

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SIMPSON STRONG-TIE COMPANY INC.,
Petitioner,

v.

COLUMBIA INSURANCE COMPANY,
Patent Owner.

PGR2021-00109
Patent 11,021,867 B2

Before SCOTT A. DANIELS, NEIL T. POWELL, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

BELISLE, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining Some Challenged Claims Unpatentable

Granting-in-Part Patent Owner's Revised Contingent Motion to Amend

35 U.S.C. § 328(a)

Dismissing Patent Owner's Motion to Exclude Evidence

37 C.F.R. § 42.64(c)

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I. INTRODUCTION

A. Case Posture

Simpson Strong-Tie Company Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting a post-grant review of claims 1–23 (“the challenged claims”) of U.S. Patent No. 11,021,867 B2 (Ex. 1001, “the ’867 patent”). Columbia Insurance Company (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 7, “Prelim. Resp.”). In addition, with prior authorization from the Board (Paper 6), Patent Owner requested a Certificate of Correction pursuant to 35 U.S.C. § 255 to correct certain mistakes in the ’867 patent (Ex. 2003). A Certificate of Correction subsequently issued concerning claims 5, 11, 16, and 17 of the ’867 patent. Ex. 2032. We instituted a post-grant review of claims 1–23 of the ’867 patent on all grounds of unpatentability alleged in the Petition. Paper 42 (“Institution Decision” or “Dec.”).

After institution: (A) Patent Owner filed a Response. Paper 45 (“PO Resp.”). Petitioner filed a Reply. Paper 49 (“Pet. Reply”). Patent Owner filed a Sur-Reply. Paper 54 (“PO Sur-Reply”). (B) Patent Owner filed a Contingent Motion to Amend. Paper 46. Petitioner filed an Opposition to the Contingent Motion to Amend. Paper 50. (C) Patent Owner filed a Revised Contingent Motion to Amend. Paper 53 (“RMTA”). Petitioner filed an Opposition to the RMTA. Paper 56 (“RMTA Opp.”). Patent Owner filed a Reply to the RMTA Opposition. Paper 61 (“RMTA Reply”). Petitioner filed a Sur-Reply to the RMTA Reply. Paper 69 (“RMTA Sur-Reply”). (D) Patent Owner filed a Motion to Exclude Evidence, in which Patent Owner moves to exclude page 132, line 10

through page 145, line 5 of Exhibit 1038 (August 22, 2022 Deposition Testimony of Dr. Reynaud Serrette (Patent Owner’s expert)). Paper 63 (“Mot. Excl.”). Petitioner filed an Opposition to Patent Owner’s Motion to Exclude Evidence (Paper 64), and Patent Owner filed a Reply to Petitioner’s Opposition to Patent Owner’s Motion to Exclude Evidence (Paper 68). We held a hearing on January 17, 2023, and a transcript of the hearing appears in the record. Paper 72 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Under the applicable evidentiary standard, Petitioner has the burden to prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 326(e) (2018); 37 C.F.R. § 42.1(d) (2022). “Preponderance of the evidence means the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it.” *United States v. C.H. Robinson Co.*, 760 F.3d 1376, 1383 (Fed. Cir. 2014) (internal quotations omitted). This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, we determine (1) Petitioner has established by a preponderance of the evidence that claims 1–12, 15–17, and 21–23 (but not claims 13, 14, and 18–20) of the ’867 patent are unpatentable; (2) Patent Owner has not satisfied the statutory requirements of 35 U.S.C. § 326(d) and the procedural requirements of 37 C.F.R. § 42.221 as to proposed substitute claims 25, 28, and 40, and therefore, we *deny* Patent Owner’s RMTA as to proposed substitute claims 25, 28, and 40; (3) Petitioner has demonstrated unpatentability of proposed substitute claims 24–31, 33–35, 38–40, and 44–46 by a preponderance of the evidence,

and therefore, we *deny* Patent Owner’s RMTA as to proposed substitute claims 24–31, 33–35, 38–40, and 44–46; (4) Patent Owner has satisfied the statutory requirements of 35 U.S.C. § 326(d) and the procedural requirements of 37 C.F.R. § 42.221 as to proposed substitute claim 32, and Petitioner has not demonstrated unpatentability of this claim by a preponderance of the evidence, and therefore, we *grant* Patent Owner’s RMTA as to proposed substitute claim 32; and (5) Petitioner has not established by a preponderance of the evidence that claims 13, 14, and 18–20 are unpatentable, and therefore, we *dismiss* as moot Patent Owner’s RMTA as to contingent proposed substitute claims 36, 37, and 41–43, which correspond to original claims 13, 14, and 18–20, respectively.

B. Related Matters

The parties identify the ’867 patent as a continuation of U.S. Patent No. 10,316,510 (“the ’510 patent”). Pet. 121; Paper 4, 2. The ’510 patent was involved in post-grant proceeding *Simpson Strong-Tie Company Inc. v. Columbia Insurance Company*, PGR2019-00063, Paper 52 (PTAB Mar. 11, 2021), which is on appeal and cross-appeal in *Columbia Insurance Company v. Simpson Strong-Tie Company Inc.*, Appeal Nos. 2021-2145, 2021-2157, in the U.S. Court of Appeals for the Federal Circuit. Pet. 121; Paper 4, 2. The ’510 patent also is involved in a civil action in *Columbia Insurance Company et al. v. Simpson Strong-Tie Company Inc.*, No. 3-19-cv-04683 (N.D. Cal.) (“Related Litigation”). Pet. 121; Paper 4, 2.

Patent Owner also identifies pending U.S. Patent Application No. 17/235,349, filed April 20, 2021, as claiming benefit of the '867 patent. Paper 4, 2.

C. The '867 Patent

The '867 patent is titled “Hanger For Fire Separation Wall,” and issued on June 1, 2021, from U.S. Application No. 16/433,799, filed June 6, 2019. Ex. 1001, codes (10), (21), (22), (45), (54). The '867 patent claims priority through a series of continuing applications to U.S. Provisional Application No. 61/922,531, filed December 31, 2013. *Id.* at codes (60), (63).

The '867 patent generally relates to “a truss hanger for connecting a truss to a wall including fire retardant sheathing.” Ex. 1001, 1:19–21. Figure 2 of the '867 patent is reproduced below.

FIG. 2

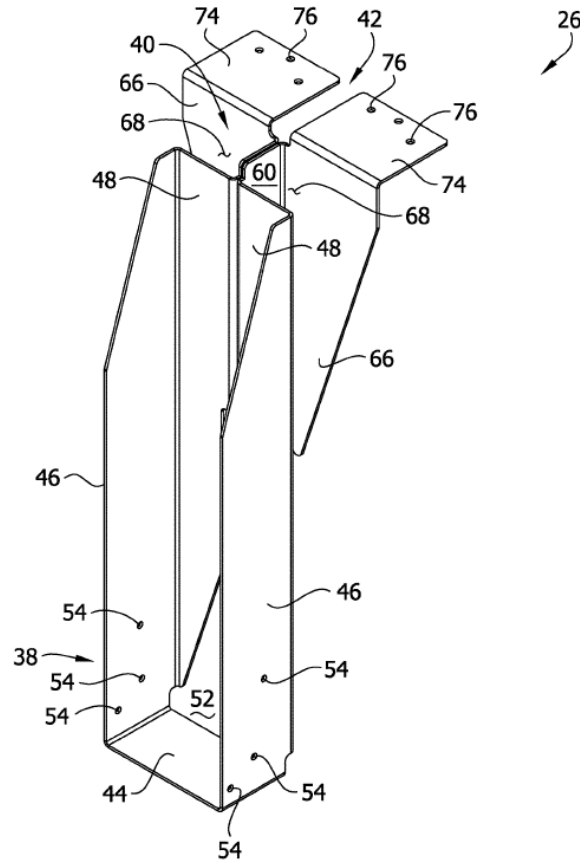


Figure 2 is a perspective view of a truss hanger.

Id. at 2:59–60.

Figure 2 shows truss hanger 26 having three main portions: channel-shaped portion 38, extension portion 40, and connection portion 42. Ex. 1001, 4:34–36. Channel-shaped portion 38 is configured to receive floor truss 12 (not shown), and includes seat or base 44 and a pair of side panels 46 extending upward from base 44. *Id.* at 4:36–39. When installed, base 44 is generally horizontal, and side panels 46 extend generally vertical from base 44. *Id.* at 4:39–41. Back panel 48 extends from each of side panels 46, and each back panel 48 is generally perpendicular to both side

panels 46 and base 44. *Id.* at 4:41–44. When installed, each back panel 48 extends generally parallel to interior face 50 of fire-retardant sheathing 34 (not shown). *Id.* at 4:44–47.

Extension portion 40 includes two extension flanges 60 configured to extend through fire retardant sheathing 34 (not shown). Ex. 1001, 5:1–3. Each flange 60 extends from one of back panels 48, and is “positioned in opposed, face-to-face relation,” “preferably engag[ing] each other along a juncture.” *Id.* at 5:3–6. Back flange 66 extends generally perpendicular from each of extension flanges 60, and is oriented generally parallel to back panels 48. *Id.* at 5:19–22.

Connection portion 42 includes a pair of connector tabs 74 extending from back flanges 66. Ex. 1001, 6:37–39. Each connector tab 74 extends generally perpendicular from one of back flanges 66, and is generally horizontal when hanger 26 is installed. *Id.* at 6:39–42.

Truss hanger 26 mounts to framing of a wall during construction as shown in Figure 10 of the '867 patent, reproduced below. Ex. 1001, 5:32–41.

FIG. 10

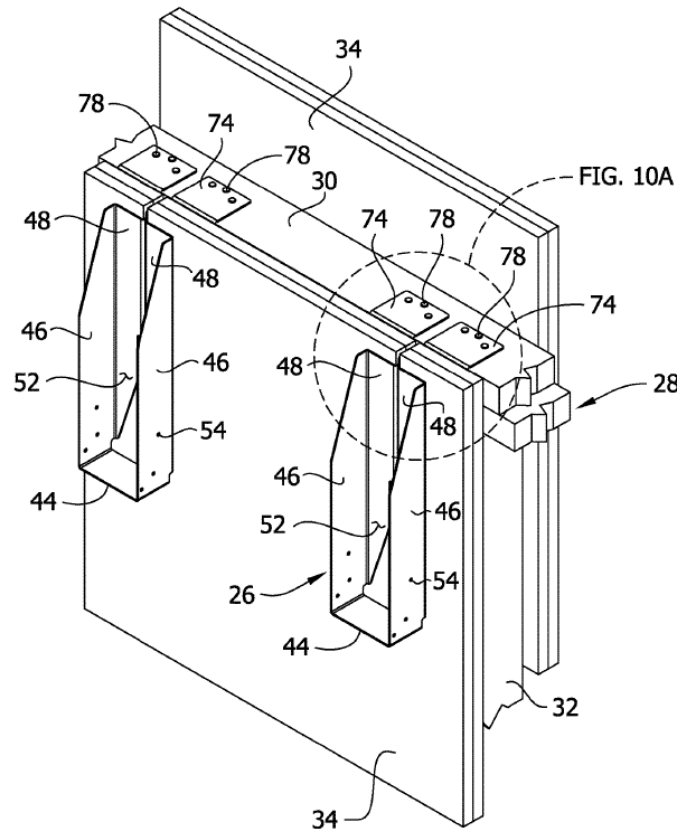


Figure 10 is a perspective view of wall 28 having fire retardant sheathing 34 with a slot cut in the sheathing to receive truss hanger 26.

Id. at 3:4–5. Once installed, a portion of fire-retardant sheathing 34 extends into each sheathing channel 68 and is secured between back panels 48 and back flanges 66. *Id.* at 5:38–41. According to the '867 patent, an exemplary embodiment of fire-retardant sheathing 34, as shown in Figure 10 for example, is gypsum board, such as two layers of 5/8" gypsum board. *Id.* at 4:18–24.

According to the '867 patent, the use of truss hanger 26 allows for the mounting of joists or beams to fire separation walls with less interruption to the wall's fire-retardant sheathing, thus minimizing any reduction in the wall's fire-resistant rating. *See* Ex. 1001, 1:25–41.

D. Illustrative Claim

The '867 patent includes twenty-three claims, all of which are challenged. Claims 1 and 16 are independent claims. Claim 1 is illustrative and reproduced below.

1. A hanger for connecting a structural component to a wall adapted to have sheathing mounted thereon, the hanger comprising:
 - a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base configured to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface configured to engage the structural component, the upper surface lying in a base plane;
 - a connection portion configured for attachment to the wall, the connection portion including a back flange having an upper edge, the back flange extending from the upper edge in a direction generally toward the base plane, the connection portion and channel-shaped portion being in a fixed, spaced apart relation relative to one another; and
 - an extension portion including first and second extension flanges extending from the channel-shaped portion to the connection portion, each extension flange being configured to extend through the sheathing, each extension flange lying in an extension flange plane, the extension flange planes being generally perpendicular to the base plane, the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped

portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall.

Ex. 1001, 12:15–44.

E. Evidence of Record

Petitioner relies on the following patent evidence and published patent application evidence.

Name	Document	Exhibit
Bundy	9,394,680 B2	1007
Timony	2005/0155307 A1	1008
Tsukamoto	JPH0314482Y2 ¹	1009
Gilb '792	4,422,792	1035
Robinson	GB2433522A	1046
Harrison	2005/0120669 A1	2016

Pet. 1–3, RMTA Opp. 12.

Petitioner relies on the Declarations of W. Andrew Fennell (Exs. 1003, 1039, 1045).

Patent Owner relies on the Declarations of Reynaud Serrette, Ph.D. (Exs. 2001, 2057, 2059, 2069).

We note that Patent Owner does not challenge the prior art status of any of the patents and published patent applications listed above.

¹ Citations herein to Tsukamoto are to the certified translation thereof included in Ex. 1009.

F. Instituted Challenges to Patentability

We instituted post-grant review of claims 1–23 of the ’867 patent on the following grounds. Dec. 2–3, 8–9, 87–88.

Claims Challenged	35 U.S.C. §	References/Basis
1–23	112(b)	
5, 17	112(a)	
1–12, 15–17, 21–23	103 ²	Gilb ’792, Bundy
1–4, 6, 10, 11	102	Timony
5, 7–9, 12, 15– 17, 21–23	103	Timony, Bundy
1–12, 15–17, 21–23	103	Tsukamoto, Bundy

II. ANALYSIS: ORIGINAL CLAIMS 1–23

A. Applicable Law

Petitioner challenges the patentability of original claims 1–23 of the ’867 patent on the grounds that various claims are indefinite, lack sufficient written description, or are anticipated under 35 U.S.C. § 102 or obvious under 35 U.S.C. § 103 in light of various references, namely, Gilb ’792, Timony, Tsukamoto, and Bundy. To prevail in its challenges to the patentability of the claims, Petitioner must establish unpatentability by a

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103. Because the ’867 patent was effectively filed after March 16, 2013, the effective date of the relevant amendment, the AIA versions of §§ 102 and 103 apply.

preponderance of the evidence. 35 U.S.C. § 326(e); 37 C.F.R. § 42.1(d). In a post-grant review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”); *cf. Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“[I]t was [Petitioner’s] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable.”). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

1. Written Description

Under 35 U.S.C. § 112(a), a patent specification shall contain a “written description” of the invention. 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.” *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 920 (Fed. Cir. 2004) (quoting *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)). This requirement protects the *quid pro quo* between inventors and the public, whereby the public receives “meaningful disclosure in exchange for being excluded from practicing the invention for a limited period of time.” *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 970 (Fed. Cir. 2002).

To satisfy the written description requirement, the disclosure must reasonably convey to skilled artisans that the inventor possessed the claimed invention as of the claimed priority date. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). “One does that by such descriptive means as words, structures, *figures*, diagrams, formulas, etc., that fully set forth the claimed invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997) (emphasis added). “The invention is, for purposes of the ‘written description’ inquiry, whatever is now claimed.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991). Such description need not recite the claimed invention *in haec verba* but must do more than merely disclose that which would render the claimed invention obvious. *Univ. of Rochester*, 358 F.3d at 923; *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566–67 (Fed. Cir. 1997); *see also PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306–07 (Fed. Cir. 2008) (explaining that § 112, ¶ 1 “requires that the written description actually or inherently disclose the claim element”).

2. Indefiniteness

Under 35 U.S.C. § 112(b), a patent specification “shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . . . regards as the invention.” This is commonly referred to as the definiteness requirement.

The Board applies in post-grant reviews the same indefiniteness standard as used in federal courts and the U.S. International Trade Commission under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014), and its progeny. USPTO Memorandum, *Approach To Indefiniteness*

Under 35 U.S.C. § 112 In AIA Post-Grant Proceedings (Jan. 6, 2021).

Under *Nautilus*, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with *reasonable certainty*, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 901 (emphasis added).

“[A] patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them,” but the present standard recognizes that “absolute precision is unattainable.” *Id.* at 909–10 (internal quotation marks and brackets omitted).

3. *Anticipation*

To serve as an anticipatory reference under 35 U.S.C. § 102, “the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently.” *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). “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) (emphasis added).

The elements must be arranged as required by the claim, “but this is not an ‘*ipsissimis verbis*’ test,” i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990) (citing *Akzo N.V. v. United States Int’l Trade Comm’n*, 808 F.2d 1471, 1479 & n.11 (Fed. Cir. 1986)).

4. *Obviousness*

A claim is unpatentable under 35 U.S.C. § 103 “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to

which the claimed invention pertains.” 35 U.S.C. § 103; *see KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when of record, objective evidence of obviousness or non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Secondary considerations may include the following: “commercial success, long felt but unsolved needs, failure of others, etc.”³ *Id.* The totality of the evidence submitted may show that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The Supreme Court has 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 a 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 reach this conclusion, however, requires more than a mere

³ Patent Owner has not presented objective evidence of non-obviousness.

showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing 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.* “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

We analyze the challenges presented in the Petition and to the RMTA (*see* section III, *infra*) in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art, at the time of the effective filing date of the ’867 patent:

would have had an education background of, or practical experience providing an equivalent to, a Bachelor of Science in Mechanical Engineering, Structural Engineering or a related/equivalent field and at least four years of work experience in construction connector design/development.

Pet. 13 (citing Ex. 1003 ¶ 15). Similarly, Patent Owner contends that the skilled artisan:

would have acquired a body of knowledge gained through formal education, or practical experience providing an equivalent to, a Bachelor of Science in Mechanical Engineering, Civil/Structural Engineering, or a related/equivalent field, and at least four years

of work experience in construction connector design/development.

PO Resp. 23; *see* Ex. 2001 ¶ 19.

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). The level of ordinary skill in the art also is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Neither party argues that the outcome of this case would differ based on our adoption of any particular definition of the level of ordinary skill in the art. Although slight differences exist in the formulation of such skill level between the parties, we discern no meaningful differences because none of those differences would affect the outcome of our analysis. Considering the subject matter of the ’867 patent, the background technical field, the prior art, and parties’ proposed definitions of the skilled artisan, we apply the level of skill cumulatively set forth above by the parties, which is consistent with testimony of both parties’ experts (Ex. 1003 ¶ 15; Ex. 2001 ¶ 19).

C. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.200(b). Under *Phillips*, claim terms are afforded “their ordinary and

customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317. Only terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review).

In PGR2019-00063, which involved the ’510 patent (an immediate parent of the ’867 patent), we construed certain claim limitations also relevant to this case, namely:

(1) “*extend through*”: in the context of element A “extend[ing] through” element B, “extend through” means “element A extends into one side and out the other side of element B” (*Simpson Strong-Tie Company Inc. v. Columbia Insurance Company*, PGR2019-00063, Paper 52 (Ex. 2006) at 44–45 (PTAB Mar. 11, 2021));

(2) “*configured to extend through*” the sheathing: in the context of “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing,” an “extension portion . . . configured to extend through the sheathing” means (or requires structurally) “an extension portion extending from the channel-shaped portion towards the connection portion and defining a space to receive sheathing” (*id.* at 51; *see id.* at 41–52);

(3) “*extending from*”: in the context of element B extending from element A, “extending from” means “the beginning of element B’s extension is on element A” (*id.* at 110; *see id.* at 106–110); and

(4) “*rigidly fixed*”: “rigidly fixed” means “components are connected such that they do not move freely with respect to one another” (*id.* at 98; *see id.* at 96–98).

We maintain these same constructions for these terms in this case for the same reasons given in PGR2019-00063. *See* Pet. 14 (“Given that the Specification is identical between the present patent and the ’510 Patent (the subject of the Board’s prior decision), Petitioner applies the same construction to the same terms in the present claims.”); PO Resp. 23–24 (“For the purposes of this Preliminary Response [sic: Response], [Patent Owner] does not dispute [Petitioner’s] constructions of ‘extend through,’ or ‘extending from.’”). We note that Petitioner submits “[w]hile the term ‘rigidly fixed’ does not appear in the ’867 Patent claims, the term ‘fixed’ does,” and “[g]iven that the Board’s prior construction of ‘rigidly fixed’ appears to have relied on portions of the shared specification using the word ‘fixed,’ Petitioner uses the same construction herein for the term ‘fixed.’”

Pet. 14. Patent Owner, on the other hand, disputes the meaning of “fixed” in this case. PO Resp. 49–51. Patent Owner also continues its dispute as to the meaning and import of “configured to,” as recited in, for example, independent claim 1, including as recited in the limitation “configured to extend through,” that we already construed in PGR2019-00063 as noted above. *Id.* at 39–43, 45–49. To the extent necessary, we further address the meaning and import of “fixed” (versus “rigidly fixed”) and “configured to” as well as the meaning of these other limitations in our unpatentability analysis below.

In this case, Petitioner and Patent Owner also collectively advance constructions for three other claim limitations:

- (1) “*planar*,” as recited in, for example, dependent claim 2 (Pet. 14–15; PO Resp. 51–57);
- (2) “*each extension flange lying in an extension flange plane*,” as recited in, for example, independent claim 1 (PO Resp. 24–39); and
- (3) “*extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of the sheathing*,” as recited in, for example, dependent claim 5 (*id.* at 43–45).

To the extent necessary to resolve the controversy before us, we address claim interpretation in our unpatentability analysis below.

D. Alleged Unpatentability of Claims 1–23 Based on Indefiniteness

Petitioner contends claims 1–23 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness. Pet. 15–23; Pet. Reply 2–4, 8–11. Patent Owner opposes Petitioner’s contentions. PO Resp. 57–68; PO Sur-Reply 3–9. For the reasons expressed below, and based on the complete record before

us, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 5 and 17 (but not claims 1–4, 6–16, and 18–23) are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

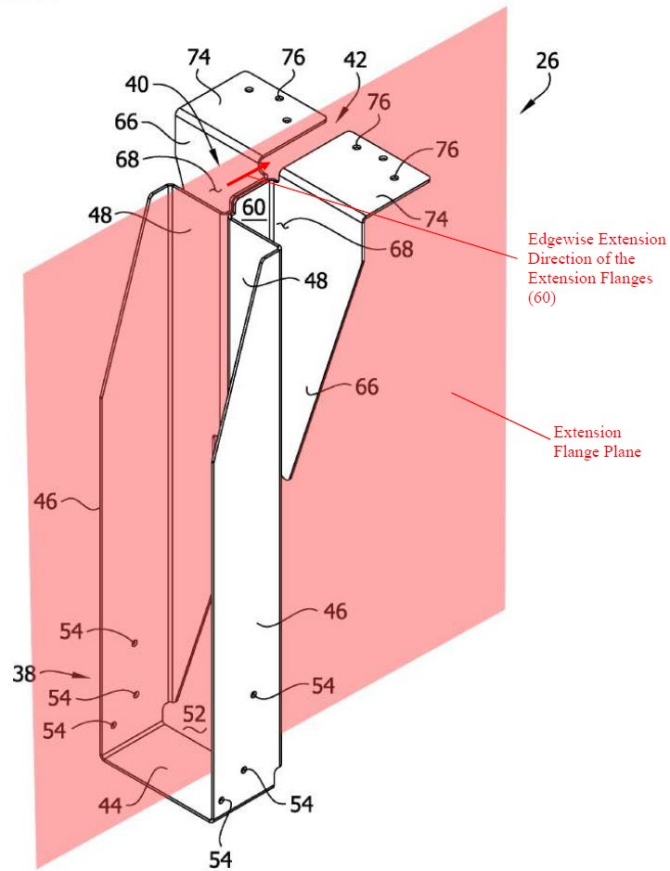
1. *Claims 1–15: “each extension flange lying in an extension flange plane”*

Petitioner contends the limitation “each extension flange lying in an extension flange plane” as recited in independent claim 1 is indefinite. Pet. 15–20; Pet. Reply 2–4, 8–10; Ex. 1001, 12:35–36. Petitioner’s contention also applies to claims 2–15, which depend, directly or indirectly, from claim 1. In particular, Petitioner argues this limitation “fails to inform with reasonable certainty where the ‘extension flange’ is located relative to the ‘extension flange plane,’ specifically which surface of the ‘extension flange’—and how much of such surface—lies ‘in’ the ‘extension flange plane.’” Pet. 15. Petitioner further argues “claim 1 defines the location of the ‘extension flange plane’ based on a *three-dimensional, multiplanar object*—the extension flange—without identifying any particular surface or cross-section on the extension flange,” and that because “[e]ach extension flange has multiple surfaces, which surfaces also include curves,” “[t]his renders the claimed location of the ‘extension flange plane’ ambiguous.” Pet. 16; *see* Pet. 17 (“Across its thickness, extension flange 60 lies in an infinite number of imaginary two-dimensional planes.”). Petitioner contends, “[t]o the extent that the phrase ‘each extension flange lying in an extension flange plane’ can be construed *consistently* with the specification, [the skilled artisan] would have understood this to mean that the extension flange plane coincides with *a section* of a flange *located between* the

connection portion *and* the channel-shaped portion, not entirely *from* the channel-shaped portion *to* the connection portion.” Pet. Reply 4 (citing Ex. 1001, 2:20–23; Ex. 1039 ¶¶ 22–26).

