Sawaki”).

¹⁶ In the chart of amended claims, we have eliminated grounds asserted against proposed substitute amended claims that subsequently were withdrawn by Patent Owner’s Motion to Amend Reply. Also, we note Petitioner again lists several of the grounds with various alternatives.

Proposed Amended Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis¹⁷
50, 54, 62–64 ¹⁸	112(a)	Written description and enablement
64	102	NanoCool 98596
64	103	NanoCool 98596, Goncharko/Sawaki, Frysinger
64	103	NanoCool 98596, Goncharko/Sawaki, Roderick ¹⁹
65 ²⁰	103	NanoCool 98596, Frysinger or Roderick and further in view either Bannister, ²¹ Weimer, ²² Owens, ²³ or Hamilton ²⁴

¹⁷ See Table of Contents from Petitioner’s Opposition to Patent Owner’s Motion to Amend, Paper 16, ii–iii.

¹⁸ In Petitioner’s opposition to the Motion to Amend, this ground also was asserted against claims 51, 57, and 60. Pet. Opp. MTA 1. Claims 51, 57, and 60, however, were withdrawn in Patent Owner’s Motion to Amend Reply. PO MTA Reply 1.

¹⁹ Roderick et al, US 2009/0001086 A1, publ. Jan. 1, 2009 (Ex. 1065, “Roderick”).

²⁰ There are eight separate and distinct grounds asserted against this claim. To avoid unnecessary duplication, we do not list all grounds separately.

²¹ Bannister, US 4,911,355, issued Mar. 27, 1990 (Ex. 1066, “Bannister”).

²² Weimer, US 4,770,339, issued Sep. 3, 1988 (Ex. 1067, “Weimer”).

²³ Owens, US 3,973,723, issued Aug. 10, 1976 (Ex. 1068, “Owens”).

²⁴ Hamilton, US 3,157,346 issued Nov. 17, 1964 (Ex. 1069 “Hamilton”).

Proposed Amended Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis ¹⁷
49, 50, 54–56, 58, 61–63, 67, 68	103	References cited in Grounds 2–7 of the Petition, in view of one or more of Morrison, ²⁵ Kruelle ²⁶ or Signode 1996 Catalog ²⁷ , and further in view of Mayer ²⁸

In support of its challenges, Petitioner relies on the declarations of Paul Harber (Ex. 1002), Charles Zumwalt (Ex. 1030), and Amy Martinez (Ex. 1031), among other evidence.

II. ANALYSIS

A. *Legal Standards for Patentability*

1. *Section 112(a)*

The written description and enablement requirements in 35 U.S.C. § 112(a) are separate and distinct requirements. *Ariad Pharm., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1341 (Fed. Cir. 2010) (*en banc*); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1562 (Fed. Cir. 1991) (reaffirming that the written description requirement is separate and distinct from the enablement requirement).

²⁵ Morrison et al, US 3,199,709, issued Aug. 10, 1965 (Ex. 1015, “Morrison”).

²⁶ Kruelle, US 7,383,952, issued Jun. 10, 2008 (“Kruelle”).

²⁷ “Signode 1996 Catalog” (Ex. 1019) (The name of this Exhibit was adopted by Petitioner. The exhibit is *not* dated, and consists of only two pages. Page 2 bears a copyright notice that states “©1996 SIGNODE AN ITW COMPANY SPD 1033-E REV. 10-10-03.”

²⁸ Mayer et al, US 7,950,246, issued 31, 2011 (Ex. 1070, “Mayer”)

To satisfy the written description requirement, the specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention at the time of filing. *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000) ("The purpose of [the written description requirement] is to ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification"). This "requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art." *Ariad*, 598 F.3d at 1351.

The enablement requirement refers to the requirement of 35 U.S.C. § 112(a) that the specification describe how to make and how to use the invention. The purpose of the enablement requirement is to ensure that the public is told how to carry out the invention, *i.e.*, to make and use it. *Amgen Inc. v. Sanofi*, 143 S. Ct. 1243, 1255 (2023) (referring to "the basic statutory requirement that a patent's specification describe the invention 'in such full, clear, concise, and exact terms as to enable any person skilled in the art' to 'make and use' the invention").

As summarized by the Supreme Court, 35 U.S.C. § 112(a) requires that

[i]f a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent's specification must enable a person skilled in the art to make and use the entire class. In other words, the specification must enable the full scope of the invention as defined by its claims. The more one claims, the more one must enable.

Id. at 1254.

To prove that a claim is invalid for lack of enablement, a challenger must show that a person of ordinary skill in the art would not be able to practice the claimed invention without “undue experimentation.” *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d 1180, 1188 (Fed. Cir. 2014) (quoting *In re Wands*, 858 F.2d 731, 736–37 (Fed. Cir. 1988)). “Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations.” *Amgen Inc. v. Sanofi, Aventisub LLC*, 987 F.3d 1080, 1084 (Fed. Cir. 2021), *aff’d sub nom. Amgen Inc. v. Sanofi*, 143 S. Ct. 1243 (2023) (quoting *Wands*, 858 F.2d at 737). Those factual considerations, which have come to be known as the “*Wands* factors,” are:

(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Id. Patents, however, “are not production documents, and nothing in the patent law requires that a patentee must disclose data on how to mass-produce the invented product.” *Christianson v. Colt Indus. Operating Corp.*, 822 F.2d 1544, 1562 (Fed. Cir. 1987).

2. Section 102

“The hallmark of anticipation is prior invention.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). As explained in *Net MoneyIN*,

unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited

in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.

Id. at 1371; *see also Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987) (“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”). “The identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

3. Section 103

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*; *see also Orexo AB v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1273 (Fed. Cir. 2018) (“The question is not whether the various references separately taught components of the ’330 Patent formulation, but whether the prior art suggested the selection and combination achieved by the ’330 inventors.”).

In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason *why* a person of skill in the art would have made the combination. *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017).

Moreover, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Litton Indus. Prods., Inc. v. Solid State*

Sys. Corp., 755 F.2d 158, 164 (Fed. Cir. 1985) (“It is elementary that the claimed invention must be considered as a whole in deciding the question of obviousness.”); *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983) (“[T]he question under 35 U.S.C. § 103 is not whether the differences *themselves* would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention *as a whole* would have been obvious.”).

As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

Applying these general principles, we consider the evidence and arguments of the parties.

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (citing *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (quoting *Env’t Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)). These factors are not exhaustive but merely are a guide to determining the level of

ordinary skill in the art. *Daiichi Sankyo*, 501 F.3d at 1256. In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355. “The patent’s purpose also can be informative.” *Best Med. Int’l*, 46 F.4th at 1353 (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1362–63 (Fed. Cir. 2006)).

Additionally, the Supreme Court informs us that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR*, 550 U.S. at 421.

With regard to the level of ordinary skill in the art, Petitioner asserts that a person of ordinary skill would have had “a bachelor’s degree or higher degree in biological, chemical or mechanical engineering, or related sciences, and at least *two* to five years of experience in designing and testing ISCs [insulated shipping containers] depending on education level.” Pet. 9 (emphasis added) (citing Ex. 1002 ¶¶ 23–24). Exhibit 1002 is the Declaration testimony of Mr. Paul Haber. Mr. Harber actually states a slightly different level of ordinary skill. Mr. Harber testifies:

The hypothetical POSITA would have: (i) at least a bachelor’s degree in biological, chemical or mechanical engineering, or related sciences, and have at least *three* to five years of experience in designing and testing ISCs [Insulated Shipping Containers]^[29]. Such a person may also have (ii) a higher level degree, such as a PhD and/or Master’s degree in engineering, or related sciences, and have at least two to three years of experience in designing and testing ISCs.

²⁹ See Ex. 1002 ¶ 23.

Ex. 1002 ¶ 24 (emphasis added). Mr. Harber also testifies that “[t]hese descriptions are approximate, and a higher level of education or specific skill might make up for less experience, and vice-versa.” *Id.*

Additionally, relying on Mr. Harber’s testimony, Petitioner asserts a person of ordinary skill

“would have familiarity with VIPs for use in [ISC’s] to improve thermal insulating performance, as well as general techniques for creating containers from VIPs, banding them together using strapping or the like, and preparing such systems for shipping such as, for example, placing them into outer boxes for additional protection, application of labels and shipping instructions, etc.

Pet. 9 (citing Ex. 1002 1002 ¶ 23).

Neither Petitioner nor Mr. Harber provide any analysis of the factors pertinent to a determination of the level of ordinary skill, identified above, to support their conclusory statements. We give Mr. Harber’s conclusory testimony minimal probative weight. 37 C.F.R. § 42.64(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Moreover, there is no persuasive evidence to which we have been directed of the need for specific education or experience in biological or chemical technologies related to the claimed containers and inserts.

Patent Owner states the “level of skill in the art applied by Patent Owner and its expert is similar to that previously articulated by the Board.” Mot. Amend 34 (citing Ex. 2002 ¶ 6). The reference to the level of skill “previously articulated by the Board” appears to be a reference to the Board’s statement of the level of skill in our Decision to Institute this proceeding. *See* Dec. Inst. 25 (stating “we adopt, for the purpose of this Decision, Petitioner’s proposed definition for the POSA’s skill level,” with

the minor modification of “deleting the qualifier ‘at least’” when referring to length of experience).

Exhibit 2002 cited by Patent Owner is the Declaration testimony of Fabian , one of the named inventors of the ’685 patent. Mr. Eschenbach testifies that Patent Owner “normally employ[s] engineers with a Bachelor's degree and engineers with the equivalent of an advanced Master's degree in the fields of mechanical engineering, physics, thermodynamics and heat transfer.” Ex. 2002 ¶ 6. He states his opinion that “[o]rdinary skill in this field would require a Bachelor's degree and two to three years of experience, or the Master’s equivalent.” *Id.*

We note that Patent Owner’s Declarant, Dr. Slocum, also provides Declaration testimony regarding the level of ordinary skill. *See* Ex. 2011 ¶¶ 41–43. Patent Owner, however, has neither cited this testimony or otherwise directed us to consider this testimony. We decline to consider this testimony. *See Fidelity National Information Services, Inc. v. DataTreasury Corp.*, IPR2014-00489, Paper 9, slip op. at 9–10 (PTAB Aug. 13, 2014) (“We, therefore, decline to consider information presented in a supporting declaration, but not discussed sufficiently in a petition; among other reasons, doing so would permit the use of declarations to circumvent the page limits that apply to petitions.”).

Based on the totality of the evidence before us, including the cited testimonial evidence and the prior art of record in this proceeding, and considering the scope of the claimed invention, we determine a person of ordinary skill would have a Bachelor’s degree in mechanical engineering, physics, or similar discipline involving thermodynamics and heat transfer, and two or three years of experience designing insulated containers. A

recipient of other academic degrees may qualify as a person of ordinary skill if they have taken coursework or have experience in a pertinent technology. Additional education, such as an advanced degree, could offset less work experience; additional work experience could offset less education or coursework.

C. Claim Construction

We construe each claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2021). Under this standard, claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (citations omitted)). We need only construe terms to the extent needed to resolve a controversy between the parties. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Relevant to the amended claims still remaining in this proceeding (claims 49, 50, 54–56, 58, 61–65, 67, and 68), neither Petitioner nor Patent Owner proposes any specific claim constructions. In the context of the issues presented by the parties, we agree; specific claim constructions are not required.