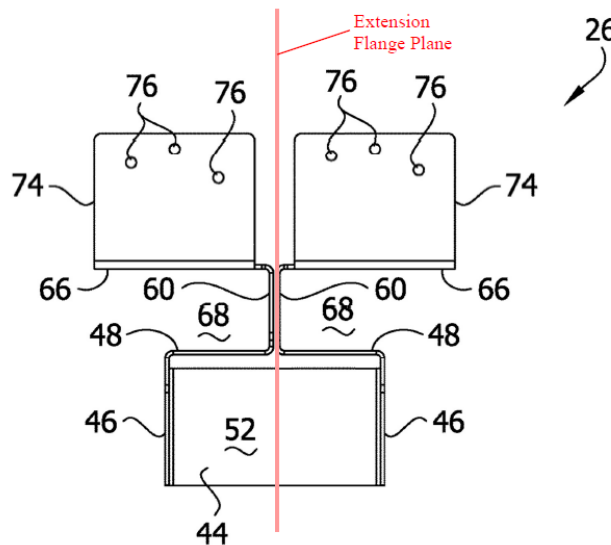
Patent Owner argues Petitioner “fails to apply a proper construction of what [it] means to ‘lie in a plane’” in view of claim 1, the Specification, and knowledge of the skilled artisan. PO Resp. 58. In particular, Patent Owner argues Petitioner “erroneously asserts that this limitation requires the identification of a specific surface of the extension flange that lies in the extension flange plane, and that the limitation is indefinite because no specific surface of the extension flange is identified by claim 1.” *Id.*; *see id.* at 62 (“[L]ying in a . . . plane’ is commonly used in the mechanical arts, including joist hangers, to describe the arrangement of a three dimensional object—particularly an object such as a flange that has a smaller thickness in relation to the dimensions of its major surfaces—relative to a plane.” (citing Ex. 2001 ¶ 164)). Patent Owner contends the limitation “each extension flange lying in an extension flange plane” is not indefinite, and means “for each extension flange an extension flange plane is within the extent of the extension flange from the channel-shaped portion to the connection portion.” *Id.* at 26. Patent Owner argues, based on this proposed construction, “[the skilled artisan] is readily able to determine, with certainty, the arrangement of the extension flange planes and ultimately the orientation of the extension flanges” (*id.* at 63 (citing Ex. 2001 ¶ 167); *see id.* at 26; Ex. 2001 ¶ 158), and to illustrate this provides annotated versions of Figures 2 and 7 of the ’867 patent, reproduced below.

FIG. 2



The above illustration shows Patent Owner's understanding of an extension flange plane applied to Figure 2 of the '867 patent.

FIG. 7



The above illustration shows Patent Owner's understanding of an extension flange plane applied to Figure 7 of the '867 patent.

PO Resp. 58–61 (citing Ex. 2001 ¶¶ 158–160); *see* Ex. 1001, Figs. 2, 7.

We find Petitioner's arguments unpersuasive, and turn first to the construction of the limitation at issue.

a) *Claim Construction: “each extension flange lying in an extension flange plane”*

Patent Owner argues the skilled artisan would understand the limitation “each extension flange lying in an extension flange plane” to mean “for each extension flange an extension flange plane is within the extent of the extension flange from the channel-shaped portion to the connection portion.” PO Resp. 24–39, 58–63; *see* PO Sur-Reply 3–8. Patent Owner argues “[t]his construction represents the plain and ordinary meaning in the art of ‘each extension flange lying in an extension flange plane’ as would be understood by [the skilled artisan] in view of its context

in claim 1, the specification, and knowledge possessed by the [skilled artisan].” PO Resp. 26 (citing Ex. 2001 ¶¶ 115–121). Patent Owner argues the context of claim 1 itself supports this construction:

[The skilled artisan] would recognize that the limitation “each extension flange lying in an extension flange plane” is being used to establish the orientation and arrangement of the extension flange. EX2001:¶¶115–118; EX1001:12:32–38. Claim 1 defines the plane in which the edgewise end-to-end extension is arranged as an “extension flange plane.” EX2001:¶ 119. Claim 1 further provides the starting point (“extending from the channel shaped portion”) and ending point (“to the connection portion”) of the extent of each of the extension flanges. *Id.* ¶ 120. Finally, claim 1 provides the orientation of the extension flange plane as being “generally perpendicular to the base plane,” thus establishing the orientation of the extension flange relative to the base plane. *Id.* ¶ 121.

Id. at 25; *see* Ex. 2001 ¶¶ 112–121. Patent Owner argues the Specification supports this construction (PO Resp. 26–28), and submits “it is readily apparent [as shown in annotated Figures 2 and 7 reproduced above] that for each extension flange there is an extension flange plane *within the extent of the extension flange* from the channel-shaped portion [to the back flanges of the connection portion].” *Id.* at 26 (citing Ex. 2001 ¶¶ 122–124) (emphasis added).

In addition, Patent Owner argues “prior art references all show that [Patent Owner’s] proposed claim construction for this limitation is consistent with its ordinary usage in the art,” and discusses several instances where prior art patents or published patent applications for joist or structural component hangers describe various three-dimensional objects or flanges as lying in planes. PO Resp. 29–39 (citing Ex. 2001 ¶¶ 128–144); *see* PO Sur-

Reply 4 (“As was addressed in the [Response] and left unrebutted in [Petitioner’s] Reply, the prior art—including [Petitioner’s] own art—demonstrates that the term ‘plane’ is routinely used to describe three-dimensional objects within the art.”); *In re Cortright*, 165 F.3d 1353, 1358 (Fed. Cir. 1999) (“Prior art references may be ‘indicative of what all those skilled in the art generally believe a certain term means . . . [and] can often help to demonstrate how a disputed term is used by those skilled in the art.’”) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996)). Notably, for example, a published patent application of Simpson Strong-Tie International, Inc. (Ex. 2015) describes certain three-dimensional aspects of a joist hanger as lying in planes: “The stiffening elements (25) *lie in a plane* substantially parallel with a plane including the side flanges (30, 40)”]; and “The return leg(s) *lie in a plane* approximately parallel to a plane including the back flange(s).” Ex. 2015, 10 (emphases added). This Simpson application also claims, for example, “side flanges *in a plane* approximately perpendicular to *planes including* the adjoining side flange and the seat.” *Id.* at 15 (emphases added). We find Patent Owner’s exposition of various prior art references that describe objects, particularly joist hanger objects, as lying in planes to support Patent Owner’s proposed claim construction above and to contradict Petitioner’s indefiniteness argument.

Petitioner urges us to construe the subject limitation not to require an extension flange plane to be *within the extent* of the extension flange *from* the channel-shaped portion *to* the connection portion, but only to require an extension flange plane to be *within a section* of the flange *located between*

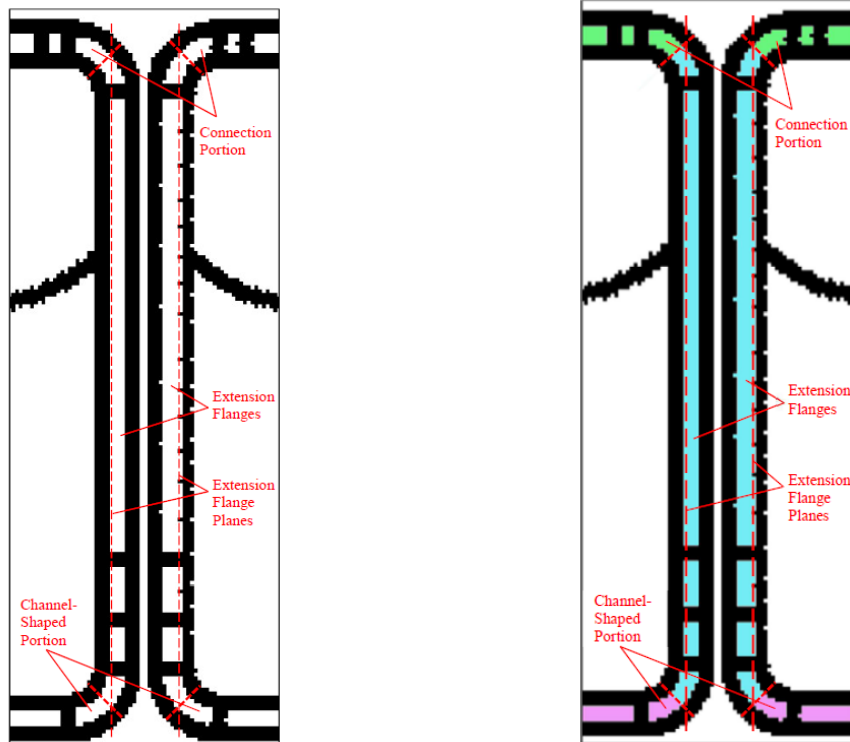
the connection portion *and* the channel-shaped portion. *See* Pet. Reply 4. In other words, according to Petitioner, as long as any section of the flange, however small (even an edge), located anywhere between the connection portion and the channel-shaped portion lies within an extension flange plane, then this would satisfy the subject limitation. We find such a construction unavailing, as it would effectively gut the subject limitation of any limiting value, particularly of providing any meaningful orientation and arrangement of the extension flange relative to other components of the claimed hanger. *See* PO Resp. 25 (“[The skilled artisan] would recognize that the limitation ‘each extension flange lying in an extension flange plane’ is being used to establish the orientation and arrangement of the extension flange.” (citing Ex. 2001 ¶¶ 115–118; Ex. 1001, 12:32–38)); *see also infra* Section II.D.1.b; Ex. 2001 ¶ 127 (“[The skilled artisan] would understand that a flange ‘lying in’ a plane refers to a plane that is aligned with the end-to-end extension of the flange, and not a plane that crosses or runs perpendicular to the extension.” (cited at PO Resp. 28)).

Petitioner argues “[Patent Owner’s] construction of ‘each extension flange lying in an extension flange plane’ is inconsistent with the specification, and therefore, should not be used to add further meaning to the claims,” and hence does not provide reasonable certainty as to the scope of this limitation. Pet. Reply 8–9. In particular, Petitioner argues:

[N]owhere does the specification describe an extension flange coinciding with a plane entirely from the channel-shaped portion to the connection portion. Rather, the extension flange explicitly includes *bends*; only a section (not the ends) of the extension flange coincides with a plane *between* the channel-shaped portion and the connection portion.

Id. at 9 (first emphasis added); *see id.* at 2 (“The specification and drawings make clear that [Patent Owner’s] own extension flanges include bends between the channel-shaped portion and connection portion.”), 3 (“[E]ither [Patent Owner’s] construction cannot be supported or must be broadened to include bends.”), 4 (“[Patent Owner’s] construction . . . would exclude every disclosed embodiment of the specification.”). We find Petitioner’s arguments unpersuasive.

As argued by Patent Owner, the “bends” disclosed in the ’867 patent and identified by Petitioner “do not preclude[] the extension flange from being coincident with an extension flange plane,” as illustrated in Patent Owner’s enlarged and annotated versions of Figure 7 of the ’867 patent, reproduced below. PO Sur-Reply 5–6; Ex. 2069 ¶ 12.



The above illustrations show Patent Owner's understanding of extension flange planes applied to Figure 7 of the '867 patent.

PO Sur-Reply 5–6; Ex. 2069 ¶ 12; Ex. 1001, Fig. 7. We agree with Patent Owner that in this structural context “the extension flanges are still each coincident with an extension flange plane throughout their extent from the channel-shaped portion to the connection portion even with the bends.” PO Sur-Reply 5. This is so because the bends (or bent portions) at the ends of the extension flanges disclosed in Figure 7, for example, have radiuses small enough to allow an extension flange plane to remain *within the extent* of the extension flange *from the channel-shaped portion to the connection portion*.

During the oral hearing in this proceeding, Petitioner's counsel agreed:

[Question:] [W]ith Dr. Serrette's fourth declaration drawing [i.e., the enlarged, annotated version of Figure 7 reproduced above], does the location of that dotted line, being the extension flange plane, does that allow the object to satisfy the claim language in your view?

[Petitioner's Counsel:] It doesn't. Well, it's unclear because we don't actually know where the ends of the extension flange are. *If we assume that the ends of the extension flange kind of end where the -- see on the bottom where the blue transitions to pink, that's okay*

Tr. 11:8–20 (emphasis added).

We note that Patent Owner, in addition to arguing its proposed construction of the subject limitation as discussed above, contends that the subject limitation *also* “should be construed to require that the extension flanges are *thin* and *relatively flat* such that the entire extension flange is *substantially coplanar* with the plane.” PO Resp. 39 (emphases added); *see id.* at 25. We find Patent Owner's argument here unavailing, particularly

because Patent Owner’s proposed interpretation of the subject limitation (a) introduces three relative terms (i.e., “thin,” “relatively flat,” and “substantially coplanar”), not present in the subject limitation under construction, without identifying any support from the ’867 patent as to the *scope* of such relative terms, and (b) requires us to read-in those limitations which simply are not present in the subject limitation itself (but readily could have been explicitly claimed if intended). More specifically, because the ’867 patent discloses certain hanger embodiments stamped from sheet metal (e.g., 16-gauge steel sheet) (*see, e.g.*, Ex. 1001, 6:15–21, Fig. 2), and because certain prior art cited by Patent Owner uses variations of the phrase “lying in a plane” in conjunction with features of hangers stamped from sheet metal (*see* PO Resp. 29–39), Patent Owner argues that “lying in [a] . . . plane” in the subject limitation must be read to reflect properties of sheet metal, such as “thin” and “relatively flat” (PO Resp. 39). We disagree, and find doing so to be a clear case of improperly importing limitations (and implicit ones at best) from the Specification into the subject limitation. *See E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003) (Claims must be interpreted “‘in view of the specification’ without unnecessarily importing limitations from the specification into the claims.” (citing *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1203–04 (Fed. Cir. 2002))). Indeed, the ’867 patent itself describes the construction of its hangers by stamping sheet metal only as “embodiment[s],” and explicitly discloses that “other suitable materials are within the scope of the present invention.” Ex. 1001, 6:15–21.

We also note that Patent Owner, again in addition to arguing its proposed construction of the subject limitation as discussed above, contends that “bends” at the ends of extension flanges are “negligible features” and “would not be considered in determining whether a flange lies in a plane.” PO Sur-Reply 7. Similarly, Patent Owner contends “the bends would be *ignored* in determin[ing] whether the extension flange lies in a plane.” *Id.* at 6 (emphasis added). We find Patent Owner’s arguments here unavailing, particularly because they plainly contradict Patent Owner’s proffered construction of the subject limitation, which requires an extension flange plane to be *within the extent* of the extension flange *from* the channel-shaped portion *to* the connection portion, and plainly undermine Patent Owner’s contention that Petitioner is wrong that the subject limitation requires an extension flange plane to be only within *a section* of the flange *located between* the connection portion *and* the channel-shaped portion. Indeed, disregarding structural features at the ends of extension flanges, such as “bends,” leaves only a “section” of the flange to lie in a plane, which we disagree is the proper construction of the subject limitation. *See supra*. As discussed above, the parties agree that construing the subject limitation to mean “for each extension flange an extension flange plane is within the extent of the extension flange from the channel-shaped portion to the connection portion” does accommodate bends of certain radii at the ends of extension flanges, but not any size bend or transition (regardless of location along the extension flange), which we find affords proper boundaries for the subject limitation of “each extension flange lying in an extension flange plane.” *See Nautilus*, 572 U.S. at 901.

Accordingly, based on the foregoing and the complete record before us, we construe the limitation “each extension flange lying in an extension flange plane” to mean “for each extension flange an extension flange plane is within the extent of the extension flange from the channel-shaped portion to the connection portion.”

b) Alleged Indefiniteness

Based on our reasoning immediately above for our construction of the limitation “each extension flange lying in an extension flange plane,” we are not persuaded by Petitioner that this limitation would not have informed *the skilled artisan*, with reasonable certainty, about the scope of the claimed invention. *See Nautilus*, 572 U.S. at 901, 909–10 (“absolute precision is unattainable”); PO Resp. 63 (“[The skilled artisan] is readily able to determine, with certainty, the arrangement of the extension flange planes and ultimately the orientation of the extension flanges.”); *see also* PO Resp. 58–63; Ex. 2001 ¶¶ 158–167.

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of evidence that claims 1–15⁴ are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

⁴ As noted above in Section I, Patent Owner obtained a Certificate of Correction that, in part, added the term “portion” after the last use of the term “channel-shaped” in claim 11. Ex. 2032. We find this change does not affect our indefiniteness analysis here. Thus, we need not and do not decide herein whether the Certificate of Correction, which issued subsequent to the filing of the Petition, has effect in this proceeding.

2. *Claims 16–23: “a channel-shaped portion configured to receive the structural component” and “a base configured to receive an end portion of the structural component thereon to support the structural component”*

Petitioner contends the limitations “a channel-shaped portion configured to receive *the structural component*” and “a base configured to receive an end portion of *the structural component* thereon to support *the structural component*” as recited in independent claim 16, and thus in claims 17–23 which depend therefrom, are indefinite. Pet. 20–22; Ex. 1001, 13:34–14:18. In particular, Petitioner argues these limitations “lack proper antecedent basis for the term ‘structural component,’ thereby failing to inform with reasonable certainty what object—a joist or a structural component—is intended to be used with the recited hanger.” Pet. 21. According to Petitioner, because claim 16 introduces “a joist” in the preamble and then later introduces “the structural component” without proper antecedent basis, the skilled artisan “would not have been able to determine with reasonable certainty whether the recited hanger is intended to be used with a joist (a specific type of structural member having standard, uniform sizes) or a structural component (a generic term covering various structural members (e.g. a truss) having different shapes and sizes).” Pet. 21–22.

Patent Owner, quoting *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001), argues “the failure to provide explicit antecedent basis for terms does not always render a claim indefinite.” PO Resp. 63–64; *see In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971) (“[T]he definiteness of the language employed must be analyzed—not in a vacuum, but always in light

of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art.”). Patent Owner argues the skilled artisan “would have readily understood that the term ‘a joist’ provided antecedent basis for the term ‘the structural component’ based on the claim language, the specification, and the knowledge possessed by the [skilled artisan].” PO Resp. 64 (citing Ex. 2001 ¶¶ 168–178). Patent Owner argues the skilled artisan “knows that joists are a type of structural component,” and highlights that Petitioner even agrees with this point. *Id.* (citing Ex. 2001 ¶ 172; Pet. 21–22 (“a joist (a specific type of structural member[])”)). Patent Owner argues the skilled artisan “would have understood the term ‘a joist’ provided antecedent basis for the term ‘the structural component.’” *Id.* at 63. We agree with Patent Owner’s arguments.

Based on the foregoing and the complete record before us, we are not persuaded by Petitioner that the limitations “a channel-shaped portion configured to receive the structural component” and “a base configured to receive an end portion of the structural component thereon to support the structural component” would not have informed *the skilled artisan*, with reasonable certainty, about the scope of the claimed invention. *See Energizer Holdings, Inc. v. Int’l Trade Comm’n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006) (“When the meaning of the claim would reasonably be understood by persons of ordinary skill when read in light of the specification, the claim is not subject to invalidity upon departure from the protocol of ‘antecedent basis.’”). Accordingly, we conclude that Petitioner

has not demonstrated by a preponderance of evidence that claims 16–23 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

As noted above in Section I, Patent Owner obtained a Certificate of Correction that, in part, replaces the term “joist” in claim 16 with the term “structural component.” Ex. 2032; *see* PO Resp. 63. The Certificate of Correction was filed and issued after Petitioner filed the Petition. Our determination as to Petitioner’s indefiniteness challenge is based on the original phrasing of claim 16. As indicated in our analysis, we find that the term “a joist” provides antecedent basis for the term “the structural component.” Thus, we would reach the same result regardless of whether the Certificate of Correction has effect in this proceeding. In any event, we need not and do not decide herein whether the Certificate of Correction has effect in this proceeding.

3. *Claims 5 and 17: “extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of the sheathing”*

Petitioner contends the limitation “extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of the sheathing” as recited in dependent claims 5 and 17 is indefinite. Pet. 22–23; Pet. Reply 6–7, 11; Ex. 1001, 12:53–56, 14:19–22. In particular, Petitioner argues this limitation “fails to inform with reasonable certainty *how* the recited function of maintaining a 2 hour fire resistance rating *further limits the claimed hanger.*” Pet. 22 (emphases added). Petitioner argues “the recited function of maintaining a 2 hour fire resistance rating of sheathing *does not clarify what is required by the hanger*, because the fire resistance rating is based on the entire wall assembly, not just the

conformance between the sheathing and the hanger.” Pet. 23 (citing Ex. 1003 ¶ 86) (emphasis added).

Patent Owner argues the skilled artisan would have recognized that the phrase ‘a 2 hour fire resistance rating of the sheathing’ as recited in claims 5 and 17 “was describing a 2 hour fire resistance rating of the entire wall assembly including the [wall (claim 5)/frame wall (claim 17)] and the sheathing.” PO Resp. 44 (citing Ex. 2001 ¶ 155); *see id.* at 43–45, 64–68. Patent Owner argues, at least implicitly, that the skilled artisan would understand, with reasonable certainty, what the limitation the “extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing” requires. PO Resp. 43–45, 64–68. Patent Owner does so without citing any supporting evidence, and without identifying what structural attributes *the claimed hanger* allegedly “requires” to meet this 2-hour fire resistance feature, let alone what the claimed structural difference(s) are between (1) extension flanges configured to extend through sheathing and (2) extension flanges configured to extend through sheathing *while maintaining a 2 hour fire resistance rating of the sheathing*.

Patent Owner argues that the limitation “maintaining a 2 hour fire resistance rating of the sheathing” “adds the requirement that *the hanger be configured so as to minimally disturb the fire barrier (i.e., the sheathing)* such that a wall assembly—including a frame wall and the sheathing—upon which the hanger is installed would pass[] a two-hour fire rating test performed according the testing standards prescribed by ASTM E814 and ASTM E119.” PO Resp. 45 (emphases added) (citing Ex. 2057 ¶¶ 54, 57).

We disagree. The *claimed hanger* has no structural properties, at least none identified to the Board, that force or enforce the application of sheathing like drywall such that users must apply such sheathing in close conformance with the extension flanges of the claimed hanger. Patent Owner seems to argue this “minimal[] disturb[ance]” feature backwards—it is not the claimed hanger that has structure defined by how each one of countless users applies sheathing around the hanger or that forces or enforces application of sheathing in a particular manner relative to the hanger; instead, it is the *users* of the hanger (e.g., construction workers) that may, at their discretion, apply sheathing or other material around the structure of the claimed hanger so as to achieve a 2-hour fire resistance rating. *See* Pet. Reply 7 (“[The skilled artisan] would not have been able to determine with reasonable certainty what structure is required by the hanger to ‘minimally disturb[] the fire barrier’ – particularly since the ‘fire barrier’ includes not just the sheathing and the hanger, but any other fire mitigation materials incorporated into the barrier, as acknowledged in the ’867 patent.” (citing Ex. 1038, 121:12–123:22, 148:3–24; Ex. 1001, 11:45–60; Ex. 1039 ¶¶ 32–33)). Indeed, Patent Owner’s expert, Dr. Serrette, testifies that “[a]n installer can put *any material they wish to fill that gap* [i.e., any gap between sheathing/drywall and the hanger’s structure], provided it’s code approved.” Ex. 1038, 148:3–24 (cited at Pet. Reply 11) (emphasis added).