III. MOTION TO EXCLUDE

Before turning to the merits of this proceeding, we first consider Patent Owner’s Motion to Exclude Evidence.

With few exceptions, the Federal Rules of Evidence apply to *inter partes* proceedings. 37 CFR § 42.62. The moving party has the burden of proof to establish that it is entitled to the requested relief. 37 C.F.R. § 42.20(c), 42.62(a).

Patent Owner moves to exclude the NanoCool 98830-type products³⁰ as prior art, and further to exclude arguments made by Petitioner and testimony provided by Petitioner relying on the NanoCool 98830 being prior art. *See* PO Mot. Excl 1. Patent Owner asserts that Federal Rule of Evidence 402, which states that irrelevant evidence is inadmissible, should act to exclude the NanoCool 98830 evidence. PO Mot. Excl. Reply 1–2. We deny the motion because status as prior art is a substantive issue, not an evidentiary issue, and because the motion is moot.

A. Status as Prior Art Is a Substantive Issue, Not an Evidentiary Issue.

A motion to exclude is not an appropriate mechanism for challenging the sufficiency of evidence, such as whether a reference qualifies as prior art, or the proper weight that should be afforded an argument. *See Flir Systems, Inc. v. Leak Surveys, Inc.*, IPR2014-00411, Paper 113, 4, 8–9 (PTAB September 3, 2015); PTAB Consol. Trial Practice Guide 79 (Nov.

³⁰ Mr. Zumwalt testifies that other NanoCool products, designated by product number 85430 and 98630, also have the same configuration as the 98830 product and are made by the same process. Thus, “the 98830, 85430, and 98630 products can be collectively referred to as ‘98830-type’ products all having the same relevant design.” Ex. 1030 ¶ 17.

2019) (“A motion to exclude . . . may not be used to challenge the sufficiency of the evidence to prove a particular fact. A motion to exclude is not a vehicle for addressing the weight to be given evidence—arguments regarding weight should appear only in the merits documents.”); *Caterpillar Inc. v. Wirtgen Am., Inc.*, IPR2017-02187, Paper 42,17 (PTAB May 21, 2019) (status as prior art “is a substantive issue, not an evidentiary issue.”)

Thus, whether the NanoCool 98830 product is prior art is *not* the proper basis for Patent Owner’s Motion to Exclude evidence concerning the NanoCool 98830 product.

Our general approach for considering challenges to the admissibility of evidence was outlined in *Corning Inc. v. DSM IP Assets B.V.*, IPR2013-00053, Paper 66, 19 (PTAB May 1, 2014). As stated in *Corning*, similar to a 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. *Id.* (citing *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) (stating, in the context of reviewing an administrative determination of the National Labor Relations Board based on findings by a Trial Examiner, “We think that experience has demonstrated that in a trial or hearing where no jury is present, more time is ordinarily lost in listening to arguments as to the admissibility of evidence and in considering offers of proof than would be consumed in taking the evidence proffered . . . One who is capable of ruling accurately upon the admissibility of evidence is equally capable of sifting it accurately after it has been received . . .”)).

Moreover, “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, Paper 59, at 40 (PTAB Feb. 24, 2014). 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, Paper 32, at 31 (PTAB Apr. 14, 2015); *see also Gnosis S.p.A. v. S. Alabama Med. Sci. Found.*, IPR2013-00118, Paper 64 at 43 (PTAB June 20, 2014) (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 evidence was excluded which that court regards as having been admissible, a new trial or rehearing cannot be avoided.”))).

B. The Motion to Exclude Is Moot

In its Petition, Petitioner asserted that two different NanoCool Products anticipate *original* claims 1–2, 4, 7–12, 14, 19–28, 36–38, and 43–48 of the ’685 patent. Pet. 42 (asserting that these claims “are unpatentable under 35 U.S.C. § 102(a)(1) in view of the NanoCool 98596-type³¹ and

³¹ Mr. Zumwalt testifies another NanoCool product, designated by product number 85361, also has the same design configuration as the 98596 product and is made by the same process. Thus, “the 98596 and 85361 products can be collectively referred to as ‘98596-type’ products all having the same relevant design.” Ex. 1030 ¶ 14.

98830-type products.”). All of these claims have been replaced or cancelled by the Motion to Amend. *See* PO MTA Reply 36–59 (Substitute App. A). The NanoCool 98596-type and 98830-type products differ in structure and function, as explained in the Petition. Pet. 11–12. Moreover, Petitioner is now asserting only the NanoCool 98596-type products against claim 64.

In its opposition against amended claim 64, Petitioner refers to only the “NanoCool 98596-type Products.” Pet. Opp. MTA 12 (heading IV.A; “The limitations added to the claim do not patentably distinguish it over the NanoCool 98596-type products.”); *see also* Pet. MTA Sur-reply 1 (asserting in heading II.A that “Claim 64 anticipated by NanoCool 98596-type prior art product.”).

Petitioner has not directed us to any evidence, or provided any argument, that the NanoCool 98830-type products are being asserted against the *amended* claims. We understand that Petitioner is no longer asserting the NanoCool 98830-type products against the pending amended claims. Thus, whether the NanoCool 98830-type products remain as an Exhibit in this proceeding is a moot issue, and we need not address it.

For these reasons, the Motion to Exclude is *denied*.

IV. MOTION TO AMEND

In a post-grant review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 326(d). “Before considering the patentability of any substitute claims, . . . the Board first must determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 326(d) and 37 C.F.R. § 42.221.” *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential). We must, therefore,

consider whether: (a) the amendment proposes a reasonable number of substitute claims; (b) the proposed claims are supported in the original disclosure; (c) the amendment responds to a ground of unpatentability involved in the trial; and (d) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 326(d); 37 C.F.R. § 42.221. Patent Owner has the burden of persuasion to show, by a preponderance of the evidence, that a motion to amend complies with the statutory and regulatory requirements for such a motion. *Id.*

Petitioner retains the burden of persuasion to show, by a preponderance of the evidence, that any proposed substitute claims are unpatentable. *Id.* at § 42.221(d)(2); 35 U.S.C. § 326(e) (“In a post-grant review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”); *see also Lectrosonics*, IPR2018-01129, 01130, Paper 15 (discussing the requirements and burdens for motion to amend in the context of an *inter partes* review. The logic and analysis in *Lectrosonics* applies equally to motions to amend in a post-grant review.); *compare* 37 C.F.R. §§ 42.121 (amendments in an *inter partes* review) and 42.221 (amendments in a post-grant review) (noting that they are identical).

The Board must assess the patentability of proposed substitute claims “without placing the burden of persuasion on the patent owner.” *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017) (en banc); *see Lectrosonics*, Paper 15 at 3–4. Patent Owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claims presented in the motion to amend. Rather, “the petitioner bears the burden of proving

that the proposed amended claims are unpatentable by a preponderance of the evidence.” *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027, 1040 (Fed. Cir. 2017) (as amended on rehearing, *Bosch Auto. Serv. Sols., LLC v. Iancu*, Order on Petition for Panel Rehearing, No. 2015-1928 (Fed. Cir. Mar. 15, 2018)). See *Lectrosonics*, Paper 15 at 3–4. In determining whether a petitioner has proven unpatentability of the substitute claims, the Board focuses on “arguments and theories raised by the petitioner in its petition or opposition to the motion to amend.” *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51 (Fed. Cir. 2020). Thus, the Board determines whether substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, including any opposition made by the Petitioner.

In our Preliminary Guidance on whether Patent Owner’s Motion to Amend complied with the applicable requirements, we determined that Patent Owner established “a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend as to proposed substitute claims 49, 50, 54–56, 58, and 61–68, but not as to proposed substitute claim 57.” Prelim. Guid. 5.

In our Preliminary Guidance, we also stated “we do not consider the amendments to claims that are not challenged in this proceeding.” *Id.* at 3 (citing 35 U.S.C. § 326(d)(1) (providing that a patent owner may file a motion to amend the patent to cancel “any challenged patent claim” and to propose a reasonable number of substitute claims “[f]or each challenged claim”). *Lectrosonics*, Paper 15 at 5 (“All proposed claims should be traceable to an original challenged claim as a proposed substitute claim for that challenged claim.”).

Patent Owner then further modified the proposed amended claims and cancelled proposed substitute claims 51–53, 59, and 60, which were offered as substitutes for, original claims 3, 5, 6, 13, and 15 of the ’685 patent, respectively, but which have not been challenged in this proceeding. Prelim. Guid. 3–4; *see also* PO MTA Reply 1, 36–59 (Substitute App. A, claim list).

Thus, we now look to whether the further modified proposed amended claims meet the statutory requirements of 35 U.S.C. § 326(d) and the procedural requirements of 37 C.F.R. § 42.221.

A. Statutory and Regulatory Requirements

1. Reasonable Number of Substitute Claims

A motion to amend must “propose a reasonable number of substitute claims.” 35 U.S.C. § 326(d)(1)(B); 37 C.F.R. § 42.221(a)(3) (“A motion to amend may cancel a challenged claim or propose a reasonable number of substitute claims.”). Patent Owner proposes only one substitute claim for each challenged claim. *See* PO MTA Reply 36–39. Petitioner does not argue otherwise. *See* Pet. MTA Sur-reply.

Therefore, we determine that the amendments propose a reasonable number of substitute claims.

2. Respond to Ground of Unpatentability

“A motion to amend may be denied where . . . [t]he amendment does not respond to a ground of unpatentability involved in the trial.” 37 C.F.R. § 42.221(a)(2)(i). Patent Owner asserts that the substitute claims “address Petitioner’s arguments under §§ 102, 103, and 112.” PO Mot. Amend. 15. Petitioner does not argue otherwise. *See* Pet. MTA Sur-reply.

We determine that the amended language in the proposed substitute claims is responsive to a ground of unpatentability involved in this trial.

3. Scope of Amended Claims

A motion to amend “may not enlarge the scope of the claims of the patent.” 35 U.S.C. § 326(d)(3); *see* 37 C.F.R. § 42.221(a)(2)(ii) (“A motion to amend may be denied where . . . [t]he amendment seeks to enlarge the scope of the claims of the patent . . .”).

The proposed substitute claims appear to include narrowing limitations as compared to the original claims. PO MTA Reply 36–59 (Substitute App. A). Petitioner does not argue otherwise. *See* Pet. MTA Sur-reply.

Thus, we determine the amended claims do not enlarge the scope of the claims of the patent such that the proposed substitute claims would encompass apparatuses outside the scope of the original claims.

4. New Matter

A motion to amend “may not . . . introduce new matter.” 35 U.S.C. § 326(d)(3); *see* 37 C.F.R. § 42.221(a)(2)(ii) (“A motion to amend may be denied where . . . [t]he amendment seeks to . . . introduce new subject matter.”). Patent Owner asserts there is support for the proposed substitute claims in the disclosure. PO Mot. Amend. 5–15.

Petitioner asserts that Petitioner argues that proposed substitute claims 50, 62 and 63 “fail to include an essential feature (corner protection elements 12 that extend as far as the bottom VIP to jointly clamp the bottom VIP).” Pet. Opp.MTA 2. According to Petitioner, the disclosure of the ’685 patent does not provide adequate support for a bottom VIP being part of the coherent-frame type insert, and a strap arranged close to the bottom edge such that it exerts pressure on the bottom VIP, “without also requiring the corner protection elements to extend as far as the bottom VIP to jointly

clamp the bottom VIP with the side wall VIPs.” Pet. Opp. MTA 2–3. We disagree. The ’685 patent describes a preferred embodiment, as shown in Figure 3, in which corner protection elements 12

extend as far as the vacuum insulation panel 5 associated with the bottom 2, with the result that the vacuum insulation panel 5 associated with the bottom 2 is clamped jointly with the vacuum insulation panels 5 of the side walls 3. The tensioning strap 10 situated at the bottom is positioned in such a way that it can also exert sufficient pressure on the edge of the vacuum insulation panel 5 situated at the bottom.

Ex. 1001, 9:29–37. Although proposed substitute claims 50, 62, and 63 do not explicitly recite that the corner protection elements extend as far as the bottom panel, it appears that this omission merely makes the claims broad. There may be situations in which a claim’s breadth results in a lack of written description support. Petitioner, however, fails to provide persuasive argument or evidence that such a situation is present here. Petitioner does not persuasively establish that extending the corner protection elements as far as the bottom VIP is critical or essential to one of the tensioning straps being close to the bottom edge such that it exerts pressure on the bottom VIP.

Based on the evidence, we determine that there is support for the proposed substitute claims in the original application.

We now turn to the merits of Petitioner’s arguments.

B. Patentability of the Proposed Substitute Claims

*1. Claims 50, 54, 62–64
35 U.S.C. § 112(a), (b)*

Petitioner asserts there is a lack of written description support for proposed substitute claims 50, 54, and 62–64. Pet. Opp. MTA 1–12. Patent

Owner provides extensive citations to the Specification of the '685 patent in Table 2 of its Motion to Amend showing where each element and limitation is disclosed and enabled. *See* Mot. Amend 5–6, 8–10, 12–15 (citing Ex. 2010).

Petitioner also asserts that these claims are indefinite. *See* Pet. 39–42; Pet. Opp. MTA 8–9. Petitioner's expert, Dr. Harber, does not address written description, enablement, or indefiniteness in his declaration. *See, e.g.,* Ex. 1002, ii–vi.

For the reasons set forth below, we find that Petition has not established that any of substitute claims 50, 54, and 62–64 are unpatentable under 35 U.S.C. § 112(a) or (b).

a) Written Description

Proposed substitute claim 50, dependent from claim 49, recites, in relevant part, “the bottom vacuum insulation panel [(“VIP”)] is part of the coherent frame-type insert and one of the horizontally extending tensioning straps is arranged close to the bottom edge such that it exerts pressure on the bottom vacuum insulation panel.” PO MTA Reply 49–50. Proposed substitute claims 62 and 63 recite similar limitations. *See id.* at 53–54.

Patent Owner argues that the disclosure of the '685 patent provides written description support for these limitations. Mot. Amend 5–7, 10–11 (citing Ex. 2010).

Petitioner argues that proposed substitute claims 50, 62 and 63 “fail to include an essential feature (corner protection elements 12 that extend as far as the bottom VIP to jointly clamp the bottom VIP).” Pet. Opp. MTA 2. According to Petitioner, “[t]he only example described in the '685 patent specification in which a bottom VIP **is part of** a coherent frame-type insert

with sidewall VIPs, or where a tensioning strap exerts pressure on the bottom VIP[,] is the example in Fig. 3.” *Id.* Petitioner asserts that the example shown in Figure 3 of the ’685 patent *requires*, as an essential element, that the corner protection elements³² extend as far as the bottom VIP to clamp the bottom VIP, but proposed substitute claims 50, 62, and 63 omit this feature. Pet. Opp. MTA 2 (citing Ex. 1001, 9:29–37). In other words, according to Petitioner, the disclosure of the ’685 patent does not provide adequate support for a bottom VIP being part of the coherent-frame type insert, and a strap arranged close to the bottom edge such that it exerts pressure on the bottom VIP, “without also requiring the corner protection elements to extend as far as the bottom VIP to jointly clamp the bottom VIP with the side wall VIPs.” *Id.* at 2–3. We disagree.

The written description describes the structure, function, and positioning options for the corner protection elements. The ’685 patent discloses:

To ensure that the one or more tensioning means do not cut into the sensitive outer layer of the vacuum insulation panels consisting of high barrier foil, the corners of the vacuum insulation panels placed together in the coherent frame-type insert are protected by means of corner protection elements, e.g. angled rails made of paperboard or plastic (metal is also possible in the design). In this way, any damage to the outer surface of the vacuum insulation panels is prevented, despite the fact that the edges thereof are pressed firmly together. It will be recognized

³² Proposed substitute claim 49, from which proposed substitute claim 50 depends, recites “corner protection elements comprise angled rails that extend vertically over vertical corners of the coherent frame-type insert.” PO MTA Reply. 48–49 (Substitute App. A.). Proposed substitute claim 61, from which proposed substitute claims 62 and 63 depend, recites a similar limitation. *Id.* at 52–54.

that, as used within the present disclosure, a “corner protection element” may also be referred to as an “corner protection element”, *and within this context a “corner” may be referred to as an “edge*

Ex. 1001, 4:30–43 (emphasis added). Thus, clearly the corner protection elements can extend along the “edge” of each VIP.

Moreover, the ’685 patent discloses:

Particularly if the vacuum insulation panel situated at the bottom is given slightly larger dimensions than the assembled vacuum insulation panels of the side walls, the vacuum insulation panel situated at the bottom is independently grasped and fixed by the corner protection elements pressed on by the tensioning means.

Ex. 1001, 5:17–22. Thus, in some embodiments, the corner protection elements may extend to the bottom VIP, and in other embodiments it may not. We have not been directed to any persuasive evidence that requires the corner element to extend to a specific position.

The ’685 patent describes a preferred embodiment, as shown in Figure 3, in which corner protection elements 12

extend as far as the vacuum insulation panel 5 associated with the bottom 2, with the result that the vacuum insulation panel 5 associated with the bottom 2 is clamped jointly with the vacuum insulation panels 5 of the side walls 3. The tensioning strap 10 situated at the bottom is positioned in such a way that it can also exert sufficient pressure on the edge of the vacuum insulation panel 5 situated at the bottom.

Ex. 1001, 9:29–37. Although proposed substitute claims 50, 62, and 63 do not explicitly recite that the corner protection elements extend as far as the bottom panel, this omission merely makes the claims broad.

Petitioner argues that claim 50 “requires both **(a)** angled rails between the tensioning straps and the VIPs (via base claim 49) **and** **(b)** tensioning

straps that exert pressure on the bottom VIP (via claim 50). Petitioner concludes that “[t]he only logical manner to accomplish both (a) and (b) is in Fig. 3 of the ’685 patent, where the angled rails 12 extend as far as the bottom VIP to clamp the bottom VIP.” Pet MTA Sur-reply 10. Petitioner does not cite any persuasive evidence to support this argument, thus we find it is speculative. *See generally* Pet. MTA. Opp.; *See Johnston v. IVAC Corp.*, 885 F.2d 1574, 1581 (Fed. Cir. 1989) (“Attorneys’ argument is no substitute for evidence.”).

Claims 62 and 63 (being dependent on claim 61) recite the same limitations. We reach the same conclusion for these claims. Petitioner has not cited any persuasive evidence to support this speculative argument. *See generally id.*

Petitioner argues that proposed substitute claim 54 lacks written description support for the same reasons asserted with respect to substitute claims 50, 62, and 63. *See* Pet. MTA. Opp. 3 (arguing that the original disclosure of the ’685 patent does not provide written description support for a bottom VIP being part of the coherent frame-type insert without also requiring that the corner protection elements extend as far as the bottom VIP, which substitute claim 54 omits). Petitioner also argues that claim 54 requires angled rails between the straps and the VIPs (via claim 54’s dependency on claim 49), and that those same straps fix a bottom VIP below the sidewall VIPs in a coherent frame-like insert. Pet. MTA Sur-reply. 11. Petitioner concludes that “[t]he only disclosed or reasonably apparent manner to accomplish all of those requirements is for the angled rails 12 to extend as far as the bottom VIP to clamp the bottom VIP, as shown in Fig. 3 of the ’685 patent.” *Id.* (citing Ex. 1001, 5:11–16, 9:29–34). Again,

Petitioner fails to cite any persuasive evidence to support this argument. *See generally* Pet. MTA. Opp.

For claim 64, Petitioner similarly argues “the ’685 patent specification and drawings do not describe a bottom VIP that is disposed between the sidewall VIPs and that is also fixed with side VIPs in a coherent frame by tensioning means.” Pet. Opp. MTA 4; *see also* Pet. MTA Sur-reply 12 (asserting that the Specification “does not teach or show possession of corner protection elements 12 extending to the bottom VIP to clamp the bottom VIP” in connection with the Figure 4 alternative). Again, we disagree.

The ’685 patent discloses:

According to the invention, an independent coherent frame-type insert is created from the vacuum insulation panels associated with the side walls by clamping these vacuum insulation panels together by means of at least one tensioning means, preferably by means of two encircling tensioning means arranged spaced apart. By means of the tensioning means, the vacuum insulation panels are pressed against one another at the edges, the gaps then become as small as possible and the heat transfer at these bridges is minimized.

Ex. 1001, 4:16–25. The structure and function of the tensioning means is further described:

In particular, a peripheral tensioning strap, i.e. a material strip of flat cross section consisting, for example, of a highly tear-resistant woven fabric, e.g. a nylon woven fabric, may be considered as a tensioning means. *The tensioning force is thereby distributed over a relatively large area.* As an alternative, it is also possible to use a tensioning cable. It is also possible to provide a U-shaped clamp or a plurality of U-shaped clamps. A tensioning means can also be achieved by means of a shrink film shrunk onto the vacuum insulation panels. Finally, clamping of the vacuum insulation panels can also be achieved

by sheathing the vacuum insulation panels arranged together by means of foamable plastic, in particular polyurethane.

Id. at 4:44–56 (emphasis added). Thus, a tensioning strap exerts its force over a wide area, and need not be precisely positioned at any one specific area.

We determine that Petitioner fails to establish with persuasive evidence that extending the corner protection elements as far as the bottom VIP is critical or essential to the claim requirements that one of the tensioning straps being “close to” the bottom edge such that it exerts pressure on the bottom VIP.

b) Enablement

Petitioner’s basis for asserting a lack of enablement relies exclusively on the asserted lack of written description support for limitations recited in substitute claims 50, 54, and 62–64. Pet. Opp. MTA 2–6; Pet. MTA Sur-reply 12 (asserting that the “*Wands* factors further show that the scope of claim 64 requires undue experimentation”). Petitioner again fails to cite any persuasive evidence to support this argument. *See Garrido v. Holt*, 547 F. App’x 974, 979 n.3 (Fed. Cir. 2013), (citing *In re Schulze*, 346 F.2d 600, 602 (CCPA 1965) (attorney argument in the brief “does not take the place of evidence in the record.”)).

c) Indefiniteness

Regarding the asserted indefiniteness of the amended claims, proposed substitute claim 50 recites, in relevant part, “one of the horizontally extending tensioning straps is arranged close to the bottom edge such that it exerts pressure on the bottom vacuum insulation panel.” PO

MTA Reply 49–50 (Substitute App. A). Proposed substitute claims 62 and 63 recite similar limitations. *Id.* at 53–54.