We find Patent Owner’s arguments here unavailing, and agree with Petitioner (Pet. 22) that the subject limitation, whether interpreted as “while maintaining a 2 hour fire resistance rating of the sheathing” or “while maintaining a 2 hour fire resistance rating of a wall assembly including the

frame wall and the sheathing,” fails to inform with reasonable certainty *how* the limitation allegedly *further limits the claimed hanger* (i.e., affects the scope of the claimed *apparatus*). Accordingly, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 5 and 17 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

In addition, as noted above in Section I, Patent Owner obtained a Certificate of Correction that, in part, amended the phrase “while maintaining a 2 hour fire resistance rating of the sheathing” in claims 5 and 17 to instead recite “while maintaining a 2 hour fire resistance rating of *a wall assembly including the frame wall and the sheathing.*” Ex. 2032 (emphasis added); *see* PO Resp. 43–44. As discussed above, we find this change does not affect our indefiniteness analysis here. Thus, we need not and do not decide herein whether the Certificate of Correction, which issued subsequent to the filing of the Petition, has effect in this proceeding.

E. Unpatentability of Claims 5 and 17 Based on Lack of Written Description

Petitioner contends claims 5 and 17 also are unpatentable under 35 U.S.C. § 112(a) for lack of written description. Pet. 24–25 (“[T]he subject matter of dependent claims 5 and 17 is not disclosed expressly or inherently in the ’867 Patent specification, and thus lack[s] written description support.”); Pet. Reply 11–12. Patent Owner opposes Petitioner’s contentions. PO Resp. 43–45, 68–70. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of evidence that claims 5 and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of written description.

“Sufficiency of written description is a question of fact.” *Gen. Hosp. Corp. v. Sienna Biopharmaceuticals, Inc.*, 888 F.3d 1368, 1371 (Fed. Cir. 2018). Whether a patent claim satisfies the written description requirement depends on whether the description “clearly allow[s] persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.” *Vas-Cath*, 935 F.2d at 1562–63 (internal quotation marks omitted) (quoting *In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989)). But “one cannot disclose a forest in the original application, and then later pick a tree out of the forest and say here is my invention. In order to satisfy the written description requirement, the blaze marks directing the skilled artisan to that tree must be in the originally filed disclosure.” *Purdue Pharma L.P. v. Faulding Inc.*, 230 F.3d 1320, 1326–27 (Fed. Cir. 2000).

Dependent claims 5 and 17 each recite “the first and second extension flanges are *configured to* extend through the sheathing *while maintaining a 2 hour fire resistance rating of the sheathing*.” Ex. 1001, 12:53–56, 14:19–22 (emphases added). Petitioner argues “nowhere does the ’867 patent disclose that the sheathing alone has a 2 hour fire resistance rating, such that there is no support for the claimed term ‘maintaining a 2 hour fire resistance rating of the sheathing.’” Pet. 24 (citing Ex. 1003 ¶¶ 88–90). Petitioner acknowledges “[t]he specification *only ever* refers to a 2 hour fire resistance rating of the ‘wall assembly,’ *not the sheathing itself*,” and that “other materials and wall components [are] needed to achieve the desirable fire resistance rating of the entire assembly, *even using the ’867 Patent’s own hanger*.” Pet. 24 (emphases added).

Patent Owner argues Petitioner fails to consider how the skilled artisan would construe this limitation in view of the Specification and knowledge possessed by the skilled artisan. PO Resp. 43–45, 68–70. Specifically, Patent Owner argues the skilled artisan “would have understood ‘wherein the first and second extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of the sheathing’ within the context of the ‘867 Patent to mean ‘wherein the first and second extension flanges are configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of *a wall assembly including the wall[/frame wall] and the sheathing.*’” *Id.* at 69 (citing Ex. 2001 ¶ 187). Patent Owner argues:

[T]he [S]pecification identifies that [Patent Owner] had a wall assembly independently tested by an outside firm according to the procedures prescribed by STM E814 and ASTM E119 to confirm that the penetration of the claimed hanger’s extension flange through the sheathing did not compromise the 2 hour fire rating of a wall assembly. EX1001:11:45–60. The inclusion of the independent testing is proof positive that the inventor was in possession of a hanger with extension flanges that were “configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of a wall assembly including the wall[/frame wall] and the sheathing.”

Id. at 70. Patent Owner argues that under its construction of the subject limitation the skilled artisan would have understood that the Specification of the ‘867 patent reasonably conveys that the inventor was in possession of the claimed subject matter. *Id.* at 70.

We agree with Patent Owner’s claim construction argument that, in the context of the ‘867 patent, *the skilled artisan* would interpret the phrase “while maintaining a 2 hour fire resistance rating of the sheathing” to mean

“while maintaining a 2 hour fire resistance rating of a wall assembly including the frame wall and the sheathing,” for the reasons given by Patent Owner (*see* PO Resp. 43–45). We also agree with Patent Owner that Petitioner concedes the ’867 patent describes fire ratings *only* in the context of the entire wall assembly (Pet. 24), which includes sheathing, and that this supports Patent Owner’s proposed claim construction here.

But this does not end the written description inquiry before us. Petitioner challenges whether the Specification of the ’867 patent discloses the full scope of dependent claims 5 and 17, and in particular, whether the Specification provides written description support for extension flanges “*configured to extend through the sheathing while maintaining a 2 hour fire resistance rating of the sheathing.*” *See* Pet. 24–25. Petitioner argues “the [S]pecification does not describe *what structural features of the extension flange* allow the hanger to achieve a 2 hour fire resistance rating,” and “[t]here is no support in the ’867 patent showing *how the recited extension flanges* maintain a 2 hour fire resistance rating,” even as construed by Patent Owner or in view of the Certificate of Correction directed to this limitation. Pet. Reply 11 (emphases added). We agree with Petitioner.

As noted above (*see supra* Section II.D.3), it is not the claimed hanger that has structure *defined by* how each one of countless users applies sheathing around the hanger or that forces or enforces application of sheathing in a particular manner relative to the hanger to achieve a 2-hour fire-resistance rating; instead, it is the *users* of the hanger (e.g., construction workers) that may, at their discretion, apply sheathing or other material around the structure of the claimed hanger however they wish in order to

achieve this fire-resistance rating. *See* Pet. Reply 7 (“[T]he ‘fire barrier’ includes not just the sheathing and the hanger, but any other fire mitigation materials incorporated into the barrier, as acknowledged in the ’867 patent.”); Ex. 1038, 148:3–24 (Patent Owner’s expert testifying, “An installer can put *any material they wish to fill that gap* [i.e., any gap between sheathing/drywall and the hanger’s structure], provided it’s code approved.”). In other words, a *user* (e.g., construction worker) could install the claimed bracket on a particular wall assembly in a particular way such that the overall assembly provides for a 2-hour fire-resistance rating; but that same *user*, or another *user*, could install that same claimed bracket on the same or a different wall assembly in a different way such that the overall assembly *would not* provide for a 2-hour fire-resistance rating. The claimed hanger itself has no structural properties described in the ’867 patent, at least none identified to the Board, *that force or enforce the application of sheathing like drywall such that users must apply such sheathing in close conformance with the extension flanges* of the claimed hanger for purposes of achieving a 2-hour fire-resistance rating—it’s simply up to the user. Thus, based on the complete record before us, we are persuaded that the Specification does not sufficiently describe *how* the claimed extension flange structure is “configured to” extend through sheathing “while maintaining a 2 hour fire resistance rating of the sheathing [or “of a wall assembly including the wall[/frame wall] and the sheathing],” particularly where sheathing is not even required by the claims and the claims are not directed to a method of *use* (e.g., *installation*).

Indeed, claim 1, from which claim 5 depends, is an apparatus claim directed to “[a] hanger”—just the hanger—and there is no evidence of record that the structure of that hanger, as one may find for sale in a local home center, includes a “structural component” (like a joist), a “wall,” or “sheathing” (like gypsum board), mounted on a wall. *See* Ex. 1002, 347, 353 (“[T]o clarify the claim is drawn solely to the hanger . . . and not the combination of the hanger and frame wall.”); Tr. 43:18–44:2. Similarly, in the Related Litigation, Patent Owner accuses certain of Petitioner’s hangers—just the hangers—of infringing the related ’510 patent with similar claims to a “hanger.” *See* Ex. 1031. Having reviewed the Specification, we find no description in the Specification, and the parties do not direct us to any, disclosing what structural features of the extension flanges (let alone the full scope of such features) are required for such flanges not only to be configured to extend through sheathing, but further configured to extend through sheathing “while maintaining a 2 hour fire resistance rating of the sheathing [or “of a wall assembly including the wall[/frame wall] and the sheathing”].”

Accordingly, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 5 and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of written description.

In addition, as noted above in Sections I and II.D.3, Patent Owner obtained a Certificate of Correction that, in part, amended the phrase “while maintaining a 2 hour fire resistance rating of the sheathing” in claims 5 and 17 to instead recite “while maintaining a 2 hour fire resistance rating of *a wall assembly including the frame wall and the sheathing.*” Ex. 2032

(emphasis added). As discussed above, we find this change does not affect our written description analysis here. Thus, we need not and do not decide herein whether the Certificate of Correction, which issued subsequent to the filing of the Petition, has effect in this proceeding.

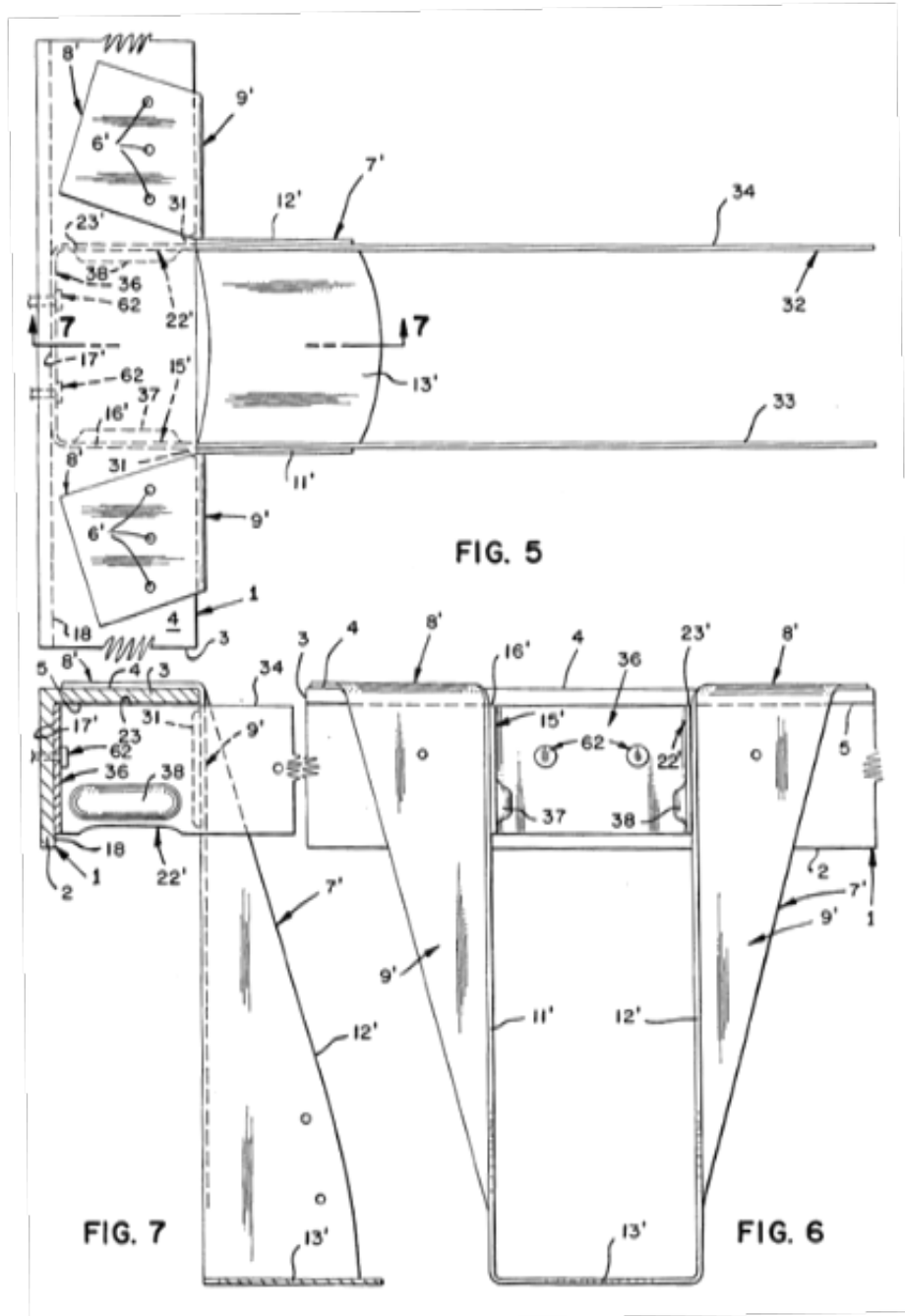
*F. Obviousness of Claims 1–12, 15–17, and 21–23 Over Gilb ’792 and Bundy*⁵

Petitioner contends claims 1–12, 15–17, and 21–23 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gilb ’792 (Ex. 1035) and Bundy (Ex. 1007). Pet. 13–15, 28–59; Pet. Reply 16–21. Patent Owner opposes Petitioner’s contentions. PO Resp. 39–49, 71–84; PO Sur-Reply 23–25. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of evidence that claims 1–12, 15–17, and 21–23 are unpatentable as obvious over the combination of Gilb ’792 and Bundy. We turn first to an overview of Gilb ’792 and Bundy.

⁵ As noted above in Section I, a Certificate of Correction was filed and issued after Petitioner filed the Petition. The Certificate of Correction concerns claims 5, 11, 16, and 17 of the ’867 patent. Our determinations as to Petitioner’s prior art grounds of unpatentability are based on the original phrasing of these claims. As discussed in Sections II.D and II.E above, we would reach the same results regardless of whether the Certificate of Correction has effect in this proceeding. In any event, we need not and do not decide herein whether the Certificate of Correction has effect in this proceeding.

1. Overview of Gilb '792

Gilb '792 generally is directed to a “gusset metal ledger hanger” that may attach to a metal ledger, as shown, for example, in Figures 5, 6, and 7, reproduced below. Ex. 1035, 2:29–30, 3:22–55.



Figures 5, 6, and 7 of Gilb '792 are top plan, front elevational, and partial cross sectional (line 7—7) views of the same hanger.

Id. at 2:7–12. Petitioner contends that Gilb '792 discloses “each and every structural element listed in claim 1 of the '867 Patent, but does not explicitly disclose that the space between its hanger’s channel-shaped portion and back flange is sized and shaped to receive sheathing therein,” for which Petitioner relies on Bundy. Pet. 28.

2. *Overview of Bundy*

Bundy generally is directed to “a joist hanger adapted to secure a joist to a header or other support member with a first drywall panel between the back of the joist hanger and the front of the header,” as shown, for example, in Figure 1, reproduced below. Ex. 1007, 1:5–11.

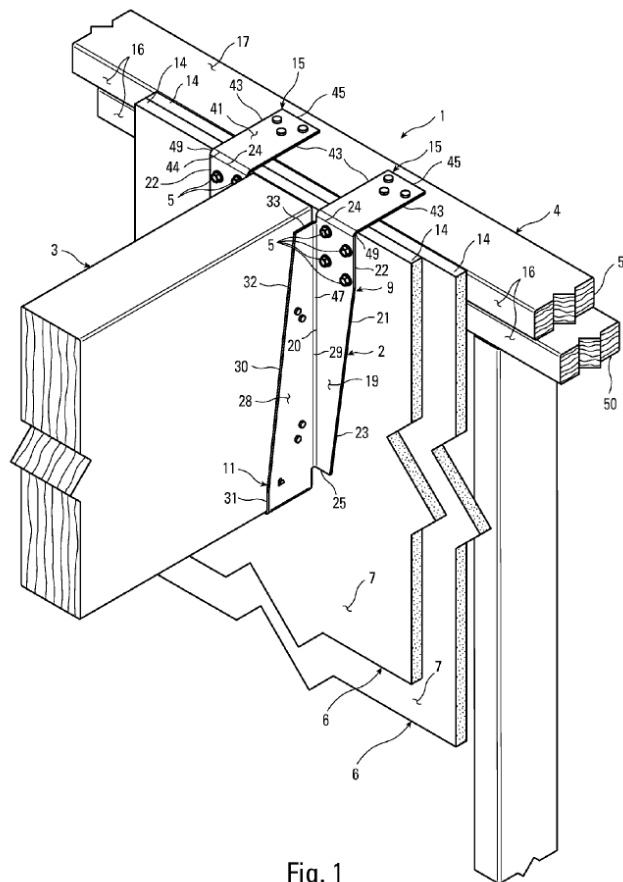


Fig. 1

Figure 1 of Bundy is an upper right perspective view of a connection formed in which the joist hanger has a pair of top flanges.

Id. at 3:7–9, 3:55–67. Bundy discloses that “[t]he one or more panels 6 preferably are drywall panels 6,” and explains “[c]ommon panel thicknesses are 1/2-inch and 5/8-inch,” and “[i]n the present invention, *two layers of 5/8-inch drywall is preferred.*” *Id.* at 5:10–22 (emphasis added).

We further discuss below the disclosures of Gilb ’792 and Bundy in connection with the parties’ arguments.

3. *Independent Claim 1*

- a) “*A hanger for connecting a structural component to a wall adapted to have sheathing mounted thereon, the hanger comprising:*”

The preamble of claim 1 recites “[a] hanger *for connecting a structural component to a wall adapted to have sheathing mounted thereon.*” Ex. 1001, 12:15–17 (emphasis added). Gilb ’792 discloses a “gusset metal ledger hanger 7” “adapted for holding a structural beam member” to a wall. Ex. 1035, 3:22–38, Figs. 5, 6, 7; *see* Pet. 8 (citing Ex. 1003 ¶ 37; Ex. 1035, code (57), 1:5–11, 3:22–50). Petitioner argues that the phrase “for connecting a structural component to a wall adapted to have sheathing mounted thereon” is not a limitation, but rather “recites an intended use of the claimed invention [i.e., a hanger], satisfied by any prior art structure capable of performing the intended use.” Pet. 30 (citing, in part, Ex. 1003 ¶¶ 46, 98, 99).

“Whether to treat a preamble as a limitation is a determination ‘resolved only on review of the entire[] . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.’” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989)) (alterations in original). “In general, a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Id.* (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). “Conversely, a preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses

the preamble only to state a purpose or intended use for the invention.” *Id.* (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). “No litmus test defines when a preamble limits claim scope.” *Id.* (citing *Corning Glass*, 868 F.2d at 1257).

In this case, we determine the above preamble phrase is not limiting, because the patentee recites a structurally complete invention in the body of claim 1, and uses the preamble only *to state a purpose or intended use for the claimed invention*. Claim 1 is an apparatus claim directed to “[a] hanger”—just the hanger—and, as noted above, there is no evidence of record that the structure of that hanger, as one may find for sale in a local home center, includes a “structural component” (like a joist), a “wall,” or “sheathing” (like gypsum board), mounted on a wall. *See* Ex. 1002, 347, 353 (“[T]o clarify the claim is drawn solely to the hanger . . . and not the combination of the hanger and frame wall.”). Indeed, in the Related Litigation, where claim 1 of the related ’510 patent also recites this same hanger preamble, Patent Owner accuses certain of Petitioner’s hangers—just the hangers—of infringing the ’510 patent. *See* Ex. 1031. If a hanger, standing separate from any joist, wall, or installed sheathing, may fall within the scope of such a claim for infringement purposes, then a prior disclosure of the structure of such a hanger (alone) may anticipate or in combination with other prior art render obvious that claim. *See Int’l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1239 (Fed. Cir. 2009) (citing *Peters v. Active Mfg. Co.*, 129 U.S. 530, 537 (1889)) (“[I]t has been well established for over a century that the same test must be used for both infringement and anticipation,” and “[t]his general rule derives from the

Supreme Court’s proclamation 120 years ago in the context of utility patents: ‘[t]hat which infringes, if later, would anticipate, if earlier.’”).

In addition, Patent Owner agrees that the preamble of claim 1 is not limiting and that the scope of claim 1 does not require any sheathing (e.g., drywall). Tr. 43:18–44:2.

For the reasons expressed above, and based on the complete record before us, we conclude that the preamble phrase “for connecting a structural component to a wall adapted to have sheathing mounted thereon” in claim 1 is not a limitation, and find Gilb ’792 discloses a “hanger,” as recited in claim 1.

b) *“a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base configured to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface configured to engage the structural component, the upper surface lying in a base plane;”*

Petitioner contends Gilb ’792 discloses a channel shaped portion (e.g., stirrup members 11’/12’ and depending flanges 9’) configured to receive the structural component (e.g., structural beam), as shown, for example, in Figures 5, 6, and 7, reproduced above. Pet. 31 (citing Ex. 1003 ¶¶ 101–102; Ex. 1035, 3:29–31 (“First and second stirrup members 11’ and 12’ are attached to the depending flanges 9’ and are adapted for holding a structural beam member . . . ”)). Petitioner contends Gilb ’792 discloses the channel-shaped portion (stirrup members 11’/12’ and depending flanges 9’) includes a base (seat member 13’) configured to receive an end portion of the

structural component (beam) thereon to support the structural component. Pet. 32 (citing Ex. 1003 ¶¶ 103–104; Ex. 1035, 3:51–52). Petitioner contends Gilb ’792 discloses the base (seat member 13’) has an upper surface (its two-dimensional top surface) configured to engage the structural component, and that the upper surface of the base lies in a base plane. Pet. 32–33 (citing Ex. 1003 ¶¶ 105–106; Ex. 1035, 3:51–52).

Patent Owner does not contend that the subject “channel-shaped portion” limitation is absent in Gilb ’792. *See* PO Resp. 39–49, 71–84; PO Sur-Reply 23–25. Any such argument has been waived. *See* 37 C.F.R. § 42.23(a) (“Any material fact not specifically denied may be considered admitted.”); *In re NuVasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding that patent owner waived arguments on an issue that were not raised in its response after institution); *see also Papst Licensing GmbH & Co. KG v. Samsung Elecs. Am., Inc.*, 924 F.3d 1243, 1250 (Fed. Cir. 2019) (holding patent owner forfeited argument for patentability not presented to the Board); *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1048 (Fed. Cir. 2019) (explaining that arguments not presented to the Board are waived).

Based on the foregoing evidence, Petitioner contends, and we find, Gilb ’792 discloses “a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base configured to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface configured to engage the structural component, the upper surface lying in a base plane,” as recited in claim 1. Pet. 31–33 (citing, *inter alia*, Ex. 1003 ¶¶ 101–106).

- c) *“a connection portion configured for attachment to the wall, the connection portion including a back flange having an upper edge, the back flange extending from the upper edge in a direction generally toward the base plane, the connection portion and channel-shaped portion being in a fixed, spaced apart relation relative to one another; and”*

Petitioner contends Gilb '792 discloses a connection portion (base 36) configured for attachment to the wall. Pet. 33 (citing Ex. 1003 ¶¶ 107–110; Ex. 1035, 3:43–44; 3:47–50 (“First and second gusset members 15’ and 22’ are held in position by shooting nail means 62 through base 36 of the U-shaped member into lower leg 2 of the metal ledger.”)). Petitioner argues the skilled artisan “would have understood that Gilb ’792’s base 36 corresponds to the recited ‘connection portion,’ and that nail means 62 extend past the ledger into the wall.” Pet. 33 (citing Ex. 1003 ¶¶ 107–108; Ex. 1035, Figs. 5, 6); *see* Ex. 1001, Fig. 7. Petitioner contends Gilb '792 discloses that the connection portion (base 36) includes a back flange having an upper edge (i.e., the very top of the back flange) and that the back flange extends downward from the upper edge in a direction generally toward the base plane. Pet. 35 (citing Ex. 1003 ¶¶ 111–112; Ex. 1035, 3:39–49). Petitioner contends Gilb '792 discloses that the connection portion (base 36) and channel-shaped portion (stirrup members 11’/12’ with flanges 9’) are in a fixed, spaced apart relation relative to one another, noting that the “elements are welded sheet metal and thus are fixed.” Pet. 35–36 (citing Ex. 1003 ¶¶ 113–114; Ex. 1035, 3:39–44).

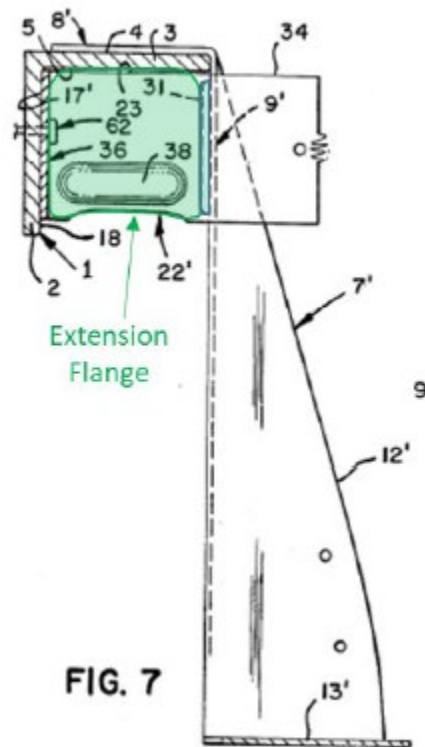
Patent Owner does not contend that the subject “connection portion” limitation is absent in Gilb '792. *See* PO Resp. 39–49, 71–84; PO

Sur-Reply 23–25. Any such argument has been waived. *See* 37 C.F.R. § 42.23(a).

Based on the foregoing evidence, Petitioner contends, and we find, Gilb ’792 discloses “a connection portion configured for attachment to the wall, the connection portion including a back flange having an upper edge, the back flange extending from the upper edge in a direction generally toward the base plane, the connection portion and channel-shaped portion being in a fixed, spaced apart relation relative to one another,” as recited in claim 1. Pet. 33–36 (citing Ex. 1003 ¶¶ 107–113).

d) “an extension portion including first and second extension flanges extending from the channel-shaped portion to the connection portion,”

Petitioner contends Gilb ’792 discloses an extension portion (gusset members 15’/22’) including first and second extension flanges (gusset members 15’/22’) extending from the channel-shaped portion (stirrup members 11’/12’) to the connection portion (base 36), as shown, for example, in Petitioner’s annotated version of Figure 7, reproduced below. Pet. 36–37 (citing Ex. 1003 ¶¶ 115–117; Ex. 1035, 3:[31]–42 (“A first gusset member 15’ is . . . directly connected to stirrup member 11’ by weld 31.”), Figs. 5–7).

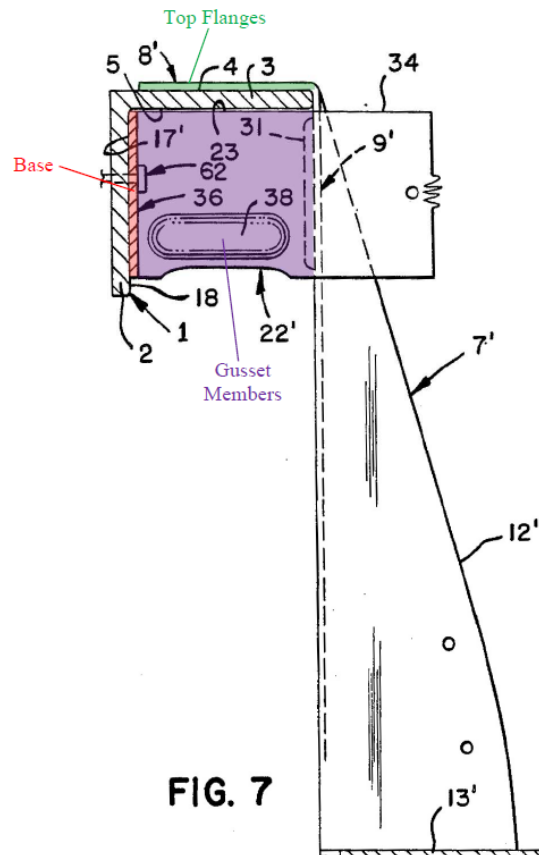


The above illustration shows Figure 7 of Gilb '792 annotated by Petitioner to show an alleged “extension portion.”

Ex. 1035, Fig. 7 (annotated); Pet. 37. Petitioner argues the skilled artisan “would have understood that the Gilb’792’s gusset members 15’/22’ (along with weld 31), correspond to the recited first and second extension flanges.” Pet. 37 (citing Ex. 1003 ¶¶ 115–116).

Patent Owner argues “the connection portion of Gilb ‘792 is not limited to just base (36),” “[r]ather, the connection portion of Gilb’792 includes the top flange (8’) and the gusset members (15’/22’) (which [Petitioner] incorrectly identifies as extension portion/extension flanges),” as shown, for example, in Patent Owner’s annotated version of Figure 7,

reproduced below. PO Resp. 83 (citing Ex. 2057 ¶ 109; Ex. 1035, Fig. 7); *see id.* at 80–84.



The above illustration shows Figure 7 of Gilb '792 annotated by Patent Owner to show an alleged “connection portion.”

Ex. 1035, Fig. 7 (annotated); PO Resp. 83. Patent Owner argues, “[a]s the gusset members (15’/22’) are themselves part of the connection portion, they do not extend from the connection portion of the hanger to channel-shaped portion of the hanger,” and thus, “Gilb ‘792 does not disclose an extension portion as recited in the claims of the ‘867 Patent.” PO Resp. 84 (citing Ex. 2057 ¶¶ 110–111).

Petitioner responds that “[t]he ’867 patent claims recite the transitional phrase ‘comprising,’ rendering the scope of the claims open-ended,” and “[t]he open-ended nature of claims 1 and 16 does not preclude extension flanges that register with a ledger leg, and base [36] alone satisfies the claimed ‘connection portion’.” Pet. Reply 21. Petitioner also argues “Gilb ’792’s hanger does not require a ledger, and in such case would connect to the wall only via the back flange (base 36).” *Id.* (citing Ex. 1038, 167:25–168:9; Ex. 1039 ¶¶ 80–82). We agree with Petitioner and find Patent Owner’s argument unavailing.

We also note that Patent Owner alleges in this case that its own hanger as depicted in the ’867 patent, which only shows hanger structures having both back flanges 66 and connector tabs 74 (i.e., top flanges), does not require both back flanges and top flanges, and instead could mount to a wall using only its back flanges (like Gilb ’792’s base 36, per Petitioner). *See* RMTA Reply 7–8 (“The ’867 Patent’s specification never identifies the top flange as essential.”), 9 (“Critically, [the skilled artisan] was aware of other methods of attachment, such as face mounted hangers.”); Tr. 58:12–18 (“[T]his was so well known in the art that the [skilled artisan] would look at the ’867 Patent’s disclosures and go, yes, I see that they’re only disclosing top flange embodiments, but I don’t see why I couldn’t just easily do it with a face mount hanger. And that’s how [the skilled artisan] would view the embodiments.”); Ex. 1001, 12:15–44 (claim 1) (top flange not recited).

Based on the foregoing evidence, Petitioner contends, and we find, Gilb ’792 discloses “an extension portion including first and second extension flanges extending from the channel-shaped portion to the

connection portion,” as recited in claim 1. Pet. 36–37 (citing, *inter alia*, Ex. 1003 ¶¶ 115–117); Pet. Reply 20–21 (citing, *inter alia*, Ex. 1039 ¶¶ 80–82).

- e) “each extension flange being configured to extend through the sheathing, each extension flange lying in an extension flange plane, the extension flange planes being generally perpendicular to the base plane, the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall”

This limitation recites, *inter alia*, that the “extension portion,” and more specifically “each extension flange” thereof, is “*configured to extend through the sheathing* [mounted on a wall];” and that “the back flange and the channel-shaped portion defin[e] a *sheath space sized and shaped to receive the sheathing therein* so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing *when the hanger and sheathing are installed on the wall.*” Ex. 1001, 12:32–41 (emphases added). But, as argued by Petitioner, claim 1 is directed to and claims only “[a] hanger.” See Pet. 30 (“[T]he limitation ‘for connecting a structural component to a wall adapted to have sheathing mounted thereon’ recites an intended use of the claimed invention.”), 4–5 (“[T]he claimed hanger of the ’867 Patent is not limited to a specific wall configuration.”). Based on the complete record before us, we find the claimed hanger’s *structure* does not include a “wall.” It does not include

“sheathing.” And it does not include “sheathing” between certain portions of the hanger. *See* Tr. 43:18–44:2. In addition, claim 1 recites no limitation on the size of any sheathing cutout or opening necessary to allow a hanger’s extension portion to “extend through the sheathing.” In other words, claim 1 recites a hanger having certain structural features, and would cover a hanger having the structural limitations of claim 1 whether that hanger were on a shelf in a hardware store or installed as shown, for example, in Figure 1 of the ’867 patent (or even incorrectly installed). *See ParkerVision, Inc. v. Qualcomm, Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018) (The Federal Circuit “explained long ago that ‘[a]pparatus claims cover what a device *is*, not what a device *does*.’” (quoting *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990))).

Nevertheless, as in PGR2019-00063, the parties continue to dispute whether the prior art discloses extension flanges configured to extend through the sheathing and a sheath space sized and shaped to receive the sheathing therein. We discuss these and other disputes concerning the extension flanges below.

- (1) “each extension flange being configured to extend through the sheathing”
 - (a) Claim Construction: “configured to extend through the sheathing”

Claim 1 recites that each “extension flange” is “*configured to extend through the sheathing [mounted on a wall]*.” Ex. 1001, 12:34–35 (emphasis added). The parties dispute whether the phrase “*configured to extend through the sheathing*” is (1) a purpose or intended use of the “extension flanges” (e.g., a *capability* of the extension flange); or (2) a function of the

“extension flange” that provides additional structural attributes to the extension flange (e.g., a particular *configuration* of the extension flange); and if (2), what is that claimed configuration. *See* PO Resp. 39–49, 71–78; PO Sur-Reply 23–25; Pet. 30, 36–42; Pet. Reply 5–6.

In PGR2019-00063, we construed “configured to extend through the sheathing,” in the context of “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing,” to mean (or require structurally) “an extension portion extending from the channel-shaped portion towards the connection portion and defining a space to receive sheathing.” Ex. 2006, 51; *see id.* at 41–52. In this case, we maintain the same construction, and thus construe “each extension flange being configured to extend through the sheathing” to mean (or require structurally) “each extension flange defines a space between the back flange of the connection portion and the channel-shaped portion to receive sheathing.” For completeness, below we review (and supplement or clarify) our claim construction analysis for the subject limitation.

(i) *Capability or Intended Use vs. Configuration*

Patent Owner argues “[c]ontrolling authority[] has established that the claim language ‘configured to’ (*i.e.*, a structure configured to perform a function) should be construed to require that the claimed structure is specifically ‘meant to’ or ‘designed to’ perform the claimed function.” PO Resp. 40–43 (citing *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012); *In re Giannelli*, 739 F.3d 1375, 1379

(Fed. Cir. 2014); *Acclarent, Inc. v. Ford Albritton, IV*, IPR2017-00498, 2018 Pat. App. LEXIS 9828, at *19–22 (PTAB July 9, 2018)).

Petitioner generally relies on our constructions of “extend through” and “configured to extend through” in PGR2019-00063 (Pet. 13–14), and otherwise appears to argue that claims, which recite no structural limitations that would preclude a prior art reference that discloses a different structure from performing the claimed function, require nothing more than that a structure be *capable of* performing that claimed function. Pet. Reply 6 (citing *ParkerVision*, 903 F.3d at 1361).

As explained by the Federal Circuit, case law “distinguish[es] between claims with language that recites *capability*, and those that recite *configuration*.” *ParkerVision*, 903 F.3d at 1361 (emphases added). “The language used in the claims is critical to deciding on which side of this line the claims fall.” *Id.* In this case, the claim language itself would at least *appear* to suggest a narrower construction by expressly reciting the “configured to” language. Precedent makes clear that the “configured to” phrase itself connotes the narrower meaning (i.e., configuration), as opposed to the broader meaning (i.e., capability), and simply *presumes* this is the case. For example, in *Aspex Eyewear*, the court treated “configured to” as synonymous with the narrower “made to” and “designed to” phrases. *Aspex Eyewear*, 672 F.3d at 1349 (“In common parlance, the phrase ‘adapted to’ is frequently used to mean ‘made to,’ ‘designed to,’ or ‘configured to,’ but it can also be used in a broader sense to mean ‘capable of’ or ‘suitable for.’”); *see Giannelli*, 739 F.3d at 1379 (same); *In re Man Machine Interface Technologies LLC*, 822 F.3d 1282, 1286 (Fed. Cir. 2016) (same).

But the principles of construing terms like “configured to” as used in claim 1 cannot be interpreted and applied in a vacuum, without resort to the many other competing principles of claim construction. In particular, despite reciting the words “configured to” in this limitation, Patent Owner concedes that the preamble language of “for connecting a structural component to *a wall adapted to have sheathing mounted thereon*” is merely an intended use of the claimed hanger and does not limit the scope of claim 1. Tr. 43:18–44:2. In other words, using the claimed hanger *with sheathing*, such as drywall, is admittedly only an intended use (which makes sense, since the hanger may be mounted to a wall and used without any sheathing ever being applied to the wall). Given this, we find the subsequent recitation in the claim of “each extension flange being configured *to extend through the sheathing*” merely mirrors the intended use of the hanger itself, and more specifically, reflects the intended use of the extension flanges in the hanger. Indeed, despite this being the second post-grant review proceeding between the same parties and involving this same hanger subject matter and subject limitation, when the Board asked Patent Owner during the oral hearing how the limitation “configured to extend through the sheathing” further limits the structure of the claimed hanger or how the skilled artisan would know whether a given hanger’s “extension flanges” were “configured” to do so, Patent Owner responded, to paraphrase, the skilled artisan *would just know*:

[Question:] So my understanding is these claims are being asserted against brackets, standalone brackets, without any method of installation or what have you. So somehow staring at a bracket by itself without a tag on it that says “this bracket is

intended to receive drywall between these two pieces here,” how does the skilled artisan know reading that claim [and] looking at a bracket, whether it’s configured to extend through drywall beyond having the flange, the receiving part for the joist and the extension portion?

[Patent Owner’s Counsel:] Well, he’s going to look at that bracket and he is going to say, look, that the way this extension flange is constructed and arranged on that bracket, that it is made to and designed to extend through sheathing as applied to the wall. *He’s going to know that.* Yeah, the wall is not there, the sheathing is not there, but this is something that the skilled person in the construction art has seen hundreds, if not thousands, of times *so they’re going to know immediately.*

Tr. 47:8–24 (emphases added); *see, e.g., id.* at 48:8–24, 73:12–25⁶.

Accordingly, we conclude that the limitation “configured to extend through

⁶ Petitioner’s counsel:

I also want to raise this point that was made several times. The question came up, sitting on a shelf or looking at an assembled hanger, how would a skilled artisan know whether this hanger is intended to be used with sheathing? What’s the structural distinction? And time and again, the answer was they just would. There wasn’t any specific structural element that would indicate whether it was intended to extend through sheathing, how much sheathing, just create a space. It was just a skilled artisan would know.

Well, I submit to you that you have Tsukamoto with an extension flange. You have Timony, you have Gilb ’792, all with extension flanges. What’s the difference between those and without anything more from Patent Owner, the hanger [described in] the ’867 patent? Why wouldn’t a skilled artisan just know that you would put sheathing in it? There’s no distinction there.

the sheathing” is an intended use of the claimed extension flanges and does not further limit the scope of claim 1.

To the extent that the limitation “configured to extend through the sheathing” were interpreted *not* to be an intended use of the claimed extension flanges, we find the limitation “each extension flange being configured to extend through the sheathing” *superfluous*. It is true that “interpretations that render some portion of the claim language superfluous are disfavored.” *Power Mosfet Techs., L.L.C. v. Siemens AG*, 378 F.3d 1396, 1410 (Fed. Cir. 2004); *see also Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.” (citations omitted)). “The preference for giving meaning to all terms, however, is not an inflexible rule that supersedes all other principles of claim construction.” *SimpleAir, Inc. v. Sony Ericsson Mobile Commc’ns AB*, 820 F.3d 419, 429 (Fed. Cir. 2016) (citing *Power Mosfet*, 378 F.3d at 1410).

In this case, claim 1 already explicitly recites structural requirements for the hanger’s extension flanges, namely, that the extension flanges (1) “extend[] from the channel-shaped portion to the connection portion,” and (2) “[lie] in . . . extension flange plane[s], [where] the extension flange planes [are] generally perpendicular to the base plane.” Ex. 1001, 12:32–44. Claim 1 also requires that the extension flanges do so where “the back flange [of the connection portion] and the channel-shaped portion defin[e] a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing

are installed on the wall.” *Id.* Neither party directs us to any evidence of how the subject limitation “configured to extend through the sheathing” allegedly further limits the scope claim 1 *beyond the foregoing explicit structural requirements*. During oral hearing in this case, the Board asked, “if my hypothetical bracket meets all the structural limitations of your claim, Claim 1, isn’t it a given that it would necessarily be configured to extend through drywall if it has all the structural features of [Claim] 1?”

Tr. 48:8–11. Patent Owner did not (or could not) identify with clarity and particularity any further structural restriction that this subject limitation places on claim 1, but for, as noted above, arguing that the skilled artisan *would just know*. See Tr. 48:12–24; *see also, e.g.*, Tr. 47:8–24; 73:12–25. We discern no additional restriction to the scope of apparatus claim 1 by the recitation of “configured to extend through the sheathing,” and conclude this “limitation” is superfluous.⁷

⁷ Patent Owner does argue, “[t]o the extent additional structural attributes need to be identified, the extension flanges would need to (1) have sufficient length to extend into one side and out the other side of the sheathing, and (2) be constructed and arranged relative to the other components of the hanger (particularly, the connection portion) such that they would actually do so when installed.” PO Resp. 48–49. We find this attempt to assign structural attributes to the subject limitation unavailing. First, as discussed above, claim 1 explicitly requires that the extension flanges extend from the channel-shaped portion to the connection portion, and that a sheath space for receiving sheathing is formed between the back flange of the connection portion and the channel-shaped portion; thus, the extension flanges necessarily would have sufficient length to extend into one side and out the other side of the sheathing. Second, claim 1 applies to a hanger alone; thus, extension flanges having the structure explicitly recited in claim 1

To the extent that the limitation “configured to extend through the sheathing” were interpreted *not* to be an intended use of the claimed extension flanges and *not* to be superfluous, then the subject limitation requires additional structure configured to accomplish the claimed function. For this scenario, we next turn to construing “extend through” in the function of “*extend through* the sheathing,” and then to determining the structural attributes of an “extension portion” that allow it to extend through sheathing (keeping in mind that sheathing is not part of the claimed hanger’s structure).

(ii) “*Extend Through*”

Claim 1 recites that the “extension portion” is “configured to *extend through* the sheathing [mounted on a wall].” Ex. 1001, 12:34–35 (emphasis added). The parties both rely on our construction of “extend through” in PGR2019-00063, where we determined that in the context of element A “extend[ing] through” element B, “extend through” means “element A extends into one side and out the other side of element B” (Ex. 2006, 44–45). *See* Pet. 13–14; PO Resp. 45–46. We maintain this same construction in this case.

Although we find the skilled artisan would have understood “extend through” to have the above meaning in the art, the context in which this term is used poses yet another claim interpretation hurdle. Claim 1 recites a

necessarily would have sufficient length to extend into one side and out the other side of the sheathing whether installed and used with sheathing or not.

hanger with “each extension flange being configured to extend through the sheathing,” but the hanger is made (i.e., a structure satisfying the structural limitations of apparatus claim 1) *before* the introduction of any sheathing (if used at all). Although Patent Owner seems to argue that the extension flanges of claim 1 are structured (“being configured”) so as to conform to certain opening(s) in sheathing and “extend through” such opening(s), this is backwards, as discussed above (*see supra* Section II.D.3). Patent Owner does not direct us to any evidence of any standard, pre-made openings or cutouts in conventional sheathing (e.g., drywall) through which the claimed extension flanges would extend. Indeed, it is not the claimed hanger that has structure defined by how each one of countless users applies sheathing around the hanger or that forces or enforces application of sheathing in a particular manner relative to the hanger; instead, it is the *users* of the hanger (e.g., construction workers) that may, at their discretion, apply or conform sheathing or other material around the structure of the claimed hanger. *See* Pet. Reply 7; Ex. 1039 ¶¶ 32–33; Ex. 1038, 148:3–24. We provide below, in Table 1, our own basic illustration of the claimed hanger’s extension flanges (red solid lines) in conjunction with sheathing (outlined by black dotted lines) for purposes of further analyzing the proper interpretation of “configured to extend through the sheathing.”

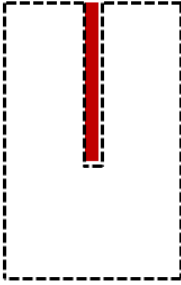
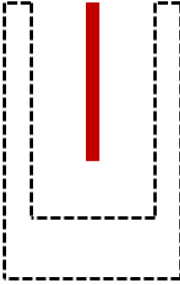
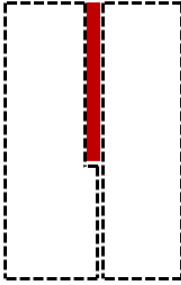
Table 1			
			
A	B	C	D

Table 1 is an illustration prepared by the Board for use in analyzing the phrase “each extension flange being configured to extend through the sheathing.”

Table 1 includes four illustrations, A through D, which depict only the two extension flanges of the claimed hanger, and do so as a single (red) unit that is viewed from the perspective of a person directly facing the hanger when hung on a wall, either without (A) or with (B–D) surrounding sheathing attached to the wall.

Illustration A above represents the extension flanges of the hanger of claim 1 of the ’867 patent as found, for example, in such an uninstalled hanger available in a hardware store, without any sheathing thereabout. Patent Owner argues in the Related Litigation that certain of Petitioner’s hangers—just the hangers—infringe the related ’510 patent. *See* Ex. 1031. Patent Owner argues the skilled artisan, holding only a hanger itself and by “look[ing]” at “the way [the] extension flange is constructed and arranged on that bracket,” would just “know immediately” whether the extension flanges were configured to extend through sheathing, i.e., to extend into one side

and out the other side of sheathing (even without knowing anything about the type, thickness, or number of layers of sheathing intended by a user for use with the hanger). Tr. 47:8–24.

Illustration B represents the *same* extension flanges of the hanger of claim 1, but mounted to a wall assembly having sheathing conformed around the extension flanges with “only a minimal gap” between the sheathing and extension flanges (PO Resp. 67), as shown, for example, in Figure 1 of the ’867 patent (Ex. 1001, Fig. 1). Patent Owner argues the extension flange/sheathing scenario in Figure 1 of the ’867 patent, which is the configuration depicted in illustration B, exemplifies extension flanges configured to extend into one side and out the other side of sheathing. *See generally* PO Resp. 39–49, 66–68, 71–78. But given the skilled artisan already would have known immediately from the illustration A concept that the extension flanges were configured to extend through sheathing (according to Patent Owner), the user’s (installer’s) choice to closely conform the sheathing around the extension flanges as shown in illustration B would have no bearing on the structural configuration of the hanger’s extension portions. The parties also do not appear to dispute that illustration B (representing Fig. 1 of the ’867 patent) represents extension flanges configured to extend into one side and out the other side of sheathing.

Illustration C also represents the *same* extension flanges of the hanger of claim 1, but mounted to a wall assembly having sheathing substantially spaced apart from the extension flanges. Again, given the skilled artisan already would have known immediately from the illustration A concept that

the extension flanges were configured to extend through sheathing (according to Patent Owner), such substantial spacing due to the “notch” in the sheathing around the extension flanges would not change the fact that the extension flanges were configured to extend into one side and out the other side of sheathing. At least in the scenario of illustration C there remains a “notch” in the sheathing through which the extension flanges pass, so be it separated from the sheathing by a substantial distance.