Petitioner asserted that the phrase “close to” recited in the original claims was indefinite. Pet. 39–42. Petitioner argues that the added language in the amended claims, adding the phrase “such that it exerts pressure on the bottom vacuum insulation panel” does not clarify the scope of the phrase “close to.” Pet. Opp. MTA 8. Petitioner asserts that “[t]he ’685 patent does not define or describe (and a POSITA could not determine) how close or how far a tensioning strap must be to the bottom vacuum panel to *exert pressure on the bottom VIP.*” *Id.*

Petitioner acknowledges, however, that the ’685 patent Specification discloses that tensioning strap 10 is “positioned in such a way that it can also exert sufficient pressure on the edge” of the bottom VIP, as is shown in Figure 3. Pet. Opp. MTA 8–9.

According to Petitioner,

[b]ecause the corner protection elements 12 extend to the bottom VIP to clamp the bottom VIP, *the tensioning straps 10 can be located at a wide range of positions along the lengths of the corner protection elements (i.e., at any distance from the bottom edges of the sidewall VIPs) and still cause the four corner protection elements 12 to exert pressure on and clamp the bottom VIP with the sidewall VIPs.*

Id. at 9 (emphasis added; citing Ex. 1072 ¶¶ 15–17).

Even if a wide range of positions would allow the tensioning strap to exert pressure on the bottom VIP, as claimed, Petitioner has not persuasively shown that the limitation’s meaning would be unclear to one of ordinary skill in the art. *See In re Packard*, 751 F.3d 1307, 1309 (Fed. Cir. 2014) (A claim is indefinite under 35 U.S.C. § 112 when it contains words or phrases

whose meaning is unclear). Petitioner’s explanation may show that the claims are broad, but “breadth is not to be equated with indefiniteness.” *In re Miller*, 441 F.2d 689, 693 (CCPA 1971).

We also note that we determined in Section II.B of this Decision that the level of ordinary skill is high for the disclosed and claimed container technology – a Bachelor’s degree in mechanical engineering, physics, or similar discipline involving thermodynamics and heat transfer, and two or three years of experience designing insulated containers. Petitioner also asserted that a person of ordinary skill

“would have familiarity with . . . general techniques for creating containers from VIPs, *banding them together using strapping or the like*, and preparing such systems for shipping such as, for example, placing them into outer boxes for additional protection, application of labels and shipping instructions, etc.

Pet. 9 (emphasis added; citing Ex. 1002 1002 ¶ 23). We determine a degreed, experienced engineer would position the tensioning straps close enough to the bottom edge such that it exerts enough pressure on the bottom vacuum insulation panel to perform the function, and carry the weight, for which the container was designed.

d) Conclusion as to 35 U.S.C. § 112(a), (b)

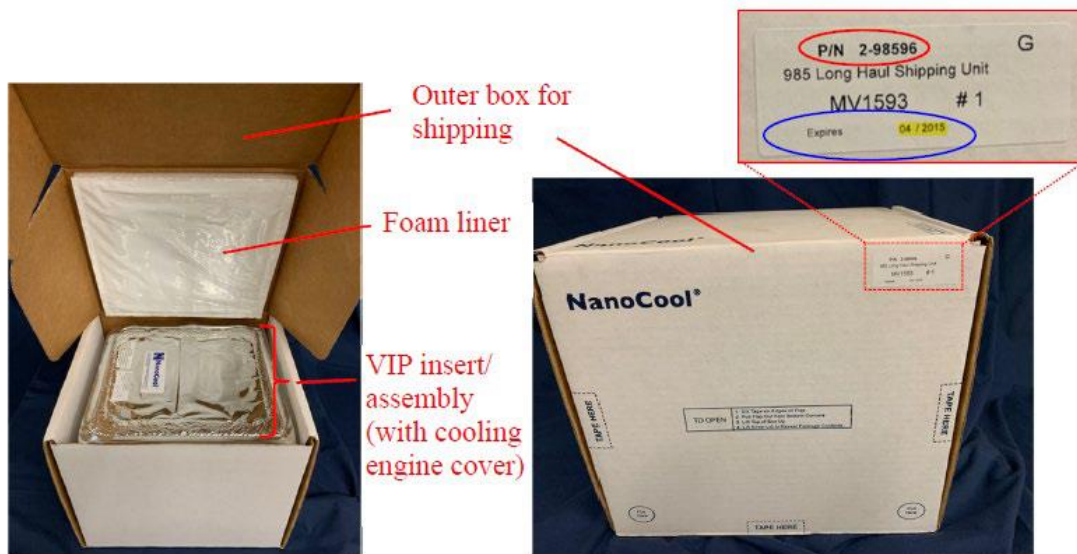
For the reasons set forth above, we determine that Petitioner has *not* met its burden to establish with substantial evidence that claims 50, 54, and 62–64 are invalid for failure to meet the requirements of 35 U.S.C. § 112(a) and (b).

2. Claim 64 Anticipation by NanoCool 98596-Type Products

The Petition argued that claim 36 was anticipated by the NanoCool 98596-type products. Pet. 68. Patent Owner cancelled claim 36 and added

substitute claim 64 to replace it. Mot. Amend. 22. Petitioner asserts “[t]he limitations added to the claim [64] do not patentably distinguish it over the NanoCool 98596-type products.” Pet. MTA Sur-reply 12–15. We agree with Petitioner.

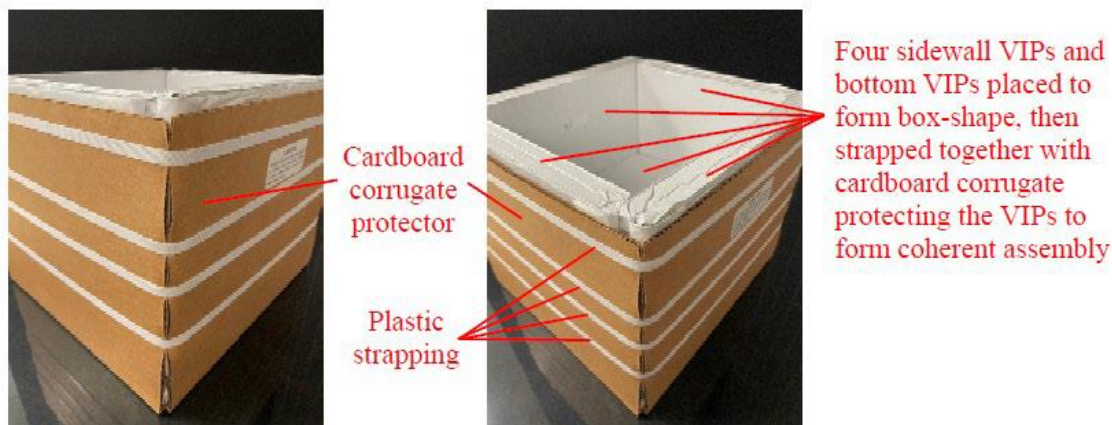
Annotated photographs of a 98596-type product are reproduced immediately below.



Ex. 1030 ¶ 8. The above photographs depict, on the left, a 98596-type product with the outer shipping box open and showing the box’s contents, including a “VIP insert/assembly” (as annotated in red by Mr. Zumwalt) and, on the right, a 98596-type product with the outer box closed. *Id.* The image on the left further shows a “cooling engine” atop the VIP insert. *Id.* ¶¶ 8–9. Above the photo on the right is an enlarged image of a sticker on a portion of the outer box, which shows the product number “P/N 2-98596” (circled in red by Mr. Zumwalt) and text below that number that reads “Expires 04/2015” (highlighted in yellow and circled in blue by the Board). *Id.* ¶ 8. Mr. Zumwalt testifies that this sticker indicates that this particular sample of the shipping container expired in April 2015, and would have

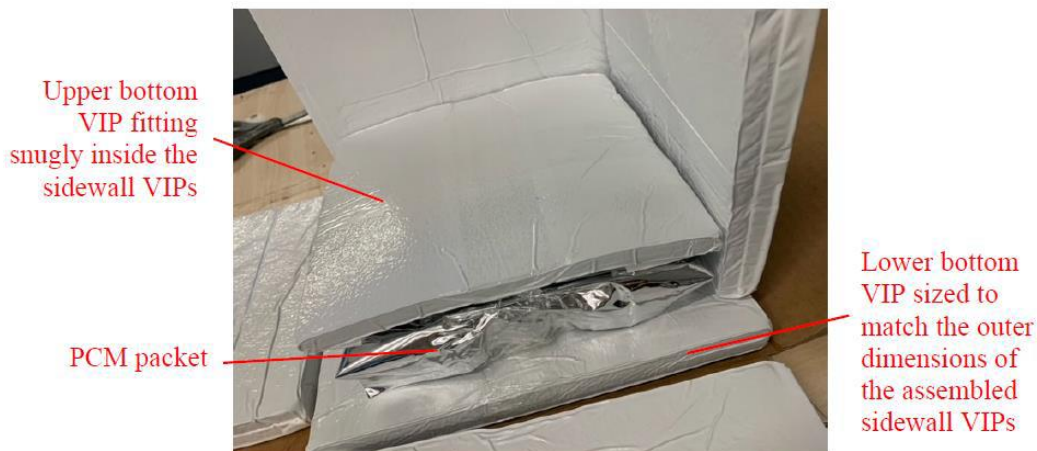
been made in April 2013, because NanoCool's products had a two-year shelf life at that time. *Id.* ¶ 11; Ex.1032, 2; Ex.1031 ¶ 5.

Mr. Zumwalt also provides photographs of the insert portion of the 98596-type products without the outer box. Two of those photographs, annotated by Mr. Zumwalt, are reproduced below.



Ex. 1030 ¶ 8. The two photographs above are different perspective views of the insert used for the 98596-type products. *Id.* In the image on the right, Mr. Zumwalt has annotated various features of the insert, including “[f]our sidewall VIPs and bottom VIPs placed to form [a] box shape.” *Id.* Also shown, and annotated in both photographs is a “[c]ardboard corrugate protector” material along the outer surfaces of the sidewalls of the aforementioned VIPs, and the annotation of the photo on the right also identifies “[p]lastic strapping” outside of and encircling the cardboard corrugate protector material and sidewalls of the VIPs. *Id.*; *see also*, Ex. 1046, 4 (Mr. Harber’s claim chart showing the NanoCool 98596-type products that use corrugated cardboard between the VIPs and the strapping to protect the edges/corners of the VIPs). Note that the corrugated protectors extend the height and width of the VIPs.

Mr. Zumwalt's Declaration also shows in the photo reproduced below the bottom part of the NanoCool 98596 insert labeled as "Lower bottom VIP."



Ex. 1030 ¶ 10; *see also* Ex. 1002 ¶ 110 (Mr. Harber's Declaration providing a similar annotated figure of the bottom of the NanoCool 98596 insert. Mr. Harber also provides a claim chart comparing the NanoCool 98596-type products to the originally challenged claims. *See* Ex. 1046. This claim chart was prepared for the originally challenged claims. Amended claim 64 replaced original claim 36. Mr. Harber's claim chart for claim 36 is at page 24 of Exhibit 1046. He refers to claims 1, 7, and 10 for his analysis of claim 36, now replaced by claim 64.

a) Bottom VIP

Substitute claim 64 adds "a bottom board-like vacuum insulation panel . . . disposed between the sidewall vacuum insulations panels," "a top board-like vacuum insulation panel," wherein "the sidewall vacuum insulation panels and the top vacuum insulation panel are pressed against

one another when the cover of the outer container is tightly closed.” PO MTA Reply 55–56 (Substitute App. A).

Petitioner argues that the added limitations do not distinguish proposed substitute claim 64 from the NanoCool 98596-type products, which includes a “cooling engine” comprising a board-like VIP that sits on top of—and firmly presses against—the sidewall VIPs. Pet. Opp. MTA 12–13 (citing Ex. 1071 ¶¶ 4–5; Ex. 1072 ¶ 21).

Petitioner also argues that the NanoCool 98596-type insert has “a bottom VIP that is sized and located within the sidewall VIPs.” *Id.* at 13 (citing Pet. 56–57; Ex. 1002 ¶¶ 122–123).

Mr. Harder also illustrates the two “bottom” VIPs in the NanoCool 98596-type product, as shown below.



Ex. 1046, 7. The figure shows a cut-away view of a NanoCool 98596-type product VIP insert with two bottom VIPs having a phase change material (PCM) packet (shown in silver foil) contained between the two-bottom VIPs. According to Mr. Harder, one bottom VIP is “inside the sidewall VIPs,” and a second bottom VIP is “completely below the sidewall VIPs.” *Id.*; see also Ex. 1002 ¶¶ 110, 122 (Mr. Harber’s Declaration supporting Petitioner’s argument).

According to Patent Owner, the internal VIP over the PCM packet “is not the bottom VIP even though Mr. Zumwalt misleadingly labels this internal VIP as “Upper bottom VIP.” PO MTA Reply 3–4. According to Patent Owner, this internal “upper bottom” VIP “is not located at the lowest

point of the insert,” does not “cover the bottom of the outer container,” and “cannot be considered to be the ‘bottom’ VIP of the NanoCool insert.” PO MTA Reply 4. Patent Owner concludes that the internal, upper VIP “is simply not a *bottom* VIP because it is not located at the lowest point of the structure and it does not cover surfaces of the sidewalls and the bottom of the outer container. The lowermost VIP in the NanoCool 98596 is not disposed between the sidewall VIPs. Thus, according to Patent Owner, this structure does *not* meet “the *bottom* VIP requirements of claim 64.” *Id.*

The clause in claim 64 at issue is:

a bottom board-like vacuum insulation panel disposed in the outer container and covering surfaces of the side walls and the bottom of the outer container

PO MTA Reply 55 (Substitute App. A, claim 64).

The recitation of “a bottom board-like vacuum insulation panel does not preclude a “bottom” panel composed in two sections to serve a dual purpose of being the “bottom” panel, and also housing a PCM packet. Mr. Zumwalt’s testimony is that “[t]his product has four sidewall VIPs, and two bottom VIPs sandwiching a PCM packet.” Ex. 1030 ¶ 7. With this understanding, and based on Mr. Harder’s and Mr. Zumwalt’s testimony as discussed above, we agree with Petitioner that the lower bottom VIP contacts the bottom of the outer container and the surfaces of the sidewalls, as recited in claim 64.

b) Top VIP

Claim 64 states that the claimed container has “a top board-like vacuum insulation panel,” which is in addition to side VIPs, and a bottom VIP. PO MTA Reply 55 (Substitute App. A, claim 64).

Petitioner asserts that “[c]laim 64’s only requirement is that there be a top VIP—it has no limitations on the materials of construction, structure, or functionality (or lack of functionality) of the top VIP.” Pet MTA Sur-reply 3. Petitioner also asserts that “[c]laim 64 has no negative limitations restricting what the VIP can be made of or do beyond its basic VIP function.” *Id.* Petitioner also asserts “the cooling engine amounts to a VIP, even if it possesses additional features or functionality beyond the minimum required to constitute a VIP.” *Id.* Petitioner, however, cites no evidence to support this argument. Petitioner merely points out that “PO’s own expert “cannot/does not deny that the cooling engine is” a VIP. It is, however, Petitioner’s burden to prove this fact, *not* Patent Owner’s burden to disprove it.

There are some clear differences between a cooling engine and a VIP. In Mr. Zumwalt’s initial Declaration (Ex. 1030), he described the NanoCool 98596-type products as follows:

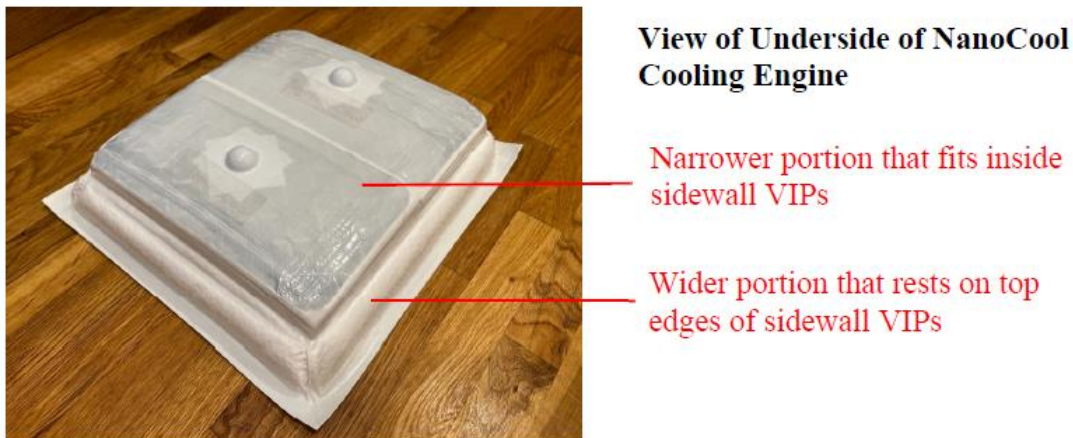
The 98596 products used (and still use) a cooling engine to help maintain the temperature inside the container, which has the silver foil cover seen in the photo above on the left. There was also a foam liner glued to the underside of the lid of the outer box that pressed against the cooling engine when the box lid is closed.

Ex. 1030 ¶ 9. He also testified:

Some of our products use a “cooling engine” placed at the top of the VIP formed box to maintain the desired temperature in the interior space, e.g., the ‘98596-type products’ discussed below. *Other products just use a top VIP to enclose the space, e.g., the ‘98830-type products.’*

Id. at ¶ 4. Here, Mr. Zumwalt draws a clear distinction between products that use a “cooling engine” and products that use a top VIP. His testimony here indicates a clear distinction with a substantive difference.

In a second Declaration (Ex. 1071)), Mr. Zumwalt provides a series of five photos, which we reproduce below, with annotations by Mr. Zumwalt describing each photo. In general, these photos provide more information about the structure of the cooling engine and how it is positioned and secured on the top of a container.



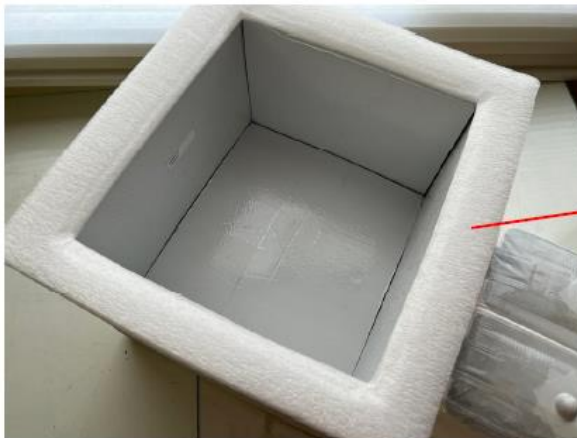
As shown in the photo above, and described by Mr. Zumwalt, the underside of the cooling engine has two main sections with a “stepped” shape, with a narrower portion that fits snugly fit inside the top opening of the sidewall VIP insert when the cooling engine is put into place. Ex. 1071 ¶ 5. The wider section of the cooling engine rests on and seals against the top surfaces of the sidewall VIPs, in cooperation with a foam gasket for better sealing. *Id.*



NanoCool VIP Insert and Cooling Engine

VIP Insert

Foam sealing strip around underside of Cooling Engine



NanoCool VIP Insert and Foam Sealing Strip

Foam sealing strip (same one as shown in phot above) sitting on top edges of sidewall VIPs

As shown in the series of photos above, the VIP insert and cooling engine (with foam sealing strip) are placed into the outer box for shipping (both to the customer, and then the customer repeats this when using the NanoCool shipper). The outer box also has a foam liner glued to the underside of its upper surface. Ex. 1071 ¶ 6.



NanoCool VIP Insert with Foam Sealing Strip and Cooling Engine in Place

Cooling Engine installed on
VIP Insert

Foam sealing strip



NanoCool VIP Insert with Foam Sealing Strip and Cooling Engine in Place

Cooling Engine

Foam sealing strip

VIP Insert

Patent Owner relies on the testimony of Dr. Slocum, who testifies that “the purpose of VIPs and cooling engines are entirely different.” PO MTA Reply, 5 (citing (Ex. 2014 ¶¶ 14–17). Dr. Slocum also testifies, however, that “when the lid is closed the lid presses down on the cooling engine to *thereby press the cooling engine onto the VIP insert and compress the foam frame.*” Ex. 2014 ¶ 15. Thus, the cooling engine is also functioning as a passive top lid.

Dr. Slocum also states that “the top VIP of the ’685 patent (Ex. 1001) provides a simple design that is far easier for a customer to use. *Id.* at ¶ 16. He also states “[t]he passively insulated VIP-only top is attached to the outer enclosing box with precision dimensions that allow for the top VIP to be pressed down on the VIP sidewalls when the cover of the outer container is

closed without the need for a separate foam liner inside the lid.” Ex. 2014

¶ 16. These distinctions do not affect an anticipation analysis.

Based on the totality of the evidence discussed above, we determine that the cooling engine of the NanoCool 98596-type products provides a top VIP as claimed in claim 64.

c) Height Dimensions

Claim 64 includes the following clause:

wherein the sum of the outside height dimensions of the sidewall vacuum insulation panels and the outside depth dimension of the top vacuum insulation panel is slightly larger than inner height dimensions of the outer container, so that the sidewall vacuum insulation panels and the top vacuum insulation panel are pressed against one another when the cover of the outer container is tightly closed.

POMTA Reply, 56.

Mr. Zumwalt testifies:

The VIPs, cooling engine, outer box, and foam liner are all designed such that the top of the cooling engine, when placed into the outer box, is higher than the position of the lower surface of the foam liner when the box lid is firmly closed. Thus, when the box is closed, the foam liner on the underside of the box lid presses down on the top of the cooling engine.