Illustration D also represents the *same* extension flanges of the hanger of claim 1, but mounted to a wall assembly having sheathing merely abutting the extension flanges (rather than presenting a “notch” through which the extension flanges pass). But yet again, given the skilled artisan already would have known immediately from the illustration A concept that the extension flanges were configured to extend through sheathing (according to Patent Owner), this scenario likewise would not change the fact that the extension flanges were configured to extend into one side and out the other side of sheathing. We find this would be true in this illustration D scenario even though the extension flanges merely pass along the outer edges of the left and right side pieces of sheathing rather than pass *through* a single piece of sheathing.

Based on the foregoing, and as informed by illustrations A–D, we conclude that *configuring* extension flanges *to extend through* sheathing, i.e., to extend into one side and out the other side of sheathing, means that the extension flanges define a space between the back flange of the connection portion and the channel-shaped portion to receive sheathing therein. We find that it is this defined space (in combination with the other

limitations of claim 1) that allows such extension flanges of the claimed hanger to be considered to extend into one side and out the other side of sheathing, regardless of whether (1) sheathing were even used with the hanger (illustration A), (2) sheathing were applied by a user in close or distant conformance with the extension flanges (illustrations B and C), or (3) sheathing were merely abutted to the extension flanges (illustration D), and regardless of the type, thickness, or number of layers of sheathing that a user may choose to apply. We note Patent Owner agrees that the extension portion, which includes the extension flanges, provides for such “spacing.” *See* PO Resp. 7 (“Because the extension portion *spaces* the joist a sufficient distance from the wall framing, the fire barrier does not require a cutout corresponding to the entire cross section of the joist.” (emphasis added)). We also find this construction supported by the Specification. *See* Ex. 1001, 1:67–2:3 (“The extension portion separates the back wall of the channel-shaped portion from the back flange of the connection portion *to define the space sized to receive the sheathing.*” (emphasis added)), Figs. 1, 2, 10A.

(b) *Disclosure of Gilb ’792*

Petitioner argues that although Gilb ’792 “does not explicitly disclose extending gusset members 15’/22’ through sheathing,” the skilled artisan “would have found it obvious to use Gilb’792’s hanger 7’ with sheathing.” Pet. 38 (citing Ex. 1003 ¶ 119). Petitioner relies on “Bundy’s use with sheathing,” and argues this “would simply have been applying a known technique . . . to a known device (Gilb’792’s hanger), yielding the predictable result of optimizing the size of the hanger’s spacing to receive sheathing, thereby ‘cover[ing] and protect[ing] the structural members of a

building.” Pet. 38 (citing Ex. 1007, 5:18–20; Ex. 1003 ¶ 119); *see* Pet. 28–29.

Patent Owner, on the other hand, again argues that extension flanges in the prior art must “be specifically ‘meant to’ or ‘designed to’ extend into one side and out of the other side of the sheathing,” and not simply be capable of doing so. PO Resp. 71; *see id.* at 71–78; PO Sur-Reply 23–25. Patent Owner argues “[n]either Gilb ’792, nor Bundy discloses a hanger with an extension flange that is ‘designed to’ or ‘meant to’ extend through sheathing.” PO Resp. 71 (citing Ex. 2001 ¶¶ 195, 207–208); *see id.* (“Gilb ’792 is entirely silent as to *the use of* the disclosed hanger with sheathing.” (citing Ex. 2001 ¶ 196) (emphasis added)). We find Patent Owner’s arguments unavailing.

First, we addressed Patent Owner’s proposed construction of “configured to,” along with its arguments and cited support, in PGR2019-00063, and found them unpersuasive. *See* Ex. 2006, 39–52. As discussed above, we continue to find them unpersuasive in the context of the same apparatus—a hanger—at issue in this proceeding.

Second, Patent Owner cannot show nonobviousness by attacking references individually where unpatentability is based on a *combination* of references. *See In re Keller*, 642 F.2d 413, 425–26 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). We agree with Petitioner that “[Patent Owner] attacks the references individually by contending that Gilb’792 does not disclose the use of sheathing, and that Bundy’s extension flanges extend over sheathing [and “not *through* it”],”

and that “[Patent Owner] does not properly consider the combination.” Pet. Reply 19; PO Resp. 71. We also agree with Petitioner that:

Gilb’792’s gusset members create a space between a top plate and a structural member, and [the skilled artisan] would have understood that sheathing can be applied in that space in view of Bundy, which teaches locating sheathing *between* a channel-shaped portion and connection portion of a hanger. EX1007, FIG. 1. Thus, in applying the *combination*, [the skilled artisan] would have found it obvious to add sheathing to the wall around Gilb’792’s gusset members. EX1039, ¶77.

Pet. Reply 19–20. Thus, we find Patent Owner’s arguments concerning the subject limitation unavailing (and not commensurate with Petitioner’s challenge to patentability).

Third, Patent Owner still does not explain why a hanger having the *structural* features recited in claim 1, particularly the recited “extension portion including first and second extension flanges extending from the channel-shaped portion to the connection portion” such as disclosed in Gilb ’792 (*see* Pet. 36–37 (citing Ex. 1003 ¶¶ 115–117; Ex. 1035, 3:[31]–42, Figs. 5–7 (gusset members 15’/22’))), would not necessarily be *configured to* extend through sheathing mounted on a wall (and provide a space sized and shaped to receive the sheathing therein), regardless of whether anyone installs sheathing around the extension portion. Indeed, in the Related Litigation, Patent Owner accuses certain of Petitioner’s hangers—just the hangers—of infringing the related ’510 patent. *See* Ex. 1031. As noted above, if a hanger, standing separate from any wall or installed sheathing, may fall within the scope of a claim for infringement purposes, then a prior disclosure of such a hanger may anticipate or in combination with other art render obvious that claim. *See Int’l Seaway*, 589 F.3d at 1239 (citing *Peters*,

129 U.S. at 537). In this case, Patent Owner repeatedly argues that the claimed extension flanges are “specifically ‘meant to’ or ‘designed to’ extend into one side and out of the other side of the sheathing,” but does not explain with clarity and particularity what that means structurally for the claimed apparatus (hanger), i.e., how the skilled artisan would know *based only on the structure of an alleged extension flange* whether it is “meant to” or “designed to” extend through sheathing. *See* PO Resp. 71; *see id.* at 71–78; PO Sur-Reply 23–25; Tr. 47:8–24, 48:8–24, 73:12–25.

We further address Patent Owner’s dispute over the “use” of Gilb ’792 with sheathing in connection with our analysis of the “sheath space” limitation below. *See infra* Section II.F.3.e.3.

(c) *Summary*

Based on the foregoing evidence, we determine that the phrase “each extension flange being configured to extend through the sheathing” is an *intended use* of the claimed extension flanges and does not further limit the scope of claim 1; to the extent that this phrase were interpreted *not* to be an intended use of the claimed extension flanges, we determine that the subject limitation is *superfluous*; and to the extent that the subject limitation were interpreted *not* to be superfluous, Petitioner contends, and we find, the combination of Gilb ’792 and Bundy teaches or at least suggests “each extension flange being configured to extend through the sheathing,” as recited in claim 1.

- (2) *“each extension flange lying in an extension flange plane, the extension flange planes being generally perpendicular to the base plane”*

Petitioner contends the extension flanges (gusset members 15'/22') disclosed in Gilb '792 “maintain the same generally perpendicular relationship with the base plane as is illustrated in the '867 Patent.” Pet. 39 (citing Ex. 1003 ¶¶ 121–122; Ex. 1035, Fig. 7 (annotated)).

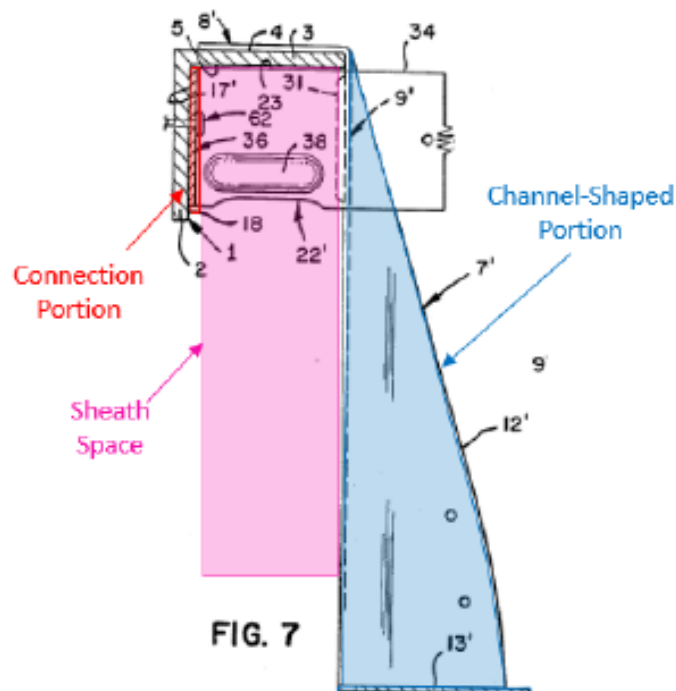
Patent Owner does not contend that the subject “lying in an extension flange plane” limitation is absent in Gilb '792, except as otherwise discussed above in Section II.F.3.d. *See* PO Resp. 39–49, 71–84; PO Sur-Reply 23–25. Any such argument has been waived. *See* 37 C.F.R. § 42.23(a).

Based on the foregoing evidence, Petitioner contends, and we find, Gilb '792 discloses “each extension flange lying in an extension flange plane, the extension flange planes being generally perpendicular to the base plane,” as recited in claim 1. Pet. 39 (citing, *inter alia*, Ex. 1003 ¶¶ 121–122).

- (3) *“the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall”*

Petitioner contends Gilb '792 discloses positioning base 36 (the back flange) at one end of gusset members 15'/22' and welding stirrup members

11'/12' (the channel-shaped portion) at opposite ends of gusset members 15'/22'. Pet. 40 (citing Ex. 1035, 3:31–44; Ex. 1003 ¶ 59). Petitioner argues “gusset members 15'/22' define a space that would permit sheathing to be inserted so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall,” as shown, for example, in Petitioner’s annotated version of Figure 7, reproduced below. Pet. 40–41 (Ex. 1003 ¶ 59; Ex. 1035, 3:23–55).



The above illustration shows Figure 7 of Gilb '792 annotated by Petitioner to show a “sheath space.”

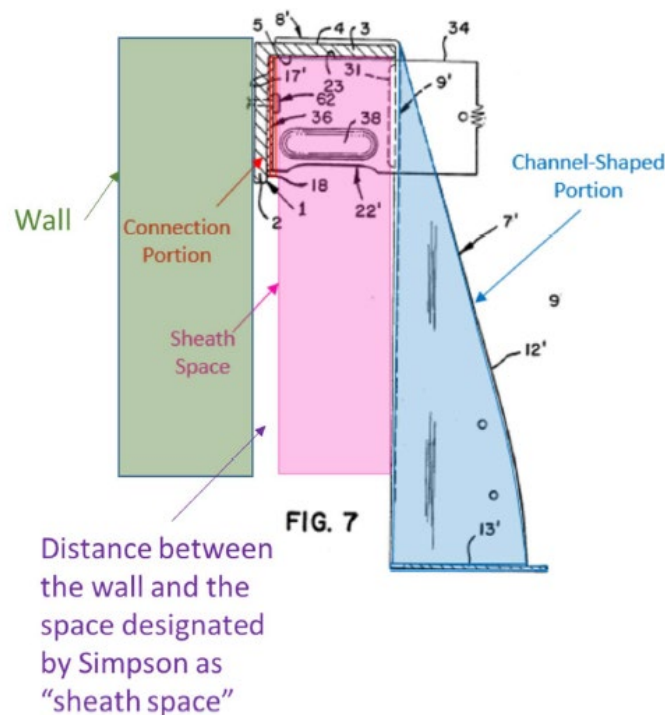
Ex. 1035, Fig. 7 (annotated); Pet. 41.

Petitioner argues, “[w]hile Gilb’792 does not explicitly disclose installing sheathing between Gilb’792’s stirrup members 11'/12' and

base 36, [the skilled artisan] would have found it obvious to size the length of Gilb’792’s gusset members 15’/22’ to define a sheathing space therein for receiving sheathing based on Bundy.” Pet.41 (citing Ex. 1003 ¶ 123).

Petitioner argues Bundy discloses “installing two layers of 5/8” sheathing between a hanger’s channel shaped portion (Bundy’s side members 11) and wall frame.” Pet.41 (citing Ex. 1007, 5:18–20; Ex. 1003 ¶ 123).

Patent Owner argues “[t]he Gilb ‘792 hanger is intended to attach to a metal ledger (‘typified by 3X3X¼ inch up through 3X6X¼ inch angled sections’ (EX1035: 1:22-25)[]) that is in turn secured to a concrete or masonry wall.” PO Resp. 72. Patent Owner argues the intended use of the Gilb ‘792 hanger would be impractical with extending the gusset members 15’/22’ through sheathing, and with the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein, as shown, for example, in Patent Owner’s annotated version of Figure 7, reproduced below. *Id.* at 73–74 (citing Ex. 2001 ¶¶ 198–200).



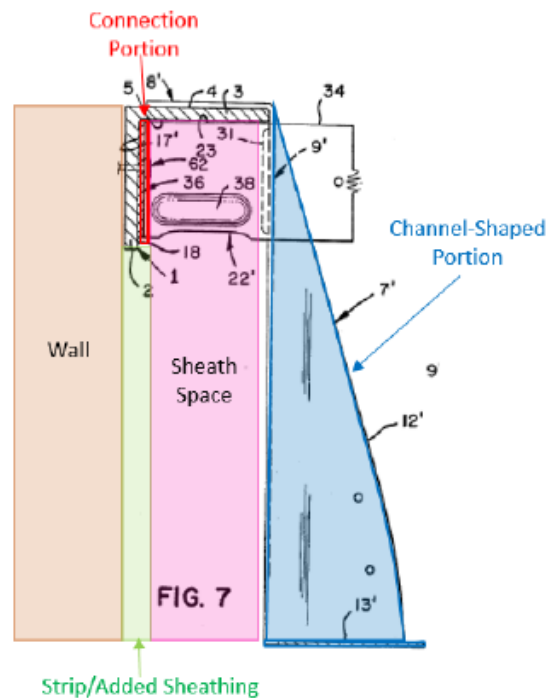
The above illustration shows Figure 7 of Gilb '792 annotated by Patent Owner to show a gap between a wall and alleged "sheath space."

Ex. 1035, Fig. 7 (annotated); PO Resp. 73–74; Ex. 2001 ¶ 200.

According to Patent Owner, "the presence of the ¼ inch thick ledger (2) together with the 7-gauge base (36) would separate the sheathing from the wall by nearly half an inch," and the skilled artisan "would readily recognize that sheathing is secured flush to the wall, not floating in space approximately half an inch away from the wall." PO Resp. 74 (citing Ex. 2001 ¶¶ 202–203). Patent Owner argues, as such, "the gusset members (15'/22') terminate within the sheathing, they don't extend through it," because "the installation of sheathing (to the extent that sheathing would be installed at all) would be stopped below the ledger and gusset members (15'/22')." *Id.* at 74–75 (citing Ex. 2001 ¶¶ 202–203, 205). Patent Owner

submits that “it would require a significant modification of the Gilb ‘792 hanger (e.g., omitting the metal ledger) to make the hanger compatible with installing sheathing up to and around the gusset members (15’/22’).” *Id.* at 76 (citing Ex. 2001 ¶ 206).

Petitioner responds that “[Patent Owner’s] arguments ignore that *the ledger is merely an intended use* of Gilb’792’s hanger,” and that “[the skilled artisan] would have understood that *base 36 of Gilb’792’s hanger can be attached directly to a wall, without a metal ledger, using nail means 62’.*” Pet. Reply 17 (citing Ex. 1003 ¶ 53) (emphases added); *see* Ex. 1038, 167:25–168:9; Ex. 1039 ¶¶ 71–72, 78–82. Petitioner submits “[Patent Owner’s] declarant admitted that Gilb’792’s hanger can ‘absolutely’ be attached to a top plate without a ledger.” *Id.* (citing Ex. 1038, 167:25–168:9). Petitioner further responds that “even if Gilb’792’s hanger was attached to the ledger, [the skilled artisan] would still have understood how and been motivated to install sheathing in the space defined by Gilb’792’s gusset members 15’/22’,” and “should such a gap be large enough to merit mitigation, [the skilled artisan] would have understood that sheathing, shims, or furring strips can be applied directly against the wall to account for [Patent Owner’s] alleged ‘gap,’” as shown, for example, in Petitioner’s annotated version of Figure 7, reproduced below. Pet. Reply 18–19 (citing Ex. 1038, 171:4–172:14; Ex. 1039 ¶¶ 69–73, 75).



The above illustration shows Figure 7 of Gilb '792 annotated by Petitioner to show a “sheath space.”

Ex. 1035, Fig. 7 (annotated); Pet. Reply 18. Petitioner further responds that “[the skilled artisan] would also have understood that Gilb’792’s wall can include a recess sized to receive the ledger’s leg so that sheathing can be applied directly against the wall and be received in the space defined by Gilb’792’s gusset members.” Pet. Reply 19 (citing Ex. 1039 ¶ 75).

In response, Patent Owner maintains that “[the skilled artisan] would not consider the arrangement of Gilb’792’s hanger—even as modified in view of Bundy—to have an extension portion arranged such that it would extend through sheathing,” because “the design of the Gilb ‘792 patent would prevent sheathing from being reasonably capable of being applied past the bottom of the ledger and gusset members (15’/22’).” PO Sur-Reply 23; *see id.* at 23–25. Patent Owner argues Petitioner’s proposals to

fill the “gap,” such as “by applying an additional layer of sheathing, shims, or furring strips to the wall framing or by creating a recess for the ledger,” “would prove abhorrently expensive and burdensome—especially when considering that they would require implementation throughout an entire multifamily structure.” *Id.* at 24 (citing Ex. 2058, 107:17–111:13). Patent Owner argues Petitioner’s potential solutions to address the “gap” that Patent Owner identifies amount to “hindsight aided reconstructions,” and “[i]t is more reasonable to conclude that one of skill in the art would apply sheathing to the bottom of the ledger and use the ledger as a fire barrier.” PO Resp. 77–78.

Patent Owner also argues, contrary to Petitioner, that the skilled artisan would not consider the Gilb ’792 hanger “to be configured for attachment to a wood framed wall without the metal ledger.” PO Resp. 79–80 (citing Ex. 2057 ¶ 97). Patent Owner argues “[t]he load path of Gilb ’792 is reliant on the connection of the top flange (8) to the outstanding ledger leg (3) to provide vertical support for the imposed load,” and “modifying the Gilb ’792 hanger to eliminate its reliance on the ledger to provide vertical support would impermissibly ‘change the basic principles under which [it] was designed to operate.’” *Id.* at 79–80 (citing Ex. 2057 ¶¶ 97–100; Ex. 2055, 45:13–48:1) (quoting *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 758 (Fed. Cir. 2015)). Based on the complete record before us, we find Patent Owner’s arguments unavailing.

In a first scenario (discussed above) where the hanger of Gilb ’792 is not used with a metal ledger, but instead attached directly to a wall top plate, without a metal ledger, using nail means 62’, we are persuaded by

Petitioner's evidence and expert testimony discussed above. Petitioner's expert testifies that the skilled artisan would understand Gilb '792 to teach this (Ex. 1039 ¶¶ 59–62, 71–72, 78–82; Ex. 1003 ¶ 109), and under cross-examination, Patent Owner's expert agreed, "absolutely," that the hanger of Gilb '792 may attach directly to a wall top plate without using a ledger (Ex. 1038, 167:25–168:9). Moreover, Petitioner's expert testifies that "there are no structural distinctions between Gilb'792's base 36 and the back flange disclosed in the '867 patent specification," and that back flange is used to mount the hanger to a wall. Ex. 1039 ¶ 78 (*compare* Ex. 1035, 3:42–44, *with* Ex. 1001, 5:19–23).

Although Patent Owner's expert testifies that "[t]he load path of Gilb '792 is reliant on the connection of the top flange (8') to the outstanding ledger leg (3) to provide vertical support for the imposed load" (Ex. 2057 ¶ 98 (cited at PO Resp. 79–80); *see id.* ¶¶ 94–100), we find this testimony unpersuasive and afford it little weight. First, as discussed above, this testimony is contradicted by his cross-examination testimony (Ex. 1038, 167:25–168:9). Second, this testimony ignores (or does not meaningfully address) that in the context of a wooden wall top plate, the lower leg (or vertical leg) of the ledger would attach to the same plate to which nail means 62 would attach, and ignores the disclosure of Gilb '792 explicitly stating that structure like base 36 mounted to the lower leg of the ledger via nail means 62 provides "a surprisingly substantial increase in holding capacity of the hanger" (Ex. 1035, 3:9–21). *See* Tr. 15:18–19 (Petitioner's counsel arguing "to the extent they're saying that it relies on load support from the ledger, well, the ledger here only connects to the wall as well.").

Third, Patent Owner's arguments and its expert's testimony that Gilb '792's hanger must have its top flange 8 engaged with the ledger's outstanding (or horizontal) leg, not only its base 36 attached via nail means 62 (*see, e.g.*, PO Resp. 78–80), is contradicted by its arguments that face mounted hangers were well known in the art and its own hanger, as shown and claimed in the '867 patent, may dispense with its top flanges and rely solely on its back flanges for attaching to a wall. *See, e.g.*, RMTA Reply 7–9; Tr. 58:4–18 (Patent Owner arguing, “hangers that use back flanges or hangers that use top flanges and back flanges were all just conventional within the art. . . . [T]his was so well known in the art that the person of skill in the art would look at the '867 Patent's disclosures and go, yes, I see that they're only disclosing top flange embodiments, but I don't see why I couldn't just easily do it with a face mount hanger.”); Ex. 1007, Figs. 1, 10 (showing Bundy's hanger in versions with top flanges (top mount) and without top flanges (face mount)).

Thus, in this first scenario, we find Petitioner sufficiently evidences that gusset members 15'/22' define a space that would permit sheathing to be inserted so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall. We also find that, where this first scenario is credited, Patent Owner concedes Gilb '792's gusset members 15'/22' define such a space and would extend through the sheathing. *See* PO Resp. 73–74 (acknowledging that where “sheathing [is] installed overlapping . . . base 36 . . . of the hanger,” “the gusset members (15'/22') would extend through the sheathing.”).

In a second scenario (discussed above) where Petitioner's identified sheath space between Gilb '792's connection portion and channel-shaped portion would, according to Patent Owner, separate the sheathing from a wall by nearly half an inch, we also are persuaded by Petitioner's evidence and expert testimony discussed above. In particular, Petitioner argues Bundy teaches using two layers of 5/8" drywall and its expert testifies that sheathing may be applied directly against the wall to account for Patent Owner's alleged gap (Ex. 1039 ¶¶ 69–73, 75)—in this case, the first layer of 5/8" drywall would abut the bottom of the ledger's lower leg and the second layer would extend between Gilb '792's connection portion and channel-shaped portion, thus satisfying the subject claim limitation. *See* Tr. 51:23–52:9 (Patent Owner conceding that applying two layers of drywall in this way would be “capable” of satisfying the subject limitation).

Further, as noted above, Petitioner's expert testifies that, if such a “gap” merited mitigation, among other techniques (e.g., sheathing, shims, or furring strips), “[the skilled artisan] would also have understood that Gilb'792's wall can include a recess sized to receive the ledger's leg so that sheathing can be applied directly against the wall and be received in the space defined by Gilb'792's gusset members.” Pet. Reply 19 (citing Ex. 1039 ¶ 75). Patent Owner attempts to controvert this expert testimony based on cross-examination testimony where Petitioner's expert agreed that such techniques have labor and material (i.e., cost) implications. *See* PO Sur-Reply 24 (citing Ex. 2058, 107:17–111:13). Notably, Patent Owner does not dispute that these techniques were well-known to the skilled artisan, and if employed, would result in sheathing being installed so as to

satisfy the subject limitation. We note that claim 1 is a “comprising” claim, and does not preclude elements in addition to those required by the claim. Patent Owner also charges that Petitioner engages impermissible hindsight in relying on these techniques to mitigate such a “gap.” PO Resp. 77–78. We find this argument unavailing, because such knowledge of assembling wall layers and establishing the plane of an outer finished wall was not gleaned only from the ’867 patent, but already known to the skilled artisan. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.”).

Thus, in this second scenario, we find Petitioner sufficiently evidences that gusset members 15’/22’ define a space that would permit sheathing to be inserted so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall.

Based on the foregoing evidence, Petitioner contends, and we find, the combination of Gilb ’792 and Bundy teaches or at least suggests “the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed

on the wall,” as recited in claim 1. Pet. 40–42 (citing, *inter alia*, Ex. 1003 ¶¶ 59, 123–124).