Ex. 1071 ¶ 6. He also states that the reason for this design was “to help ensure a good seal between the cooling engine and the sidewall VIPs, and also helping further hold the VIP insert and cooling engine steady in the box.” *Id.*

Patent Owner asserts:

The inner height dimensions of the outer container defined in claim 64 does not include the outside depth dimension of the bottom VIP in the sum because the bottom VIP in claim 64 is located between the sidewall VIPs (Fig. 4a). Because the “lower

bottom VIP” is located underneath the lower edges of the sidewall VIPs in NanoCool 98456, this limitation cannot be met.

PO MTA Reply, 6. Patent Owner cites no evidence to support this argument. Moreover, Mr. Zumwalt’s testimony on this issue states that the NanoCool 98596-type product meets the requirements of claim 64 that the height dimensions are such that the sidewall vacuum insulation panels and the top vacuum insulation panel are pressed against one another when the cover of the outer container is tightly closed. This is exactly what Mr. Zumwalt described. We find his testimony persuasive.

Accordingly, we determine that the NanoCool 98596-type product discloses the height dimensions and other functional relationships of components recited in claim 64.

d) Conclusion for Anticipation of Claim 64

Based on the complete record for the revised, amended claims before us, and the totality of the evidence as explained above, we determine Petitioner has established by a preponderance of the evidence that claim 64 is anticipated by the NanoCool 98596-type products.

*C. Claim 64 Obvious Based on
NanoCool Products, Goncharko/Sawaki, and
Frysinger or Roderick*

We determined above that the NanoCool 98596 product anticipates claim 64. Petitioner now adds a number of additional references in numerous combinations and permutations to assert that claim 64 would have been obvious based on all of these numerous alternatives. *See* Pet. Opp. MTA 12–16 (asserting claim 64 is unpatentable under 35 U.S.C. § 103 based on “NanoCool or Goncharko/Sawaki with either of Frysinger or Roderick); *see also* Pet. MTA Sur-reply 4–8 (further arguing these asserted grounds).

In our Preliminary Guidance, we determined Petitioner has shown sufficiently that the limitations of substitute claim 64 are taught or suggested by the combination of the Goncharko, Sawaki, one of Wood and Combs, and one of Frysinger and Roderick. Prelim. Guid. 17. This guidance was preliminary and non-binding. *See* Prelim. Guid. 2 (“In this Preliminary Guidance, we provide information indicating our initial, preliminary, non-binding views on whether Patent Owner has shown a reasonable likelihood that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend in an post-grant review and whether Petitioner (or the record) establishes a reasonable likelihood that the substitute claims are unpatentable.”)

Claim 64, however, has been further amended since our Preliminary Guidance. *See* PO MTA Reply 54–56 (claim 64, as further amended in the Substitute App. A). These amendments discussed above in the context of claim 64 added further details about the bottom VIP, the top VIP, and the height dimensions of the VIPs to ensure a press-fit when assembled, among other changes. Moreover, the Woods and Combs references are no longer being relied upon.

We begin our analysis with a summary of the asserted references. The NanoCool 989596-type products have been described in the previous section of this Decision.

1. Goncharko (Ex. 1012)

Goncharko is a patent application that published January 10, 2008. Ex. 1012, code (43). Patent Owner does not dispute that Goncharko is prior art. Goncharko discloses a sealed container formed from six rectangular foam insulating panels. *Id.* at Abstr. Goncharko teaches that the container

can be made from various materials, including VIPs. *Id.* ¶ 9. Goncharko teaches “[t]he sides are then strapped together under tension (one or more straps around the outer side of the sides[]).” *Id.* at Abstr.

Figure 3 of Goncharko is reproduced below and shows one embodiment of a strapped container.

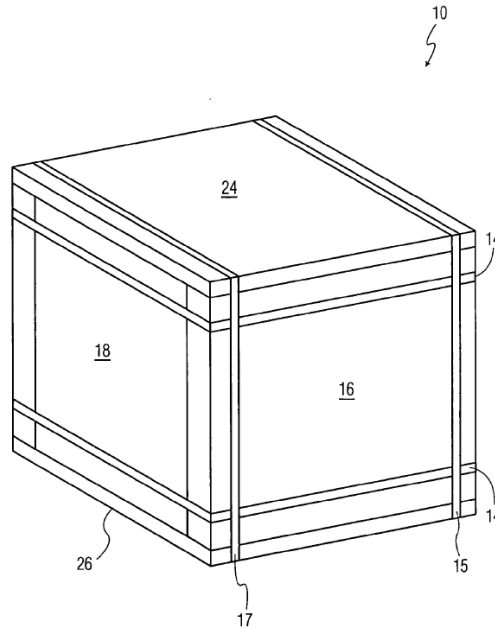


FIG. 3

Figure 3 of Goncharko is a plan view of an assembled container strapped around the sides (e.g., 16, 18) and the top and bottom (24, 26) panels with straps (14, 16). *Id.* ¶ 15. According to Goncharko, “the container is generally placed inside a corrugated box following assembly, for additional support and protection during shipment.” *Id.* ¶ 17.

Goncharko teaches, in an embodiment, that the panels are made of expanded polystyrene and that the straps are “tensioned with a banding machine to the point the foam is observed to begin to compress.” *Id.* Goncharko discloses that “[a]dditional tension may break the panels or

damage them.” *Id.* (disclosing that, generally, more than one band or strap should be used to secure the side panels).

2. *Sawaki (Ex. 1016)*

Sawaki is a U.S. patent that issued January 8, 2013. Ex. 1016, code (45). Patent Owner does not dispute that Sawaki is prior art. Sawaki relates generally to a thermally insulated “cold box” for transporting goods. *Id.* at Abstr., 1:7–13. Figure 1 of Sawaki is reproduced below.

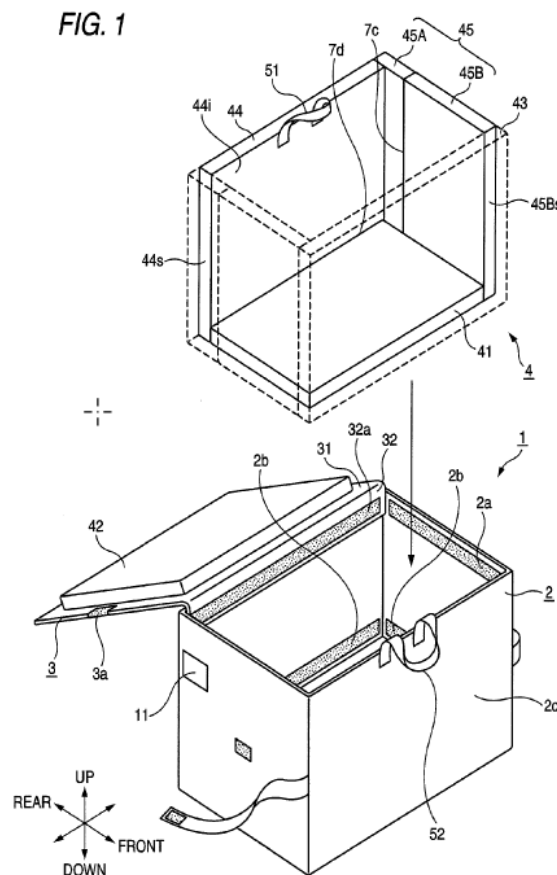


Figure 1 in Sawaki is a perspective view of a cold box according to an exemplary embodiment of the disclosed invention. Ex. 1016, 1:40–42. Sawakik discloses a thermal insulator that includes sidewalls and top and bottom walls, and that the top and bottom walls are fitted in openings

defined by the inner dimensions of the sidewalls. *Id.* at Fig. 1, 4:27–30, 6:43–52. Sawaki teaches that this arrangement prevents the sidewalls from being “inwardly deformed or displaced.” *Id.* at 6:43–52.

3. *Frysinger (Ex. 1018)*

Frysinger is a U.S. patent that issued June 12, 2001. Ex. 1018, code (45). There is no dispute that Frysinger is prior art. Frysinger relates to thermally insulated containers. *Id.* at Abstr. Figures 1 and 2 from Frysinger are reproduced below.

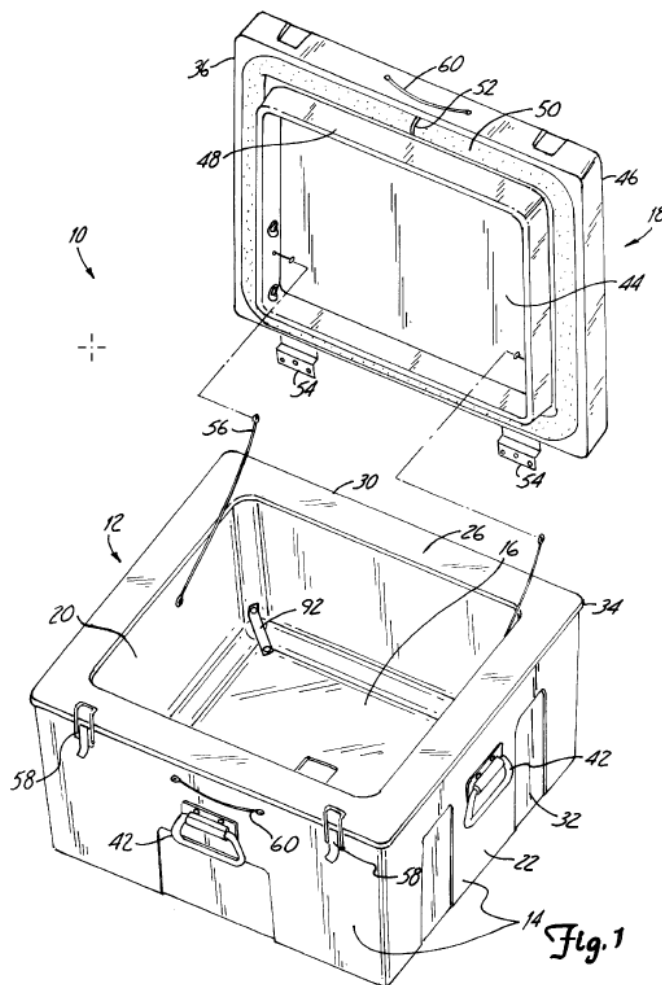


Figure 1 of Frysinger is a perspective view of the container of the disclosed invention with the lid open. Ex. 1018, 2:55–56.

Frysinger teaches that insulated containers may include walls comprising vacuum panels, and that “[t]he sides of the vacuum panels are covered by compressible fill, minimizing thermal flow along the vacuum panels” despite manufacturing differences. *Id.* Frysinger teaches that “[e]dges 72 of the vacuum panels 62 are covered with a compressible layer of thermal insulation, which in the preferred embodiment includes flexible sheet insulation 76 and loft material 74.” *Id.* at 7:19–24. Frysinger teaches that such compressible layer of thermal insulation may extend over the planar side surfaces of panels (i.e., between the panels) and the inner liner and outer shell. *Id.* at 7:24–27. Frysinger also teaches that, preferably, “each side surface of each vacuum panel 62 is covered with a compressible layer of thermal insulation 74,76.” *Id.* at 7:31–34; *see id.* Figs. 2, 3, 4.

According to Frysinger, adjacent vacuum panels cannot be spaced closely enough to eliminate edge loss (i.e., thermal flow outward between panels). *Id.* at 8:1–6. Frysinger teaches that the “presence of the compressible insulation layer 72 in the space between vacuum panels 62, including both the flexible sheet 76 and the loft material 74, significantly reduces edge loss.” *Id.* at 8:8–13.

4. *Roderick (Exhibit 1065)*

Roderick is a published U.S. patent application, published on January 1, 2009. There is no dispute that it is prior art. Roderick discloses a container insert for providing a thermally insulated enclosure. Ex. 1065, Abstract. The container insert includes a bottom panel, side panels and end panels that are interconnected by a plastic backing sheet. *Id.* The side

panels and end panels can be pivoted upwardly to form side walls and end walls. *Id.* The plastic backing sheet covers the seams between adjacent insulation panels to provide a moisture barrier. *Id.* The plastic backing sheet can also urge adjacent panels together to reduce the gap between adjacent panels and improve thermal performance. *Id.*

D. Claim 64 Based on NanoCool and Frysinger or Roderick

In Petitioner's Sur-reply, Petitioner asserts claim 64, as further amended, would have been obvious based on NanoCool 98596-type products, Frysinger and Roderick. *See* Pet MTA Sur-reply. 4 (asserting "Claim 64 is obvious over NanoCool and Frysinger or Roderick").

Petitioner asserts "[t]he Board agreed that Petitioner has shown that claim 64 is rendered obvious by the combination of above-cited references." Pet. MTA Sur-reply 4 (citing PG, 15-16).

We reiterate that claim 64 as further amended by Patent Owner in its PO Motion to Amend Reply is different from the claim 64 discussed in our Preliminary Guidance.

Patent Owner asserts that substituting a top VIP from Frysinger or Roderick for the cooling engine in NanoCool 98596, as asserted by Petitioner, would prevent the NanoCool 98596 product from accomplishing its intended purpose. POMTA Reply 6. Further, Petitioner fails to address the other missing claim elements.

Petitioner has addressed these other missing elements in its discussion on the NanoCool 98596-type products in its anticipation assertion in Section IV.B.2. Petitioner's argument here is that Frysinger and Roderick each show that it was well known to attach a VIP to a pivotal top of the outer container, and to subsequently press the top VIP against the top edges of

sidewall VIPs when the cover is closed. Pet. Opp. MTA 14. Petitioner also argues that “[i]n view of Frysinger or Roderick, a POSITA would have found a top VIP attached to the cover to be a well-known expedient (and equivalent to the cooling engine used on the NanoCool 98596-type products.

Patent Owner further amended claim 64 and argued that “[s]ubstituting a top VIP from Frysinger or Roderick for the cooling engine in NanoCool 98596, as asserted by Petitioner, would prevent the NanoCool 98596-type product from accomplishing its intended purpose.” PO MTA Reply 6; *see also id.* at 7 (“Substituting a VIP for the cooling engine in NanoCool 98596 would defeat the essential purpose of the cooling engine. (Ex. 2014 ¶ 24.”). Patent Owner also asserted that the “substitution of a top VIP for the cooling engine of NanoCool 98596 with Frysinger (Ex. 1018) or Roderick (Ex. 1065) is not a substitution one skilled in the art would make. (Ex. 2014 ¶ 24.” *Id.* at 7.

Petitioner asserts that the motivation to combine is not obviated just because certain features become inoperable via a given combination. Pet. MTA Sur-reply 5 (citing *Raytheon Co. v. Sony Corp.*, 727 Fed. App’x 662, 667 (Fed. Cir. 2018) (affirming obviousness absent showing that the resulting device would be “inoperable rather than merely less efficient or less desirable”)). Petitioner also asserts that controlling authority “recognizes that “[a] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.” *Id.* (citing *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006). Whether a cooling engine is used or not merely effects the efficiency of the cooling or the ability to cool to lower temperatures. If those results are not of significance for some products to be

shipped in the claimed containers, the proposed modification results in a structure identical to the claimed invention, which also operates *without* the benefit of a cooling engine. As asserted by Petitioner, passive, VIP-based insulated containers having a top VIP pressed firmly against the sidewall VIPs by the closure of the outer box (*e.g.*, Ex. 1065, ¶ 0058), as well as using phase-change materials (“PCMs”) to cool such containers were clearly known in the prior art. Pet. MTA Sur-reply 6 (citing Exs. 2006, 2007).

Before reaching a determination as to whether claims would have been obvious based on the asserted references, we first consider the objective evidence.

1. Objective Indicia of Non-Obviousness

“For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citation omitted). Patent Owner is entitled to a presumption of nexus when it is shown “that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (quoting *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018)). If a secondary consideration results from something other than what is claimed and novel in the claim, there is no nexus to the merits of the claimed invention. *Id.*

Patent Owner argues that the declarations of Mr. Eschenbach and Dr. Slocum provide objective evidence of non-obviousness of the proposed substitute claims. Mot. 34 (citing Ex. 2002 ¶¶ 13–18, 24, 27, 28; Ex. 2011 ¶¶ 21–30, 36–40). In particular, Patent Owner asserts that “[t]he claimed

invention has been commercialized in the va-Q-proof product line, which has been a significant commercial success.” *Id.* (citing Ex. 2002 ¶ 28); *see also* Ex. 2002 (Mr. Eschenbach declaring that, “[s]ince 2016[,] va-Q-tec has more than tripled its revenues in the temperature controlled supply chain market . . .”).

Patent Owner asserts that proposed substitute claims 49 and 61 “more specifically recite the VIP insert arrangement used in the va-Q-proof product line, which is the same as shown in Fig. 2a of the ’865 patent, and the use of tensioning straps and angled rails to eliminate thermal bridging across the VIP insert which is also shown in Fig. 2a.” *Id.* According to Patent Owner, that “objective evidence shows that the commercial success of the va-Q-proof product is directly attributable the combination of the VIP arrangement shown in Fig. 2a and the use of tensioning straps and angled rails to improve thermal performance, reduce weight and size, reduce manufacturing costs, and enable easy component replacement.” *Id.* (citing Ex. 2002 ¶ 28).

We determine that Patent Owner has not established a nexus between the proposed substitute claims and the purported objective evidence of commercial success. Patent Owner has not sufficiently shown that the va-Q-proof product line embodies the proposed substitute claims. *Fox Factory*, 944 F.3d at 1373. Nor has Patent Owner shown that any commercial success is the direct result of the unique characteristics of the proposed substitute claims. Instead, the evidence appears to suggest that other factors may have contributed to the alleged commercial success. For example, Mr. Eschenbach’s declaration describes a number of events that may have contributed to the purported increase in revenue. *See* Ex. 2002 ¶ 28

(describing, for example, the introduction of a rental project that used the va-Q-proof product, the launch by transport company TNT of a medication transport service based on the va-Q-proof rentals, a merger between TNT and FedEx).

Thus, considering the totality of the evidence, Patent Owner is not entitled to a presumption of nexus between the objective evidence and the amended claims. *Fox Factory*, 944 F.3d at 1373. Neither do we discern that Patent Owner has otherwise shown there to be such a nexus.

Moreover, even if a nexus could be presumed (which it cannot), Patent Owner's evidence regarding commercial success is unpersuasive on this record. "When a patentee can demonstrate commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed and claimed in the patent, it is presumed that the commercial success is due to the patented invention." *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 740 (Fed. Cir. 2013). Here, Mr. Eschebach declares that, "[s]ince 2016[,], va-Q-tec has more than tripled its revenues in the temperature controlled supply chain market and the va-Q proof product series plays a significant role in this success story" Ex. 2002 ¶ 28. However, the evidence does not indicate how tripling revenue corresponds to "significant sales in a relevant market." For example, Patent Owner does not point to any record evidence that would indicate that the total revenue is significant compared to the market as a whole.

Having considered all the evidence presented by Patent Owner against obviousness and weighing all the evidence, both of obviousness and of nonobviousness, the evidence of obviousness outweighs the evidence of nonobviousness.

*E. Claim 64 is obvious over Goncharko in view of Sawaki
and further in view of either Frysinger or Roderick*

Petitioner makes similar arguments for the obviousness grounds for claim 64 based on Goncharko, Sawaki, Frysinger, or Roderick. Pet. MTA Sur-reply 6–8.

Petitioner showed Goncharko describes straps 14 with “resulting compression” of sidewall VIPs” Pet. MTA Sur-reply 7–8 (citing Pet., 26–27 (citing Ex. 1012, ¶13, ll. 6–11)). Petitioner also showed Sawaki describes a plug-type bottom insulation panel 41 *Id.* (citing Pet. Opp. MTA, 15, 17–19; and Pet., 104–106 (citing Ex. 1016, 6:43-52)).

Sawaki discloses the inner faces of the sidewall insulation panels 43–45 abut on the bottom wall 41 such that when an external force is exerted on the sidewalls 43-45, the bottom insulation panel 41 prevents sidewalls 43-45 “from being inwardly deformed or displaced.” *Id.* (citing Ex. 1016, 6:46-52; and Pet., 105). Sawaki clearly teaches that external forces on the sidewalls (*e.g.* the compression force of Goncharko’s straps) cause the sidewall panels to abut and apply pressure to the bottom panel.

Based on a preponderance of the evidence as discussed above, we determine that Petitioner has established that claim 64, as further amended (PO MTA Reply 54–56 (claim 64, as further amended in the Substitute App. A) would have been obvious based on NanoCool98586 and Frysinger or Roderick, as asserted by Petitioner. Pet. MTA Sur-reply 4–6. Petitioner asserts “the container resulting from the combination would be a passive insulated shipping container, which the prior art recognized as having value even without an outside energy or cooling source. *Id.* at 5.

We determine that Petitioner established that Frysinger and Roderick each disclose a top VIP attached to a pivotable cover and that presses against the tops of the sidewall VIPs when the cover of the outer container is tightly closed. *See* Pet. MTA Sur-reply 7–8 (citing Ex. 1072, ¶¶ 19–26).

We also determine that Petitioner has established by a preponderance of the evidence that claim 64, as further amended (PO MTA Reply 54–56) would have been obvious over Goncharko in view of Sawaki and further in view of either Frysinger or Roderick, as asserted by Petitioner. Pet. MTA Sur-reply 6–8. The proposed modification is merely substituting one known element for another. Here we adopt Petitioner’s reasoning for the proposed combination.

1. Objective Indicia of Non-Obviousness

Our discussion of objective evidence above applies equally to this asserted ground of obviousness.

F. Claim 65 is obvious over NanoCool and Frysinger or Roderick and further in view of Bannister, Weimer, Owens, or Hamilton Overview of Asserted Prior Art

First we summarize the new references in this ground.

1. Bannister (Exhibit 1066)

Bannister discloses a foldable cardboard carton, for use typically in the package and storage of fruit. Ex. 1066, 1:5–6. The carton is shown in its folded form in Figures. 3 and 5 of Bannister. Figure 3, annotated by Mr. Harber (*see* Ex. 1072, ¶¶ 6–8), is reproduced below.