(4) *Reason to Combine Gilb ’792 and Bundy*

Petitioner argues Gilb ’792 “already discloses a space between its back flange (base 36 having side face 17’) and its channel-shaped portion (stirrup members 11’/12’), the width of the space defined by gusset members 15’/22’.” Pet. 28–29 (citing Ex. 1003 ¶ 92). Petitioner argues the skilled artisan “would have found it obvious to receive sheathing between Gilb’792’s stirrup members 11’/12’ and base 36, as Bundy teaches receiving sheathing between a channel-shaped portion of a hanger and the wall.” Pet. 29 (Ex. 1003 ¶¶ 93–94). Petitioner argues “it would have been obvious to optimize the size of the spacing between Gilb’792’s stirrup members 11’/12’ and base 36 to accommodate two layers of 5/8” thick sheathing according to the size preference described by Bundy.” Pet. 29. Petitioner argues “[t]his modification would have been nothing more than applying a known technique (Bundy’s spacing to accommodate two sheets of 5/8” sheathing) to a similar device (Gilb’792’s space defined by gusset members 15’/22’) to obtain the predictable result of optimizing the size of the hanger’s spacing to receive sheathing, thereby ‘*protect[ing] the structural members of a building.*’” Pet. 29 (citing Ex. 1007, 5:18–20; Ex. 1003 ¶ 94) (emphasis added); *see id.* (“Bundy teaches this preferred construction *for optimal wall integrity.*” (emphasis added))).

Petitioner also argues the skilled artisan “would have had an expectation of success in defining a sheath space between Gilb’792’s stirrup members 11’/12’ and base 36, because Gilb’792’s and Bundy’s hangers are

used for similar purposes (e.g., hanging a structural object to a wall) and Gilb '792's stirrup members 11'/12', flanges 9', and base 36 already define a space therebetween." Pet. 41 (citing Ex. 1003 ¶ 123; Ex. 1007, 4:46–51; Ex. 1035, 1:5–11, 3:23–55); *see* Pet. 29 (citing Ex. 1003 ¶ 95; Ex. 1007, 4:47–51; Ex. 1035, 2:33–58).

Patent Owner argues Petitioner's combination of Gilb '792 (and its other primary references, Timony and Tsukamoto) and Bundy is "the epitome of an impermissible hindsight reconstruction." PO Resp. 103; *see id.* at 102–107, 111–112. Patent Owner argues that "the motivation for making the prior art combinations proffered by [Petitioner] is to make the modified base reference hangers useful for a firewall application," but "[n]one of the walls for which the Gilb '792, Timony, and Tsukamoto hangers were expressly designed need a fire barrier." *Id.* at 104–105. Patent Owner argues Petitioner "provides no reason—other than its desire to combine the references with Bundy—as to why [the skilled artisan] would use Gilb '792, Timony, or Tsukamoto on wood frame walls." *Id.* at 106. According to Patent Owner, "[i]n what is nothing more than circular reasoning, the justification for using Gilb '792, Timony, or Tsukamoto on wood frame walls is to solve the very problem that is created by doing so." *Id.* at 106–107. Patent Owner argues "[the skilled artisan] would recognize that Gilb '792 is incompatible for installation directly to a top plate of a wood framed wall" (as already discussed above, we find the evidence contradicts this argument (*see* Pet. Reply 14)). *Id.* at 107.

Petitioner responds that "[the skilled artisan] would have recognized that Bundy's suggestion to 'cover and protect' structural members goes

beyond just fireproofing,” and “would have understood that sheathing can be used for soundproofing, insulation, and aesthetic applications, which all collectively achieve ‘optimal wall integrity.’” Pet. Reply 12–13 (citing Ex. 1003 ¶ 94; Ex. 1038, 32:12–33:2; Ex. 1039 ¶¶ 48–55; Ex. 1007, 5:17–21). Petitioner contends “[t]his rationale of improving wall integrity comes directly from the art.” *Id.* at 13. Petitioner argues [the skilled artisan] would have been motivated to combine drywall with masonry or concrete walls to provide cover for the wall structure,” and that Patent Owner’s expert “admitted that you can apply sheathing to anything, including masonry or foundation walls, for other purposes besides fire resistance.” *Id.* (citing Ex. 1039 ¶¶ 50–59; Ex. 1038, 32:12–33:2); *see id.* (“[The skilled artisan] would have understood that drywall is also commonly applied to masonry or concrete walls to satisfy code requirements for a particular fire rating.” (citing Ex. 1039 ¶¶ 56–58; Ex. 1040, 4 (Table 1), 5 (Table 3); Ex. 1041, 17, Fig. 8(a))).

Patent Owner in turn responds that Petitioner’s rationales based on using sheathing for “‘soundproofing, insulation, and aesthetic applications’” are “new,” “were not expressed in the petition,” and should be “disregarded” by the Board. PO Sur-Reply 10–13, 15. Patent Owner argues “[e]ach of Gilb ’792’s, Tsukamoto’s, and Timony’s hangers were designed specifically for use on masonry or concrete walls,” and thus, “[t]here would have been no reason for [the skilled artisan] to have considered constructing [such] hangers to receive drywall between a connection portion and channel shaped portion of the hanger.” *Id.* at 14. Patent Owner does, however, acknowledge that sheathing is applied to masonry or concrete walls: “While

[Petitioner] may be capable of conjuring a one-off application in which sheathing would be attached directly to a masonry or concrete wall, such applications are a gross deviation from standard practices.” *Id.* Patent Owner also reiterates its argument that the skilled artisan would not have been motivated to configure the hanger of Gilb ’792 for attachment to a top plate of a wood framed wall. *Id.* at 16–20.

Obviousness requires, among other things, a finding that a skilled artisan would have been motivated to combine the teachings of prior art to arrive at the claimed invention. *See OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1382 (Fed. Cir. 2019) (quoting *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018)). The inquiry into the existence of a motivation to combine is a flexible one—we assume a skilled artisan is a person of ordinary creativity with common sense, common wisdom, and common knowledge. *See Fleming v. Cirrus Design Corp.*, 28 F.4th 1214, 1223 (Fed. Cir. 2022) (citing *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013); *KSR*, 550 U.S. at 421). In light of the skilled artisan’s knowledge and creativity, an obviousness determination does not require prior art to expressly state a motivation for every obvious combination. *See, e.g., id.* Moreover, there is no requirement that a motivation to combine must be separately expressed in *each* prior art reference.

The Federal Circuit has recognized that an obviousness showing “does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention.” *Novartis Pharms. Corp. v. West-Ward*

Pharms. Int'l Ltd., 923 F.3d 1051, 1059 (Fed. Cir. 2019) (quoting *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004)). Here, Petitioner is required to show only that “‘there is something in the prior art as a whole to suggest the *desirability* . . . of making the combination,’ not whether there is something in the prior art as a whole to suggest that the combination is the *most desirable* combination available.” *Fulton*, 391 F.3d at 1200 (quoting *In re Beattie*, 974 F.2d 1309, 1311 (Fed. Cir. 1992)).

The Board also must “recognize that we cannot allow hindsight bias to be the thread that stitches together prior art patches into something that is the claimed invention.” *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) (“Without any explanation as to how or why the references would be combined to arrive at the claimed invention, we are left with only hindsight bias that *KSR* warns against.”); *see KSR*, 550 U.S. at 421 (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”). Our reviewing court has instructed that the Board “should consider a range of real-world facts to determine ‘whether there was *an apparent reason* to combine the known elements in the fashion claimed by the patent at issue.’” *Intercont'l Great Brands LLC v. Kellogg N. Am. Co.*, 869 F.3d 1336, 1344 (Fed. Cir. 2017) (citing *KSR*, 550 U.S. at 418) (emphasis added); *see KSR*, 550 U.S. 418 (“[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”); *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements;

instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”) (quoted with approval in *KSR*, 550 U.S. at 418).

In this case, it is indisputable that Bundy teaches, *inter alia*, joist hanger 2 attaches to top plate (or header) 4 of a wooden structural support (e.g., wall) (Ex. 1007, 3:55–5:9, code (57)); teaches using, for example, two layers of 5/8” drywall 6 between the wall frame and the hanger’s back plate members (flanges) 9 “to cover and protect the structural members of a building” and “to extend up far enough to cover the front surface of the header” (*id.* at 1:9–11, 5:16–20; *see* Pet. 29 (citing same; Ex. 1003 ¶ 94)); teaches joist hanger 2 may attach to top plate 4 via back flanges 9 only (i.e., a face-mount hanger) (Ex. 1007, 1:46–51, 1:54–56, Figs. 10–20) *or* via both back flanges 9 and top flanges 15 (i.e., a top-flange hanger) (*id.* at 1:52–54, 5:38–64, Figs. 1–9); and teaches “top flanges may be attached to the back flanges to aid in attaching the hanger to the header” (*id.* at 1:52–53), as shown, for example, in Bundy’s Figures 1 and 10, reproduced in Table 2 below. It also is indisputable that Gilb ’792 teaches, *inter alia*, joist hanger 7’ that holds a structural beam member (e.g., joist) and spaces the joist a certain distance from a wall based on gusset members 15’, 22’ (Ex. 1035, 3:22–44, Figs. 5–7); teaches “gusset members 15’ and 22’ are held in position by shooting nail means 62 through base 36 of the U-shaped member into lower leg 2 of the metal ledger,” which ledger is attached to the wall (*id.* at 3:47–50); and teaches by placing base 36 “in face to face contact with the ledger lower leg 2 and fastening [it] to the lower ledge leg by fastening means 62, a surprisingly substantial increase in holding capacity of

the hanger could be obtained” (*id.* at 3:7–21), as shown, for example, in Gilb ’792’s Figures 5–7, reproduced in Table 2 below.

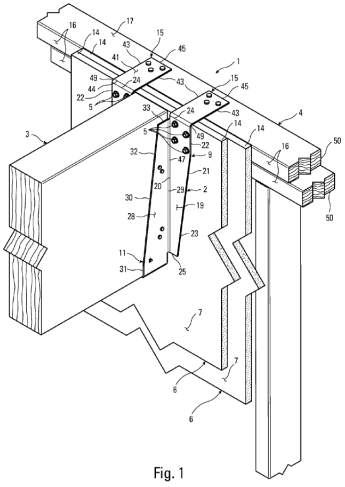
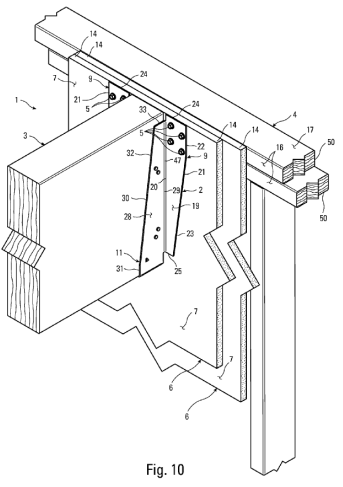
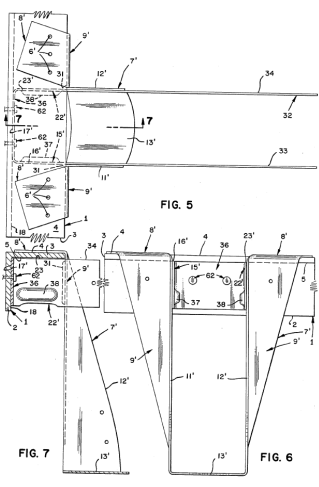
Table 2		
		
Ex. 1007, Fig. 1 (Bundy)	Ex. 1007, Fig. 10 (Bundy)	Ex. 1035, Figs. 5–7 (Gilb ’792)

Table 2 depicts Bundy’s Figures 1 and 10 and
Gilb ’792’s Figures 5–7.

We agree with Petitioner that the skilled artisan, in view of these indisputable teachings, would have recognized the desirability of combining such teachings to size the hanger of Gilb ’792, and particularly *the length* of its gusset members 15’, 22’, to define a sheath space therein for receiving sheathing (and to extend therethrough), such as one or more layers of drywall, for the explicitly stated purpose in Bundy of “cover[ing] and protect[ing] the structural members of a building” (Ex. 1007, 5:16–20), and allowing the drywall “to extend up far enough to cover the front surface of the header” (but for accounting for gusset members 15’, 22’) (*id.* at 1:9–11). We find the skilled artisan also would have appreciated Gilb ’792’s teaching of the benefits of increased strength by mounting base 36 directly to a wall

interface, and Bundy's teaching of extending drywall as continuous as possible across a wall (e.g., behind a joist), and would have recognized the desirability of combining these teachings to arrive at a hanger that mounts to a wall interface (whether via ledger or directly to the face of a wooden top plate), and that also provides a space (via gusset members 15'/22') that would permit sheathing to be inserted and positioned as set forth in claim 1 (i.e., so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall).

We disagree with Patent Owner that Petitioner relies on improper hindsight to reconstruct the invention of claim 1. Rather, as discussed more fully above, Petitioner's proffered rationale and underlying basis for doing so comes explicitly from the asserted prior art. *See* Pet. 38 (citing Ex. 1007, 5:18–20 (“cover[ing] and protect[ing] the structural members of a building”); Ex. 1003 ¶ 119); *see also* Pet. 28–29; Ex. 1007, 1:9–11 (allowing drywall “to extend up far enough to cover the front surface of the header”); Ex. 1003 ¶¶ 93–94; Pet. Reply 13. Patent Owner seeks to limit this rationale to only a firewall application, which it argues would be inapplicable in the context of a metal ledger and concrete wall in Gilb '792. PO Resp. 103–107. We find this argument unavailing. First, Patent Owner ignores the broader teaching to the skilled artisan of “covering and protecting” structural members. Second, Patent Owner acknowledges that sheathing is applied to masonry or concrete walls at least in certain settings (PO Sur-Reply 14). Finally, Patent Owner essentially argues that the skilled artisan would not have physically substituted a firewall from Bundy into

Gilb '792's hanger as mounted to a metal ledger and concrete wall, but in trying to force an actual, physical substitution here, ignores how the proffered rationale would have influenced the skilled artisan *to combine the teachings of both references to achieve the invention of claim 1*. See *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (“It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.”); *In re Sneed*, 710 F.2d 1544, 1550 (Fed.Cir.1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.”).

Patent Owner also seeks to preclude Petitioner from arguing that the skilled artisan would have understood “cover[ing] and protect[ing] the structural members of a building” (Pet. 38 (citing Ex. 1007, 5:18–20)) includes using sheathing, such as drywall, in “soundproofing, insulation, and aesthetic applications” (Pet. Reply 12–13). PO Sur-Reply 10–13, 15. Although we rely herein on Bundy’s explicit disclosure of “cover[ing] and protect[ing]” as supporting the rationale to combine the teachings of Gilb '792 and Bundy, we disagree with Patent Owner that Petitioner’s additional arguments on using sheathing for soundproofing, insulation, and aesthetic applications should be disregarded. Instead, we find such arguments properly respond to Patent Owner’s challenge that the skilled artisan would have understood “cover[ing] and protect[ing]” in Bundy to

implicate firewalls only. Patent Owner’s expert agreed that the skilled artisan would have known that the installation of drywall over wall structures serves several purposes, such as “sound mitigation and fire resistance.” Ex. 1038, 32:12–33:2. That said, we find these additional aspects of “cover[ing] and protect[ing]” structural members of a wall or building provide additional rational underpinning for why the skilled artisan would have combined Bundy’s teachings of sheathing/drywall layers covering as much of a wall as possible (e.g., up to the top of a wooden-framed wall’s top plate) with Gilb ’792’s teachings of a hanger that provides for a space between the wall and the joist being held by the hanger.

(5) *Summary*

Based on the foregoing evidence, Petitioner contends, and we find, the combination of Gilb ’792 and Bundy teaches or at least suggests “each extension flange being configured to extend through the sheathing, each extension flange lying in an extension flange plane, the extension flange planes being generally perpendicular to the base plane, the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall,” as recited in claim 1. Pet. 37–42 (citing, *inter alia*, Ex. 1003 ¶¶ 118–124).

f) *Conclusion – Independent Claim 1*

For the reasons expressed above, we conclude that Petitioner has demonstrated by a preponderance of the evidence that the combined teachings of Gilb ’792 and Bundy render claim 1 unpatentable as obvious.

In addition, because we agree with Petitioner that Gilb '792 teaches all *structural* elements of claim 1 (*see supra* Section II.F.3.a–e); because we conclude in the alternative that the phrase “configured to extend through the sheathing” is an intended use of the claimed extension flanges and does not further limit the scope of claim 1 or, if not, is superfluous of other structural limitations in claim 1 (*see supra* Section II.F.3.e.1); and because we find the length of gusset members 15', 22' as taught in Gilb '792 would necessarily provide a space to receive sheathing (even multiple layers of drywall) (*see, e.g.,* Ex. 1035, 1:23–30 (teaching the typical ledger has an outstanding (horizontal) leg measuring 3", and hanger gusset members 15', 22' extend substantially this length), Figs. 5–7; Ex. 1007, 5:14–18 (disclosing standard drywall thicknesses of 1/2" and 5/8")), we conclude, in the alternative, that there is no need to turn to any teachings in Bundy and, therefore, no need to identify any reason to combine teachings of Bundy and Gilb '792. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1372–73 (Fed. Cir. 2019) (finding “the Board was not required to make any finding regarding a motivation to combine” when the petitioner argued and the Board found that a single reference taught all the claim elements in an obviousness ground based on a combination of references). Unless the phrase “configured to extend through the sheathing” were found to further limit the scope of claim 1 (whereupon we rely on our analysis of reasons to combine Gilb '792 and Bundy (*see supra* Section II.F.3.e.4)), Gilb '792 alone would have rendered obvious the structure recited in apparatus claim 1.

4. *Independent Claim 16*

Petitioner contends independent claim 16 would have been unpatentable as obvious over the combination of Gilb '792 and Bundy. Pet. 53–58. The Petition provides a detailed assessment of claim 16, with references to the Petition's analysis of claim 1, disclosures in Gilb '792 and Bundy, and the declaration testimony of Mr. Fennell. Pet. 53–58.

In particular, independent claim 16 recites, in part, a “back flange configured for engaging a vertical face of the upper plate of the frame wall.” Ex. 1001, 13:46–49. Petitioner argues Gilb '792 discloses a back flange (base 36), and “base 36 is configured to engage a vertical surface to secure hanger 7' to a wall via nails.” Pet. 56 (citing Ex. 1003 ¶ 162; Ex. 1035, 3:23–55, Figs. 5–7). Petitioner argues that, “[w]hen installed to an upper plate of a frame wall, Gilb'792's base 36 would be configured to engage the vertical face of the upper plate by securing the hanger to the wall via nails.” Pet. 56 (citing Ex. 1003 ¶ 162).

Patent Owner argues that “[Gilb '792's] base (36) is configured to engage the lower leg (2) of the ledger, not a vertical face of the upper plate of the frame wall.” PO Resp. 78–79 (citing Ex. 1035, 1:5–63, 2:29–47; Ex. 2057 ¶¶ 92–96). Patent Owner argues, contrary to Petitioner, that the skilled artisan would not consider the Gilb '792 hanger “to be configured for attachment to a wood framed wall without the metal ledger.” *Id.* at 79–80 (citing Ex. 2057 ¶ 97). Patent Owner argues “[t]he load path of Gilb '792 is reliant on the connection of the top flange (8) to the outstanding ledger leg (3) to provide vertical support for the imposed load,” and “modifying the Gilb '792 hanger to eliminate its reliance on the ledger to provide vertical

support would impermissibly ‘change the basic principles under which [it] was designed to operate.’” *Id.* (citing Ex. 2057 ¶¶ 97–100; Ex. 2055, 45:13–48:1). Based on the complete record before us, we agree with Petitioner and find Patent Owner’s arguments unavailing for the same reasons already set forth above in Section II.F.3.e.3 (see discussion of “first scenario” where the hanger of Gilb ’792 is not used with a metal ledger).

Patent Owner otherwise does not present any separate arguments that are distinct to claim 16, and therefore, has waived such arguments. *See* 37 C.F.R. § 42.23(a); *NuVasive*, 842 F.3d at 1379–82; *Papst Licensing*, 924 F.3d at 1250; *Bradium*, 923 F.3d at 1048. Rather, Patent Owner generally is of the view that the alleged deficiencies in the Petition with respect to claim 1 are also applicable to claim 16. *See generally* PO Resp. 71–84.

For the same reasons provided above for independent claim 1, as well as the foregoing arguments and evidence submitted by Petitioner concerning independent claim 16, we conclude that Petitioner has demonstrated by a preponderance of the evidence that independent claim 16 is unpatentable as obvious over the combination of Gilb ’792 and Bundy.

5. *Dependent Claims 2–12, 15, 17, and 21–23*

Petitioner contends claims 2–12, 15, 17, and 21–23, which depend directly or indirectly from independent claims 1 or 16, would have been unpatentable as obvious over the combination of Gilb ’792 and Bundy. Pet. 42–53, 58–59. The Petition provides a detailed assessment of these claims, with references to the Petition’s analysis of claims 1 and 16,

disclosures in Gilb '792 and Bundy, and the declaration testimony of Mr. Fennell. Pet. 42–53, 58–59.

Of these dependent claims, the parties dispute whether the skilled artisan would have had a rational reason to combine Gilb '792 and Bundy to achieve the inventions of claims 7 and 21. Both claims 7 and 21 recite:

wherein the back flange has a front surface lying in a back flange plane and wherein the hanger further comprises *a stop* configured to engage the end of the structural component to space the end of the structural component from the back flange plane by a distance sized large enough to permit the sheathing to be received between the end of the structural component and the back flange plane.

Ex. 1001, 12:60–67 (emphasis added).

Petitioner argues “Gilb’792 discloses that the back flange (base 36) has a front surface lying in a back flange plane.” Pet. 47 (citing Ex. 1003 ¶ 137; Ex. 1035, Fig. 5). Petitioner argues “Gilb’792 does not explicitly disclose a stop configured to engage the end of the structural component,” but “Bundy teaches an analogous hanger that includes a stop,” via back plate members 9, which Bundy states “could both be bent inward to face each other between the first and second side members 11.” Pet. 47 (quoting Ex. 1007, 4:39–46; citing Ex. 1003 ¶ 138). Petitioner contends “it would have been obvious for [the skilled artisan] to modify Gilb’792 by providing a stop to engage an end of the structural element, as taught by Bundy, *to ensure that the end of the structural component 17 is spaced from the back flange.*” Pet. 48 (citing Ex. 1003 ¶¶ 139–140). According to Petitioner, “[s]uch a modification would have been applying a known technique (Bundy’s channel-shaped portion having stops bent inwards to

face each other) to a known device (Gilb’792’s channel-shaped portion without stops) to obtain [a] predictable result of providing support at the end of a structural element.” Pet. 48; *see* Pet. 58 (claim 21).

Patent Owner argues “Bundy does not identify these back plate members as being a stop,” and that the skilled artisan allegedly would not have considered a stop to be necessary in Bundy, because “Bundy’s hanger was designed for installation after the drywall was already installed.” PO Resp. 114 (citing Ex. 1007, 2:20–25, Fig. 2; Ex. 2055, 64:8–18; Ex. 2057 ¶¶ 114–115, 191–192). Patent Owner argues Petitioner’s rationale for providing a “stop” in the combination of Gilb ’792 and Bundy “is simply an impermissible hindsight reconstruction.” *Id.* at 116–119; *see id.* at 119 (“That [Petitioner] now pulls bending only a portion of Gilb ’792’s depending flanges . . . out of thin air exemplifies that Simpson is using the claims of the ‘867 Patent as a roadmap to invalidate claims 7 and 21.”).

Petitioner responds that “[a]dding a stop would allow the hangers in [Gilb’792] to control the end of the structural element, and [the skilled artisan] would have been motivated to do so without the benefit of hindsight, *so as to protect any wall element behind the hanger.*” Pet. Reply 15 (citing Ex. 1003 ¶¶ 138–139, 217–219, 294–296; Ex. 1039 ¶¶ 65–68) (emphasis added). Petitioner contends “[Patent Owner] erroneously asserts that Petitioner’s rationale for bending only a portion of [Gilb’792’s] channel-shaped portions arrives ‘out of thin air,’” but Patent Owner “*overlooks the skill of a POSITA [i.e., the skilled artisan], who would have known that select portions of a hanger section may be bent.*” *Id.* at 15–16 (citing Ex. 1039 ¶ 67) (emphasis added); *see* Ex. 1039 ¶¶ 65–67.

Patent Owner in turn responds that “[Petitioner’s] alleged motivation has no support anywhere in the prior art, and instead is merely a *post haec* excuse to incorporate a claim limitation that was entirely missing from the asserted prior art.” PO Sur-Reply 20; *see id.* at 20–21. We agree with Petitioner and find Patent Owner’s arguments unavailing.

The law does not require that the references expressly articulate a motivation to combine. *See, e.g., Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1359 (Fed. Cir. 2017). “Motivation to combine may be found in many different places and forms.” *Allergan, Inc. v. Sandoz, Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013); *see also Cross Med. Prod., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1322 (Fed. Cir. 2005) (“It has long been the law that the motivation to combine need not be found in prior art references, but equally can be found ‘in the knowledge generally available to one of ordinary skill in the art.’”). Indeed, an obviousness analysis may “consider a range of real-world facts to determine ‘whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.’” *Intercont’l Great Brands*, 869 F.3d at 1344 (quoting *KSR*, 550 U.S. at 418).

In this case, we already determined above that the skilled artisan—without improper hindsight—would have had sufficient reasons to combine the teachings of Gilb ’792 and Bundy to achieve the invention of independent claim 1, which includes “the back flange and the channel-shaped portion *defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the*

sheathing when the hanger and sheathing are installed on the wall.” *See supra* Section II.F.3.e.4 (“Reason to Combine Gilb ’792 and Bundy”).

Given this sheath space and given that joists may be installed in the hangers before drywall installation, we agree with Petitioner that the skilled artisan (e.g., a Mechanical Engineer with at least four years of work experience in construction connector design/development) would have recognized the desirability of providing “a stop to engage an end of the structural element, as taught by Bundy, to ensure that the end of the structural component 17 is spaced from the back flange.” Pet. 48. In other words, we find the skilled artisan would have desired to *stop* joists, during their installation, from intruding into the sheath space so as not to block or impede subsequent installation of sheathing/drywall into the sheath space. *See KSR*, 550 U.S. at 419–21 (An obviousness analysis must account for the teachings of the prior art as a whole in light of the common sense and creativity of a person of ordinary skill in the art.).

We note that in the prior post-grant proceeding, PGR2019-00063, Patent Owner did not dispute that a “stop,” such as at issue here, was known in the art. *See Ex. 2006*, 74–75 (concluding that Petitioner demonstrated by a preponderance of the evidence that the asserted prior art disclosed a “stop”). Similarly, in this case, Patent Owner does not point to any evidence of record that including a “stop” in the hanger of independent claim 1 would have been “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Patent Owner otherwise does not present any separate arguments that are distinct to remaining dependent claims 2–6, 8–12, 15, 17, 22, and 23, and therefore, has waived such arguments. *See* 37 C.F.R. § 42.23(a); *NuVasive*, 842 F.3d at 1379–82; *Papst Licensing*, 924 F.3d at 1250; *Bradium*, 923 F.3d at 1048. Rather, Patent Owner generally is of the view that the alleged deficiencies in the Petition with respect to claims 1 and 16 are also applicable to these claims. *See generally* PO Resp. 71–84, 102–123. For the same reasons provided above for independent claims 1 and 16, as well as the foregoing arguments and evidence submitted by Petitioner concerning dependent claims 2–12, 15, 17, and 21–23, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 2–12, 15, 17, and 21–23 are unpatentable as obvious over the combination of Gilb ’792 and Bundy.

6. *Overall Summary*

For the reasons expressed above, we conclude that Petitioner has demonstrated by a preponderance of the evidence that the combined teachings of Gilb ’792 and Bundy render claims 1–12, 15–17, and 21–23 unpatentable as obvious.

G. *Summary of Analysis of Original Claims 1–23*

In our analysis above of original claims 1–23 of the ’867 patent, we determine that Petitioner *has* demonstrated by a preponderance of the evidence:

(1) claims 5 and 17 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness;

(2) claims 5 and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of written description; and

(3) claims 1–12, 15–17, and 21–23 are unpatentable as obvious over the combination of Gilb '792 and Bundy.

We also determine that Petitioner *has not* demonstrated by a preponderance of the evidence:

(1) claims 1–4, 6–16, and 18–23 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

We note that Petitioner's only challenge to patentability of dependent claims 13, 14, and 18–20 is based on indefiniteness under Section 112(b). Petitioner does not assert any prior-art-based challenges under Section 102 or 103 against these claims. *See* Pet. 2–3. Because we find Petitioner *has not* demonstrated by a preponderance of the evidence that these claims are indefinite (*see supra* Section II.D), these original dependent claims 13, 14, and 18–20 stand.

Given Patent Owner's stated contingency of its proposed substitute claims in the RMTA (RMTA 1), for efficiency purposes, we need not and do not address in this section Petitioner's remaining prior-art-based unpatentability arguments directed to original claims 1–12, 15–17, and 21–23, and instead hereinafter turn to proposed substitute claims 24–46, as discussed below in Section III. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the

“Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”). Nevertheless, in Section III, because all proposed substitute claims are narrower than their corresponding original claims, our findings and conclusions as to prior-art-based unpatentability of proposed substitute claims apply equally to their corresponding original claims. We now turn to Patent Owner’s Revised Contingent Motion to Amend.

III. REVISED CONTINGENT MOTION TO AMEND

Patent Owner requests that we grant entry of proposed substitute claims 24–46, which correspond to original claims 1–23. RMTA 1, App. A, 2. In particular, Patent Owner requests that “[i]f, after considering Patent Owner’s briefing, the Board finds any of issued claims unpatentable, Patent Owner respectfully requests the Board replace each unpatentable claim with its corresponding substitute claim, as indicated in Appendix A.” RMTA 1. Because Patent Owner proposed substitute claims 36, 37, and 41–43 contingent upon Petitioner demonstrating the unpatentability of original claims 13, 14, and 18–20, respectively, and because Petitioner has not demonstrated the unpatentability of claims 13, 14, and 18–20 by a preponderance of the evidence, we do not consider proposed substitute claims 36, 37, and 41–43. Rather, we turn only to Patent Owner’s proposed substitute claims 24–35, 38–40, and 44–46.

A. Applicable Law

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). 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 also *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 3–4 (PTAB Feb. 25, 2019) (precedential). Subsequent to the issuance of *Aqua Products*, the Federal Circuit issued a decision in *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017) (“*Bosch*”), as well as a follow-up order amending that decision on rehearing. See *Bosch Auto. Serv. Sols., LLC v. Iancu*, No. 2015-1928 (Fed. Cir. Mar. 15, 2018) (Order on Petition for Panel Rehearing).

In accordance with *Aqua Products*, *Bosch*, and *Lectrosonics*, a patent owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claims presented in the motion to amend. Rather, ordinarily, “the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the evidence.” *Bosch*, 878 F.3d at 1040 (as amended on rehearing); *Lectrosonics*, Paper 15 at 3–4. In determining whether a petitioner has proven unpatentability of the proposed 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). Ultimately, the Board determines whether the proposed substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, including any opposition made by the Petitioner. See *Lectrosonics*, Paper 15 at 4.

Notwithstanding the foregoing, Patent Owner's proposed substitute claims 24–35, 38–40, and 44–46 must meet the statutory requirements of 35 U.S.C. § 326(d) and the procedural requirements of 37 C.F.R. § 42.221. *Lectrosonics*, Paper 15 at 4–8. Accordingly, Patent Owner must demonstrate: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment responds to a ground of unpatentability involved in the trial, (3) the proposed claims are supported in the original disclosure (and any earlier filed disclosure for which the benefit of filing date is sought); and (4) 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.

B. Proposed Substitute Claims

Proposed substitute independent claim 24 would replace independent claim 1, and is reproduced below with underlining indicating text added to claim 1.

24. A hanger for connecting a structural component to a wall adapted to have sheathing mounted thereon, the hanger comprising:

a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base configured to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface configured to engage the structural component, the upper surface lying in a base plane;

a connection portion configured for attachment to the wall, the connection portion including a back flange having an upper edge, the back flange extending from the upper edge in a direction generally toward the base plane, the connection portion

and channel-shaped portion being in a rigidly fixed, spaced apart relation relative to one another as manufactured; and

an extension portion including first and second extension flanges extending from the channel-shaped portion to the connection portion, each extension flange being configured to extend through the sheathing, each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion, the extension flange planes being generally perpendicular to the base plane, the first and second extension flanges and the channel-shaped portion being formed as one piece of sheet metal, the back flange and the channel-shaped portion defining a sheath space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing when the hanger and sheathing are installed on the wall.

RMTA, App. A, 3–4.

Proposed substitute independent claim 39 would replace independent claim 16, and is reproduced below with underlining indicating text added to claim 16.

39. A hanger to connect a ~~joist~~ structural component to a frame wall adapted to have sheathing mounted thereon so that an interior side of the sheathing faces the frame wall and an exterior side of the sheathing faces away from the frame wall, the frame wall including a wooden upper plate and wooden studs extending down from the upper plate, the hanger comprising:

a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base configured to receive an end portion of the structural component thereon to support the structural component and side panels extending upward from the base, the base having an upper surface configured to engage the structural component, the upper surface lying in a base plane;

a connection portion configured for attachment to the frame wall, the connection portion including a back flange configured for engaging a vertical face of the upper plate of the frame wall, the connection portion and channel-shaped portion being in a rigidly fixed, spaced apart relation relative to one another, the connection portion including a top flange, the top flange extending in a direction rearwardly away from the channel-shaped portion and arranged to overlie an upper surface of the wooden upper plate when the hanger is installed on the frame wall, the top flange including a rear edge located rearwardly of the back flange; and

first and second extension flanges interconnecting the connection portion and the channel-shaped portion and holding the connection portion and channel-shaped portion in spaced apart relation to each other, the first and second extension flanges being configured to extend through an opening in the sheathing to the wall frame, the first extension flange including an edge, the first extension flange extending edgewise from the channel-shaped portion toward the wall frame in an extension direction, the extension direction being parallel to the base plane, the back flange, the first and second extension flanges and the channel-shaped portion defining a sheathing space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing, the back flange being sized and arranged to at least partially block the opening in the sheathing to reduce the exposure of the wooden top plate and wooden studs to an exterior through the opening in the sheathing.

RMTA, App. A, 9–11.

According to Patent Owner, “the amendments only add elements to the issued claims of the ‘867 patent that narrow their scope,” and “do not delete limitations from the issued claims.” RMTA 2.

C. Statutory and Regulatory Requirements

*1. Reasonable Number of Claims (35 U.S.C. § 326(d)(1)(B);
37 C.F.R. § 42.221(a)(3))*

“There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.”

Lectrosonics, Paper 15 at 4–5 (citing 37 C.F.R. § 42.221(a)(3)). Petitioner challenges claims 1–23 of the ’867 patent, and Patent Owner proposes claims 24–46, as potential substitutes for claims 1–23, respectively.

RMTA 1. Patent Owner thus proposes no more than 1 substitute claim for each challenged claim, and proposes to replace two independent claims and twenty-one dependent claims with two independent claims and twenty-one dependent claims. *See* RMTA, App. A. We find Patent Owner proposes a reasonable number of substitute claims.

*2. Respond to a Ground of Unpatentability (37 C.F.R.
§ 42.221(a)(2)(i))*

Patent Owner contends that proposed substitute claims 24–46 are responsive to the grounds in this trial because they “address [Petitioner’s] indefiniteness ground (Ground 1) and obviousness grounds (Grounds 3–6).”

RMTA 18. We agree that proposed substitute claims 24–46 adequately assert additional limitations relevant to the issues in the instituted grounds. Thus, the proposed claims satisfy the requirement.

*3. Scope of Amended Claims (35 U.S.C. § 326(d)(3);
37 C.F.R. § 42.221(a)(2)(ii))*

“A substitute claim will meet the requirements of § 42.221(a)(2)(i) and (ii) if it narrows the scope of at least one claim of the patent, for example, the challenged claim it replaces, in a way that is responsive to a

ground of unpatentability involved in the trial.” *Lectrosonics*, Paper 15 at 6–7. Patent Owner contends “no substitute claim enlarges the scope of the claim that it replaces in any respect,” because “the amendments only add elements to the issued claims of the ’867 patent that narrow their scope” and “do not delete limitations.” RMTA 2; *see* RMTA, App. A. Patent Owner submits that “[t]he substitute claims presented herein also show the corrections made by the Certificate of Correction (EX2032).” RMTA, App. A, 3. We agree that proposed substitute independent claims 24 and 39 include additional limitations not recited in challenged claims 1 and 16, respectively, and do not strike any original limitations. Proposed substitute dependent claims 25–29, 32–35, 40, 41, and 46 add further amendments to their original claim counterparts, and proposed substitute dependent claims 30, 31, 36–38, and 42–45 merely change the dependency of their original claim counterparts. RMTA, App. A. Thus, we agree with Patent Owner that proposed substitute claims 24–46 are of narrower scope than challenged claims 1–23, respectively.

4. *New Matter or Written Description (35 U.S.C. § 326(d)(3); 37 C.F.R. § 42.221(b)(1))*

An amendment cannot introduce new matter. 35 U.S.C. § 326(d)(3). Thus, the motion to amend must set forth the support in the original disclosure of the patent for each claim that is added or amended. 37 C.F.R. § 41.121(b)(1); *Lectrosonics*, Paper 15 at 7. “Amendments should clearly state where the specification and any drawings support all the limitations in the proposed substitute claims. If the Board is unable to determine how the specification and drawings support the proposed substitute claims, the

motion to amend may be denied.” Consolidated Trial Practice Guide (“CTPG”)⁸ at 71; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019).

Under 35 U.S.C. § 112(a), a patent specification shall contain a “written description” of the invention. 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.” *Univ. of Rochester*, 358 F.3d at 920 (quoting *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)). This requirement protects the *quid pro quo* between inventors and the public, whereby the public receives “*meaningful disclosure* in exchange for being excluded from practicing the invention for a limited period of time.” *Enzo Biochem*, 323 F.3d at 970 (emphasis added).

a) Citations to Show Written Description Support

In its RMTA, Patent Owner provides citations to U.S. Patent Application No. 16/433,799 (Ex. 1002 (file history) at 30–101 (“’799 application”)) and to earlier-filed applications to which the ’867 patent claims priority, to show written description support for proposed substitute claims 24–46. *See* RMTA 2–18. Except as determined in analyzing written description for original claims 1–23 (*see supra* Section II.E) and as otherwise identified below (*see infra* Section III.C.4.b), we find Patent Owner’s citations to the ’799 and earlier applications are

⁸ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

sufficient to show written description support for the noted limitations (*see* RMTA 2–15).

b) Petitioner’s “New Matter” Challenges

Petitioner contends that certain limitations in the proposed substitute claims lack written description support and thus represent new matter, as discussed below. *See* RMTA Opp. 1–3; RMTA Sur-Reply 1–3.

(1) Independent Claim 24: “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion”

Patent Owner’s proposed substitute independent claim 24 adds the limitation (underlined), “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion.” RMTA, App. A, 4. Petitioner contends that Patent Owner fails to show sufficient written description support for this newly added limitation of “throughout its extent” *from* the channel-shaped portion *to* the connection portion. RMTA Opp. 1–2; RMTA Sur-Reply 1–2. Patent Owner opposes Petitioner’s contentions. RMTA Reply 1–3.

Petitioner argues that because (1) the subject limitation requires extension flanges to lie in extension flange planes the entire distance *from* the hanger’s channel-shaped portion *to* the connection portion, (2) the ’799 application’s disclosure only describes the extension flanges as having “bends” at their ends to transition to other structural members of the hanger, and (3) such bends allegedly would make it impossible for the extension flanges to lie in such planes over that entire distance, i.e., including through the “bent” portion, then the skilled artisan would not have recognized that

the inventor possessed this feature of the invention in proposed substitute claim 24. *See* RMTA Opp. 1–2 (“[T]he extension flange cannot lie along a 2-D extension flange plane *throughout its extent*, due to the bent ends.”); RMTA Sur-Reply 1–2.

As we explain above in Section II.D.1, in the context of indefiniteness of the originally issued claims, we do not agree with Petitioner that such “bends” necessarily preclude each extension flange from lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion. For example, in that section we determine that the bends (or bent portions) at the ends of the extension flanges disclosed in Figure 7 of the ’867 patent, for example, have radiuses small enough to allow an extension flange plane to remain *within the extent* of the extension flange *from the channel-shaped portion to the connection portion*. *See supra* Section II.D.1. Thus, at least Figure 7 and its accompanying text provide sufficient written description support for the subject limitation. *See Lockwood*, 107 F.3d at 1572 (“One does that [i.e., shows possession] by such descriptive means as words, structures, *figures*, diagrams, formulas, etc., that fully set forth the claimed invention.” (emphasis added)).

Based on the foregoing, and on the complete record before us, we are persuaded that the ’799 and benefit applications adequately support the limitation “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion.” Accordingly, we find that this limitation does not introduce new matter; and for this limitation, Patent Owner satisfies the requirements of 35 U.S.C. § 326(d)(3) and 37 C.F.R. § 42.221(a)(2)(ii).

- (2) *Dependent Claim 25: “wherein each of the first and second extension flanges are planar, the first extension flange being unbent between the channel-shaped portion and the back flange”*

Patent Owner’s proposed substitute dependent claim 25 adds the limitation (underlined), “wherein each of the first and second extension flanges are planar, the first extension flange being unbent between the channel-shaped portion and the back flange.” RMTA, App. A, 4–5.

Petitioner contends that Patent Owner fails to show sufficient written description support for this newly added limitation of “unbent.” RMTA Opp. 2–3; RMTA Sur-Reply 2. Patent Owner opposes Petitioner’s contentions. RMTA Reply 6.

Petitioner argues “unbent” is a negative limitation, and any alleged support therefor in the Specification is belied by the ’799 application describing the extension flanges as having “bends” at their ends to transition to other structural members of the hanger. *See* RMTA Opp. 2–3; RMTA Sur-Reply 2. Patent Owner responds that “[Petitioner’s] identified ‘bend’ occurs at an end of the extension flange—*e.g.*, at the channel-shaped portion—not between the channel-shaped portion and back flange.” RMTA Reply 6. We agree with Petitioner that the limitation “unbent,” *i.e.*, *not* bent, is a negative limitation, because it speaks to the absence of a feature, *i.e.*, bends, as opposed to positively reciting the presence of a feature in the claimed hanger.

“Negative claim limitations are adequately supported when the specification describes a reason to exclude the relevant limitation,” although “[s]uch written description support need not rise to the level of disclaimer.”

Santarus, Inc. v. Par Pharm., Inc., 694 F.3d 1344, 1351 (Fed. Cir. 2012); *see* MPEP § 2173.05(i) (“Negative Limitations”). Negative claim limitations also are supported when the specification describes a number of excludable alternatives. *See Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1356 (Fed. Cir. 2015). In this case, Patent Owner does not identify any description in the ’799 application that provides a reason to exclude “bent” extension flanges, and does not explain why this “unbent” requirement does not plainly contradict the “bends” provided at the extension flanges’ ends. Patent Owner also does not identify any such description of excludable alternatives to the extension flanges shown in Figure 2, for example. Although Figures 2 and 7 of the ’799 application may show an “unbent” first extension flange, but for the “bends” provided at the extension flanges’ ends as discussed above, based on the complete record before us, we are persuaded by Petitioner that Patent Owner’s cited evidence and arguments do not show sufficiently that the subject disclosure would have *reasonably conveyed* to the skilled artisan that the inventor possessed the subject feature as of the filing date.

Based on the foregoing, and on the complete record before us, we are not persuaded that the ’799 and benefit applications adequately support the limitation “the first extension flange being unbent between the channel-shaped portion and the back flange.” Accordingly, we find that this limitation introduces new matter; and for this limitation, Patent Owner does not satisfy the requirements of 35 U.S.C. § 326(d)(3) and 37 C.F.R. § 42.221(a)(2)(ii).

- (3) *Dependent Claims 28 and 40: “wherein the first and second extension flanges each have an exterior side face configured to extend through a cutout through the sheathing with the exterior side faces of the first and second extension flanges arranged to face the sheathing everywhere within the cutout for maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing”*

Patent Owner’s proposed substitute dependent claim 28 adds the limitations (underlined), “wherein the first and second extension flanges each have an exterior side face ~~are~~ configured to extend through a cutout through the sheathing with the exterior side faces of the first and second extension flanges arranged to face the sheathing everywhere within the cutout for ~~while~~ maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing.” RMTA, App. A, 6. Petitioner contends that Patent Owner fails to show sufficient written description support for this newly added limitation of such exterior side faces of the extension flanges facing the sheathing “everywhere within the cutout.” RMTA Opp. 3; RMTA Sur-Reply 2–3. Patent Owner opposes Petitioner’s contentions. RMTA Reply 5. Although Petitioner here points only to proposed substitute claim 28, which replaces original claim 5, we note that proposed substitute claim 40, which replaces original claim 17, recites the same limitations. *See* RMTA, App. 6, 11.

Petitioner argues that the ’799 application does not describe “extension flanges arranged to *face the sheathing everywhere* within the cutout of the sheathing,” and points to Figure 10A thereof, reproduced

below, which Petitioner annotated to “show[] that portions of the sheathing cutout (highlighted) do not face the extension flanges.”

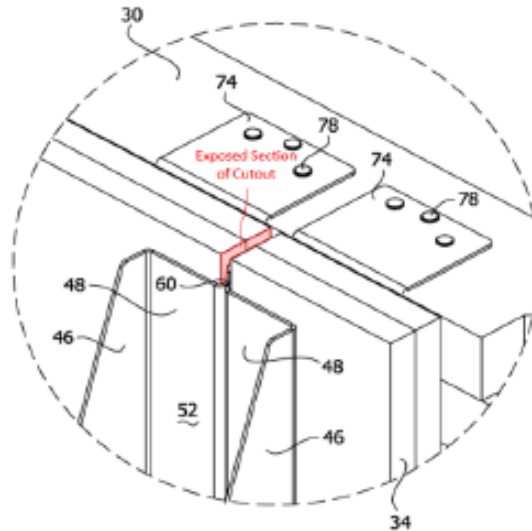


Figure 10A (annotated by Petitioner) depicts an enlarged fragmentary perspective of a hanger mounted to a wall with sheathing installed.

RMTA Opp. 3; Ex. 1001, Fig. 10A.

Patent Owner argues Petitioner “labors to misread this limitation to require every part of the sheathing to face the exterior side faces.” RMTA Reply 5. According to Patent Owner, “the limitation’s plain meaning is that the exterior side faces are arranged such that every part of each exterior side face that will be disposed in the cutout (*i.e.*, ‘everywhere within the cutout’) will face the sheathing” (*id.*)—the problem here is that this simply is not what the amended claim limitation recites, even though Patent Owner itself submitted that claim language. We agree with Petitioner: “If [Patent Owner] wanted to claim that only ‘part’ of the extension flanges face only a part of the sheathing, [Patent Owner] could have done so in its amendment. Instead, the claims recite that the flanges ‘face the sheathing *everywhere*

within the cutout” (RMTA Sur-Reply 2–3). We find no description in the ’799 application, and Patent Owner does not direct us to any, that would have reasonably conveyed to the skilled artisan that the inventor possessed the subject feature as of the filing date.

Based on the foregoing, and on the complete record before us, we are not persuaded that the ’799 and benefit applications adequately support the limitation “wherein the first and second extension flanges each have an exterior side face configured to extend through a cutout through the sheathing with the exterior side faces of the first and second extension flanges arranged to face the sheathing everywhere within the cutout for maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing.” Accordingly, we find that this limitation introduces new matter; and for this limitation, Patent Owner does not satisfy the requirements of 35 U.S.C. § 326(d)(3) and 37 C.F.R. § 42.221(a)(2)(ii).

In addition, in Section II.E above, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 5 and 17 are unpatentable under 35 U.S.C. § 112(a) for lack of written description. In particular, we find no description in the Specification, and the parties do not direct us to any, disclosing what structural features *of the extension flanges* (let alone the full scope of such features) are required for such flanges not only to be configured to extend through sheathing, but further configured to extend through sheathing “while maintaining a 2 hour fire resistance rating of the sheathing [or “of a wall assembly including the wall[/frame wall] and the sheathing”].” Because proposed substitute claims 28 and 40 do not amend original claims 5 and 17 in any manner that

resolves these deficiencies, we determine that proposed substitute claims 28 and 40 lack the requisite written description support, for the same reasons as discussed above in Section II.E.