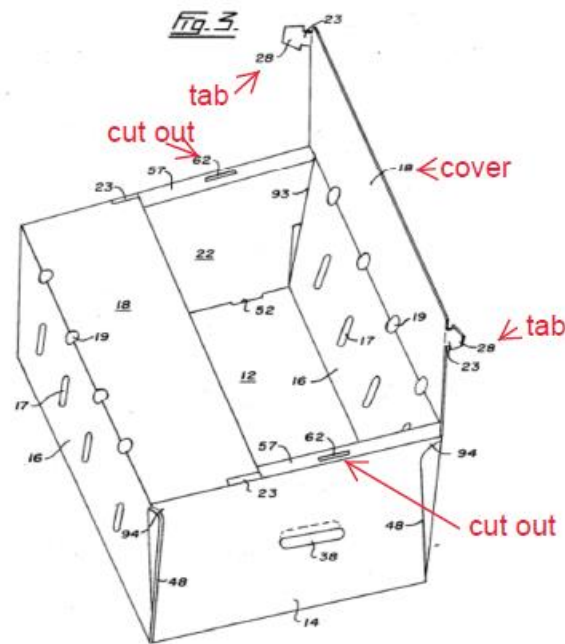


Figure 3 from Bannister, annotated by Mr. Herber (Ex. 1072 ¶¶ 6–8), is a perspective view of the carton of Figure 1 in folded form with one cover panel opened. Ex. 1066, 3:10–11.

2. Weimer (Ex. 1067)

Weimer discloses a paperboard box that includes top closure panels 22 connected on folding score lines to side panels 20. Ex. 1067, 1:28–31, 2:9–12. Top closure panels 22 are connected on folding score lines to side panels 20. *Id.* at 1:28–31 and 2:9–12.

Friction tabs 24 (also referred to by Weimer as friction flaps) are on side ends of top closure panels 22 and enter a space between the first end panel 30 and third end panel 60 when top panel 22 is folded downward. Ex. 1067, 3:29–32; Figs 2–4, annotated copies by Mr. Herber (Ex. 1072 ¶ 10) are reproduced below.

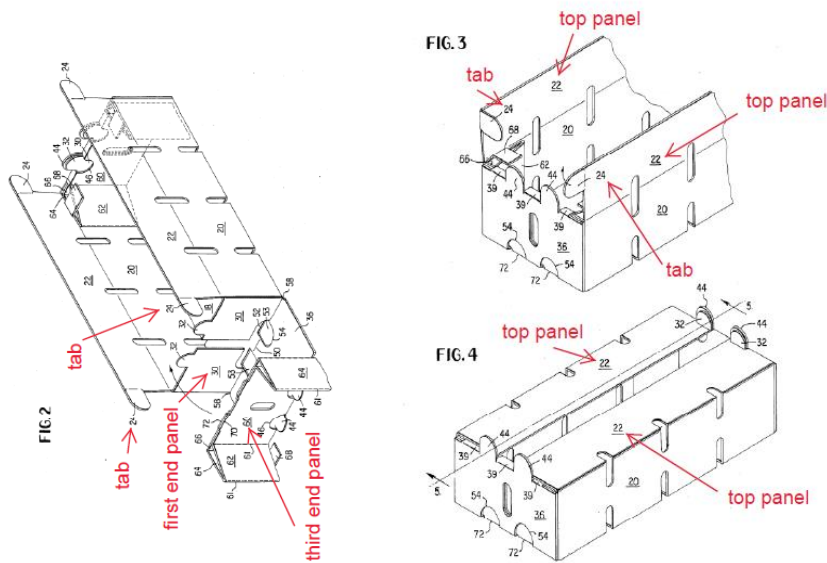


Figure 2, annotated with labeled components by Mr. Herber (Ex. 1072 ¶ 10), is a view illustrating a first intermediate stage in erecting or setting up the box from the blank shown at Figure 1. Ex. 1067, 1:51–53. Figure 4, also annotated with labeled components by Mr. Herber ((Ex. 1072 ¶ 10), is a view similar to Figure 2 and shows the box in its completed or fully erected configuration. Ex. 1067, 1:57–58.

3. Owens (Ex. 1068)

Owens discloses a corrugated container blank that folds to form a corrugated container in which locking projections on flaps engage locking apertures for assembly. Ex. 1068, 1:1–59. “[L]ocking apertures are provided in the side wall wing flap portions for receiving the free extremities of the second locking tab portions, thereby to effect locking of the top flaps in their closed positions.” Ex. 1068, 1:62–65.

Owens describes locking tabs 38 connected to lateral edges of top flaps 34 of the container. Top flaps 34 are hinged to the side walls 10 of the container. *Id.*, 2:49–54. Locking tabs 38 are introduced into locking slots

18 shown in Figs. 4–6 to lock the top flaps 34 in a closed position. *Id.*, 3:29–39.

4. *Hamilton (Ex. 1069)*

Hamilton describes a fiberboard box. Ex. 1069, 1:9–11. Hamilton’s box includes top panels 8 that connect along folding creases to a side wall panel 6. *Id.*, 2:15–16; Fig. 8. Tab 32 is formed on each top panel 8 and shaped to fit into a slot. *Id.*, 3:40–43. When the top closure flaps are folded down, tabs 32 enter openings that interrupt the narrow strip 47 and hold the side wall panels 6.

G. *Claim 65*

We determine that Petitioner did *not* meet its evidentiary burden to establish that claim 65 is unpatentable under 35 U.S.C. § 103 based on the asserted ground of claim 65, as further amended (PO MTA Reply 56–57) would have been obvious over NanoCool and Frysinger or Roderick and further in view of Bannister, Weimer, Owens, or Hamilton, as asserted by Petitioner. Pet. MTA Sur-reply 8. We determine this asserted ground fails to comply with 37 C.F.R. § 42.204(b)(4), which requires that the petition must set forth: “[w]here the grounds for unpatentability are based on prior art, the petition must specify where each element of the claim is found in the prior art.”

Additionally, this ground fails to comply with our rule 37 C.F.R. § 42.204(b)(5), which further requires that the Petition must specify the “relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.” Additionally, § 42.204(b)(5) states “[t]he Board may exclude or give no weight to the

evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge.”

H. Claims 49, 50, 54–56, 58, 61–63, 67, and 68

We determine that Petitioner did *not* meet its evidentiary burden to establish that claims 49, 50, 54–56, 58, 61–63, 67, and 68 are unpatentable under 35 U.S.C. § 103 based on the asserted ground of “references cited in Grounds 2–7 of the Petition, in view of one or more of Morrison, Kruelle or Signode 1996 Catalog, and further in view of Mayer. *See* Pet. Opp. MTA 26–31 (Section VII); *see also* Pet. MTA Sur-reply 9–10. We determine this asserted ground fails to comply with 37 C.F.R. § 42.204(b)(4), which requires that the petition must set forth: “[w]here the grounds for unpatentability are based on prior art, the petition must specify where each element of the claim is found in the prior art.”

Additionally, this ground fails to comply with our rule 37 C.F.R. § 42.204(b)(5), which further requires that the Petition must specify the “relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.” Additionally, § 42.204(b)(5) states “[t]he Board may exclude or give no weight to the evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge.”

Petitioner acknowledges the lack of specificity in its arguments. In its Sur-reply, Petitioner states:

Bearing in mind the page limits and the large number of claims to address, *Petitioner sought to rely on the table of contents in the Petition to identify the location of the detailed evidence and reasoning for the anticipation and obviousness the original patent claims 1, 2, 8, 10, 18-21, 46 and 47 that PO identified as being replaced by the above-cited claims.* Pet., iii-vi. In view of

the clear layout of the table of contents in the location of Petitioner's discussion of evidence and reasoning for each claim is identified in the record.

Pet. MTA Sur-reply 9–10 (emphasis added); *see also* Tr. 7:15–18 (counsel for Petitioner acknowledging “certainly we had a lot to try to cover in our opposition to the motion to amend, and we covered some of the key points in a lot of detail. Some other things we simply thought there wasn't space to address it in an element by element basis.”). Petitioner did not request additional “space” or pages to provide a clear discussion “where each element of the claim is found in the prior art,” as required by 37 C.F.R. § 42.204(b)(4).

Looking at the record as a whole, this asserted ground fails to meet the requirements of our rules.

V. CONCLUSION³³

After reviewing the entire record and weighing evidence offered by both parties, we determine that Petitioner has demonstrated by a preponderance of the evidence that amended claim 64 of the '685 patent are not patentable.

We also determine that Petitioner has *not* demonstrated by a preponderance of the evidence that amended claims 49, 50, 54–56, 58, 61, 62, 63, 65, 67, and 68 are unpatentable under 35 U.S.C. § 103 as obvious

³³ As noted in Section I.C of this Decision, footnote 2, Patent Owner has filed a reissue application for the '685 patent. We remind Patent Owner of its continuing obligation to notify the Board of any changes in the status of the reissue application. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

over the combined teachings of the cited references or that amended claims 50, 54, 62–64 unpatentable under 35 U.S.C. § 112(a).

Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	1–48
Substitute Claims Proposed in the Amendment	49, 50, 54–56, 58, 61–65, 67, 68
Substitute Claims: Motion to Amend Granted	49, 50, 54–56, 58, 61–65, 67, 68
Substitute Claims: Motion to Amend Denied	
Substitute Claims: Not Reached	

Claim(s)	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
49, 50, 54–56, 58, 61–63, 67, 68	103	References cited in Grounds 2–7 of the Petition, in view of one or more of Morrison, Kruelle or Signode 1996 Catalog, and further in view of Mayer		49, 50, 54–56, 58, 61–63, 67, 68
64	102	NanoCool98596	64	
64	103	NanoCool98596, Goncharko, Sawaki, Frysinger	64	
64		NanoCoolProducts, Goncharko, Sawaki, Roderick	64	
65	103	NanoCool98596, Frysinger or Roderick and further in view either Bannister, Weimer, Owens, or Hamilton		65
49, 50, 54–56, 58, 61–63, 67, 68	103	References cited in Grounds 2–7 of the Petition, in view of one or more of Morrison, Kruelle or Signode 1996 Catalog, and further in view of Mayer		49, 50, 54–56, 58, 61–63, 67, 68
50, 54, 62–64	112(a)			50, 54, 62–64
Overall Outcome			64	49, 50, 54–56, 58, 61–63, 65, 67, 68

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that amended claim 64 is unpatentable;

FURTHER ORDERED that Patent Owner's Non-Contingent Motion to Amend is granted for claims 64 and denied for all other amended claims; and

FURTHER ORDERED that Patent Owner's Motion to Exclude is denied; and

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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PELICAN BIOTHERMAL, LLC,
Petitioner,

v.

VA-Q-TEC AG,
Patent Owner.

PGR2021-00085
Patent 10,766,685 B2

Before, BARRY L. GROSSMAN, ROBERT A. POLLOCK, and
RYAN H. FLAX, *Administrative Patent Judges*.

POLLOCK, *Administrative Patent Judge*.

I concur in the result.

UNITED STATES PATENT AND TRADEMARK OFFICE

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FLAX, *Administrative Patent Judge*.

I concur in the result.

PGR2021-00085
Patent 10,766,685 B2

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