5. *Conclusion*

For the reasons expressed above, we conclude Patent Owner has failed to meet its burden to identify written description support for proposed substitute dependent claims 25, 28, and 40, but has met its burden to identify written description support for the remaining proposed substitute claims. Accordingly, we deny Patent Owner's Revised Contingent Motion to Amend as to proposed substitute dependent claims 25, 28, and 40.

We address below Petitioner's unpatentability arguments directed to Patent Owner's proposed substitute claims.

D. Unpatentability of Proposed Substitute Claims 24–35 as Lacking Enablement Under 35 U.S.C. § 112(a)

Petitioner argues “claim 24 is not enabled because it does not recite a top flange having fastening elements.” RMTA Opp. 4. Petitioner contends, “[a]ccording to PO's own expert, a top flange having fastening elements is essential for the described hanger to be operable because the patented hanger provides no other means of fastening to the wall, and it was impossible to place fastening elements on the back flange.” *Id.* (citing Ex. 1038, 132:20–137:19, 142:1–144:19, 141:17–145:5 (“if I were to remove element 74, [the hanger of Figure 2] is inoperable”)). Petitioner asserts that “[e]ach hanger embodiment of the '799 Application includes a top flange,” and “the specification never describes the top flange as being an optional feature used in a preferred embodiment.” *Id.* (citing Ex. 1002, 35–58).

Petitioner also asserts that the skilled artisan “would have considered the ‘top flange’ essential, because no other location is suitable for fastening the hanger to the wall.” *Id.* Petitioner submits “the scope of the enabling disclosure is not commensurate with the scope of claim 24,” and that because claim 24 “omit[s] a feature that is taught by the specification to be essential,” the claim necessarily “lacks enablement.” *Id.* (citing *In re Mayhew*, 527 F.2d 1229, 1233 (CCPA 1976)).

“The requirement of enablement, stated in 35 U.S.C. § 112, enforces the essential ‘*quid pro quo* of the patent bargain’ by requiring a patentee to teach the public how ‘to practice the full scope of the claimed invention.’” *McRO, Inc. v. Bandai Namco Games America Inc.*, 959 F.3d 1091, 1099–100 (Fed. Cir. 2020) (quoting *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1244 (Fed. Cir. 2003)). “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.” *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.

The Federal Circuit has explained that, “[a]fter the challenger has put forward evidence that some experimentation is needed to practice the patented claim, the factors set forth in *Wands* then provide the factual considerations that a court may consider when determining whether the amount of that experimentation is either ‘undue’ or sufficiently routine such that an ordinarily skilled artisan would reasonably be expected to carry it out.” *Alcon Research*, 745 F.3d at 1188 (quoting *Wands*, 858 F.2d at 737). Although a specification does not need to “describe how to make and use every possible variant of the claimed invention, when a range is claimed, there must be reasonable enablement of the scope of the range.” *McRO*, 959 F.3d at 1100 (citing *AK Steel*, 344 F.3d at 1244) (internal quotations omitted). “An artisan’s knowledge of the prior art and routine experimentation can often fill gaps, interpolate between embodiments, and perhaps even extrapolate beyond the disclosed embodiments, depending upon the predictability of the art, and a patent need not teach, and preferably omits, what is well known in the art.” *Id.* at 1102 (internal quotations and citations omitted).

Patent Owner responds, “[Petitioner] provides no analysis on what ‘undue experimentation’ would be required,” and its reliance on *Mayhew* is “inapposite,” because the ’867 Patent “never identifies the top flange as essential.” RMTA Reply 7–8. Patent Owner argues that “[t]he specification uses broad language—‘a connection portion [] configured for attachment to

the wall’—to describe the hanger’s portion that attaches to the wall”; “both the Abstract and portions of the ‘Summary’ section omit the top flange”; and the Specification states that the scope of the invention includes “other appropriate structure for fastening the hanger to the wall.” *Id.* at 8 (citing Ex. 1001, code (57), 2:4–23, 2:45–50, 6:44–46, 6:53–57; Ex. 2069 ¶¶ 56–59). Patent Owner also complains that Petitioner is taking the testimony of Patent Owner’s expert, Dr. Serrette, out of context, in that when Dr. Serrette testified that removing the top flanges from the hanger in Figure 2 would render the hanger “inoperable,” he was referring to the specific hanger as drawn in Figure 2. *Id.*; *see* Ex. 2069 ¶ 60.

Petitioner in turn reiterates its position that the impossible cannot be enabled, and argues, “[a]s explained by both experts, it is *impossible* for the ’867 patent’s disclosed hanger to be mounted to a wall and support a joist without having a top flange.” RMTA Sur-Reply 3–7.

We agree with Patent Owner that Petitioner is mischaracterizing the experts’ testimony here. First, Patent Owner’s expert, Dr. Serrette, was asked, “Do you believe that the hanger *shown in Figure 2* would be operable without the top flange?” To which, Dr. Serrette testifies, “without that, *for this hanger it would not be -- as configured*, would not work.” Ex. 1038, 141:21–142:5 (emphases added); *see id.* at 144 (“*As shown*, if I were to remove element 74, it is inoperable.” (emphasis added)). In other words, Dr. Serrette testifies that the specific hanger shown in the drawings of the ’867 patent, specifically Figure 2, would be inoperable if one simply cut off the top flanges. Notably, Petitioner cites no testimony from Dr. Serrette that the skilled artisan would not have been able to practice the claimed

invention, where it includes hangers without top flanges, without undue experimentation. Second, Petitioner's expert, Mr. Fennell, testifies: "If the hanger described in the '799 application was constructed as disclosed in the '799 application, but without a top flange, such a hanger would fall off the top plate," and that "[t]his is because the '799 application does not include any mechanism or method for fastening the back flange (the only other part of the connection portion described in the '799 application) to the top plate." Ex. 1045 ¶ 46. Mr. Fennell essentially testifies that if one were to cut off the top flanges shown and described in the '799 application, the hanger would be inoperable. But here too, Petitioner cites no testimony from Mr. Fennell that the skilled artisan would not have been able to practice the claimed invention, where it includes hangers without top flanges, without undue experimentation.

Contrary to Petitioner's "impossibility" argument, in discussing the hanger's "connection portion," shown with "connector tabs" (i.e., top flanges) in Figure 2, the '867 patent discloses that "[o]ther configurations are within the scope of the present invention, such as a different number of nail holes, or alternate fastening structure such as nailing teeth or other appropriate structure for fastening the hanger to the wall." Ex. 1001, 6:37–57 (emphases added); see RMTA Reply 8 (citing same). Petitioner does not sufficiently address this disclosure or other broad disclosure cited by Patent Owner (noted above). See Ex. 1001, 2:49–50 ("A connection portion is configured for attachment to the wall."); *In re Goffe*, 542 F.2d 564, 567 (CCPA 1976) ("In determining whether an unclaimed feature is critical, the entire disclosure must be considered. Broad language in the

disclosure (including the abstract) omitting an allegedly critical feature tends to rebut the argument of criticality.”); RMTA Sur-Reply 5–7. We find Petitioner’s “impossibility” argument lacks sufficient evidentiary support, and thus, unavailing.

We also find Petitioner’s belated and incomplete *Wands* factor analysis unavailing. Petitioner offers no evidence on the quantity of experimentation that would be necessary for the skilled artisan to practice the claimed invention, where it includes hangers without top flanges. Petitioner ignores many other *Wands* factors, such as the nature of the invention, the state of the prior art, the relative skill of those in the art (e.g., Mechanical Engineers with at least four years of work experience in construction connector design/development), and the predictability (or unpredictability) of the art. As for the state of the prior art, we note that Petitioner, in its “Wood Construction Connectors” catalog, states: “Top flange hangers may cause unevenness. *Possible remedies should be evaluated by a professional and include using a face mount hanger . . .*.” Ex. 2067, 11 (emphasis added); see RMTA Reply 9 (citing same). In this regard, Petitioner’s asserted Bundy reference depicts its hanger in versions with top flanges (top mount) and without top flanges (face mount), and describes the alternative use of face mount and top mount hangers in the field:

In perhaps the simplest hangers, the back flanges extend outwardly from the side flanges, providing an easily-accessed fastening face. Fasteners are then driven through the back flanges into the header. In other instances, design considerations dictate which particular attachment method is used for attaching the joist and the hanger to the header.

In addition, top flanges may be attached to the back flanges to aid in attaching the hanger to the header. Hangers with top flanges are generally referred to as top-flange hangers. Hangers without top flanges are generally referred to as face-mount hangers.

Ex. 1007, 1:46–56 (“Background”); *see id.* at Figs. 1, 10. Petitioner’s expert also testifies that face-mounted hangers were known in the art and that the skilled artisan would have been familiar with face-mounted hangers.

Ex. 2068, 44:4–9. This evidence plainly contradicts Petitioner’s allegation that it would have been “impossible” or would have required undue experimentation for the ordinarily skilled artisan to have practiced the claimed invention, where it includes hangers without top flanges (i.e., is a face mount hanger rather than a top mount hanger).

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute claims 24–35 are unpatentable under 35 U.S.C. § 112(a) for lack of enablement.

E. Unpatentability of Proposed Substitute Claims 24–35, 38–40, and 44–46 as Indefinite⁹

Petitioner contends that several terms or phrases in the proposed substitute claims are indefinite, as discussed below. RMTA Opp. 5–10;

⁹ Because Patent Owner proposed substitute claims 36, 37, and 41–43 contingent upon Petitioner demonstrating the unpatentability of original claims 13, 14, and 18–20, respectively, and because Petitioner has not demonstrated the unpatentability of claims 13, 14, and 18–20 by a preponderance of the evidence, we do not consider proposed substitute claims 36, 37, and 41–43. Rather, we consider only Patent Owner’s proposed substitute claims 24–35, 38–40, and 44–46.

RMTA Sur-Reply 7–10. Patent Owner opposes Petitioner’s contentions.
RMTA 15–18; RMTA Reply 1–7.

1. *Independent Claim 24: “the connection portion and channel-shaped portion being in a rigidly fixed, spaced apart relation relative to one another as manufactured”*

Patent Owner’s proposed substitute independent claim 24 recites, in part, “the connection portion and channel-shaped portion being in a rigidly fixed, spaced apart relation relative to one another *as manufactured*.”

RMTA, App. A, 4 (emphasis altered). Petitioner contends the phrase “as manufactured” renders claim 24 indefinite. RMTA Opp. 5–6; RMTA Sur-Reply 7–8. Patent Owner opposes Petitioner’s contentions.

RMTA 15–18; RMTA Reply 3–5.

Petitioner argues “the phrase ‘as manufactured’ is a temporal limitation attempting to specify when the connection portion and channel-shaped portion become rigidly fixed relative to each other,” and that the subject limitation “fails to inform with reasonable certainty what constitutes ‘as manufactured’ in regard to the time frame of completion of the hanger manufacturing process.” RMTA Opp. 5; RMTA Sur-Reply 7–8.

Patent Owner argues the skilled artisan would have understood “that certain hangers, such as Timony, have separate parts that are assembled on site and that other hangers, such as Gilb ‘155, Gilb ‘792, and Tsukamoto, have fixed orientations set at the factory.” RMTA Reply 3. Patent Owner argues that “[Petitioner’s] argument that it is unclear when ‘as manufactured’ is completed is contrived,” because “[a]s manufactured’ is

commonly used—including in the building arts—to refer to the state of a device as it comes from the factory.” *Id.* at 3–4 (citing various evidence).

We begin our analysis of whether Petitioner has evidenced sufficiently that the phrase “as manufactured” renders claim 24 indefinite by emphasizing two guiding legal principles. First, a claim, read in light of the patent’s specification and prosecution history, need only inform the skilled artisan about the scope of the invention with *reasonable* certainty, recognizing that absolute precision is unattainable. *Nautilus*, 572 U.S. at 898–99. Second, Patent Owner does not need to establish definiteness, rather the burden of proving indefiniteness *is on Petitioner*. *See Dynamic Drinkware*, 800 F.3d at 1378.

In this case, Petitioner cites no authority to support its position that a “temporal” limitation, such as “as manufactured” or “at the time of manufacture,” is indefinite. To the contrary, the Federal Circuit has affirmed the construction of claim limitations defined by the phrase, “at the time of manufacture,” and otherwise given plain meaning to the phrase without finding the phrase indefinite or requiring further construction. *See, e.g., Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1373 (Fed. Cir. 2009) (“Because the district court correctly construed the claim term ‘relatively resilient end edge portion’ to require only that the frame of the shelf be flexible *at the time of manufacture*, because there was undisputed evidence that the frames of Saint-Gobain’s accused shelves were flexible *at the time of manufacture*, and because the district court did not err in denying Saint-Gobain’s motions concerning obviousness, *we affirm*.” (emphases added)); *Janssen Pharmaceutica, N.V. v. Eon Labs Mfg., Inc.*, 134 F. App’x

425, 429 (Fed. Cir. 2005) (“[O]ne having ordinary skill in this art would interpret ‘a diameter of from about 600 to 700 μ m (25–30 mesh)’ to describe cores 1) labeled 25–30 mesh *at the time of manufacture* and classification, and 2) having a particular diameter, about 600–700 μ m.” (emphasis added)).

We find Petitioner’s arguments that the skilled artisan would not understand the scope of “as manufactured” with *reasonable* certainty also lacking. For example, Petitioner argues, “it is unclear whether a hanger formed from two separately manufactured pieces that are welded together *before the hanger is shipped from the manufacturing facility* falls within the limitation.” RMTA Opp. 5. But Petitioner’s argument here belies its own position, in that it apparently recognizes what “manufacturing” means and answers the question of what “as manufactured” includes by recognizing that that would have occurred at the time of “ship[ment] from the manufacturing facility” of the finished hanger product. We are persuaded that the skilled artisan, holding joist hangers or hanger components as found for sale in a hardware store, for example, would be reasonably certain that such hangers or hanger components are in a state of “as manufactured.” Whatever that skilled artisan does next with those hangers or hanger components would constitute *post*-manufacturing steps. Indeed, the skilled artisan could purchase a complete, one-piece, metal hanger from a hardware store and subsequently cut it into several pieces—that does not change the fact that the one-piece hanger was in its “as manufactured” state when purchased, and the cutting of it into pieces constitutes a post-manufacturing step or action (i.e., the pieces are not in the hangers’ “as manufactured” state).

In our Preliminary Guidance on this issue, we preliminarily stated it would have been “unclear what constitutes ‘as manufactured’ in regard to the time frame of completion of hanger manufacture.” Paper 51, 12. However, on further review of the Petition and further consideration of the parties’ briefing on this issue and the relevant case law, and based on the complete record before us, we now conclude otherwise, as discussed above. To the extent that “as manufactured” requires any further explanation beyond its plain meaning *to the ordinarily skilled artisan*, we agree with Patent Owner that it means “as it comes from the factory” (RMTA Reply 3–4).

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute independent claim 24 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness based on the “as manufactured” limitation. For the same reasons, we likewise conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute dependent claims 25–35 and 38, which depend directly or indirectly therefrom, are unpatentable for indefiniteness.

2. *Independent Claim 24: “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion”*

Patent Owner’s proposed substitute independent claim 24 recites, in part, “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion.” RMTA, App. A, 4. Petitioner contends “[s]ubstitute claim 24 does not cure the Petition’s indefiniteness challenge to originally-issued claim 1.” RMTA

Opp. 6–8. Patent Owner opposes Petitioner’s contentions. RMTA 15–18; RMTA Reply 1–3.

The parties’ arguments concerning indefiniteness of the subject limitation are the same as those presented for the limitation “each extension flange lying in an extension flange plane” in original independent claim 1, as construed herein. *See supra* Section II.D.1. Accordingly, for the same reasons set forth above in Section II.D.1, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute independent claim 24 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness based on the subject limitation. For the same reasons, we likewise conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute dependent claims 25–35 and 38, which depend directly or indirectly therefrom, are unpatentable for indefiniteness.

3. *Dependent Claims 28 and 40: “wherein the first and second extension flanges each have an exterior side face configured to extend through a cutout through the sheathing with the exterior side faces of the first and second extension flanges arranged to face the sheathing everywhere within the cutout for maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing”*

Patent Owner’s proposed substitute dependent claims 28 and 40 recite, in part, “wherein the first and second extension flanges each have an exterior side face configured to extend through a cutout through the sheathing with the exterior side faces of the first and second extension flanges arranged to face the sheathing everywhere within the cutout for

maintaining a 2 hour fire resistance rating of a wall assembly including the wall and the sheathing.” RMTA, App. A, 6, 11. Petitioner contends “[i]t is unclear how an exterior side face of an extension flange can ‘face the sheathing everywhere within the cutout.’” RMTA Opp. 8–9; RMTA Sur-Reply 9–10. Patent Owner opposes Petitioner’s contentions. RMTA Reply 5.

In particular, Petitioner argues, and we agree:

[A]n exterior side face of an extension flange cannot ‘face’ everywhere within the sheathing cutout if the height of the sheathing cutout is greater than the height of the extension flange, as shown above in FIG. 10A of the ’867 patent. *Id.* Nor can an exterior side face of an extension flange ‘face’ a portion of the sheathing on an opposite side of the extension flange. *Id.* The claim language also fails to specify whether each exterior face must individually face ‘everywhere’ or whether the combination of the exterior side faces collectively faces ‘everywhere.’ *Id.*, ¶53.

RMTA Opp. 9.

Patent Owner argues Petitioner “labors to misread this limitation to require every part of the sheathing to face the exterior side faces.” RMTA Reply 5. According to Patent Owner, “the limitation’s plain meaning is that the exterior side faces are arranged such that every part of each exterior side face that will be disposed in the cutout (*i.e.*, ‘everywhere within the cutout’) will face the sheathing” (*id.*)—the problem here is that this simply is not what the amended claim limitation recites, even though Patent Owner itself submitted that claim language. As discussed above in Section III.C.4.b.3, we agree with Petitioner: “If [Patent Owner] wanted to claim that only ‘part’ of the extension flanges face only a part of the sheathing, [Patent Owner]

could have done so in its amendment. Instead, the claims recite that the flanges ‘face the sheathing *everywhere within the cutout*’” (RMT A Sur-Reply 2–3). We find that the skilled artisan, reading the subject “‘everywhere within the cutout’” limitation, *as recited*, in light of the patent’s specification and prosecution history, would not have been *reasonably certain* as to the scope thereof (and the invention as a whole).

Accordingly, we conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute dependent claims 28 and 40 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness based on the subject “‘everywhere within the cutout’” limitation.

In addition, in Section II.D.3 above, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 5 and 17 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness. In particular, we find no description in the Specification, and the parties do not direct us to any, disclosing what structural features *of the extension flanges* (let alone the full scope of such features) are required for such flanges not only to be configured to extend through sheathing, but further configured to extend through sheathing “while maintaining a 2 hour fire resistance rating of the sheathing [or “of a wall assembly including the wall[/frame wall] and the sheathing”].” Because proposed substitute claims 28 and 40 do not amend original claims 5 and 17 in any manner that resolves these deficiencies, we determine that proposed substitute claims 28 and 40 are unpatentable for indefiniteness for the same reasons discussed above in Section II.D.3.

4. *Dependent Claim 35 and Independent Claim 39: “wherein the connection portion includ[ing] a top flange, the top flange extending in a direction rearwardly away from the channel-shaped portion and arranged to overlie a top plate of the wall when the hanger is installed on the wall, the top flange including a rear edge located rearwardly of the back flange”*

Patent Owner’s proposed substitute dependent claim 35 and proposed substitute independent claim 39 recite, in part, “[wherein] the connection portion includ[ing] a top flange, the top flange extending in a direction rearwardly away from the channel-shaped portion and arranged to overlie [a top plate of the wall / an upper surface of the wooden upper plate] when the hanger is installed on the [frame] wall, the top flange including a rear edge located rearwardly of the back flange.” RMTA, App. A, 8, 9–10. Petitioner contends the subject limitation “fail[s] to inform with reasonable certainty where the ‘top flange’ is located relative to the ‘back flange.’” RMTA Opp. 9–10; RMTA Sur-Reply 10. Patent Owner opposes Petitioner’s contentions. RMTA Reply 6–7.

In particular, Petitioner argues, and we agree:

Without specifying the spatial arrangement between the “top flange” and the “back flange,” claim 39 is open to alternative interpretations: (1) the top edge of the back flange intersects at a front end of the top flange; or (2) the top edge of the back flange intersects at a face of the top flange such that a front end of the top flange is located in front of the back flange. EX1045, ¶54. Indeed, the phrase “the top flange extending in a direction rearwardly away from the channel-shaped portion,” rather than extending in a direction away from the connection portion, suggests that the top flange may extend from the channel-shaped portion. Accordingly, it is not clear in view of claim 35 or 39 where the top flange is located relative to the back flange. *Id.*

Thus, claim 35, claim 39, and dependent claims 40–46 are indefinite.

RMTA Opp. 9–10. We also take this view a step further, and find that it is unclear from the subject limitation as recited by Patent Owner whether the top flange even needs to extend from or otherwise connect to the back flange.

Patent Owner responds, “[t]hat the claim does not state where the top flange is located relative to the back flange does not make the claim indefinite, it simply makes the claim broad.” RMTA Reply 6 (internal quotation marks omitted). Although the mantra “breadth does not necessarily mean indefiniteness” is true, it does not apply here. The subject limitation is not merely broad, rather it would have left ordinarily skilled artisans scratching their heads searching for its meaning and scope. Notably, Patent Owner provides no explanation of, for example, what “the top flange including a rear edge located rearwardly of the back flange” allegedly means. This limitation is subject to many different interpretations, leaving the skilled artisan with no reasonable certainty as to its meaning and scope.

Accordingly, we conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute dependent claim 35 and proposed substitute independent claim 39 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness based on the subject limitation. For the same reasons, we likewise conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute dependent claims 40 and 44–46, which depend directly or indirectly from proposed substitute independent claim 39, are unpatentable for indefiniteness.

F. Obviousness of Proposed Substitute Claims 24–34 and 38 Over Gilb ’792, Bundy, and Harrison

Petitioner contends proposed substitute claims 24–34 and 38 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gilb ’792 (Ex. 1035), Bundy (Ex. 1007), and Harrison (Ex. 2016). RMTA Opp. 12–19; RMTA Sur-Reply 10–12; *see* Pet. 13–15, 28–59; Pet. Reply 16–21. Patent Owner opposes Petitioner’s contentions. RMTA 18–19, 22–23; RMTA Reply 9–11; *see* PO Resp. 39–49, 71–84; PO Sur-Reply 23–25. For the reasons expressed below and those above in Section II.F, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 24–31, 33, 34 and 38 (but not proposed substitute claim 32) are unpatentable as obvious over the combination of Gilb ’792, Bundy, and Harrison. We turn first to an overview of Harrison.

1. Overview of Harrison

Harrison generally is directed to “a joist hanger for use in the construction industry,” as shown, for example, in Figure 4A, reproduced below. Ex. 2016 ¶ 3.

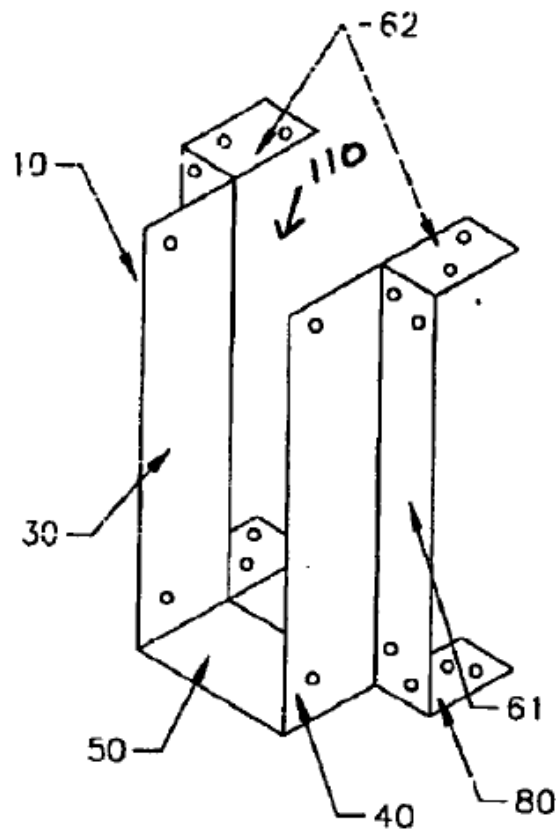


Figure 4A depicts an embodiment of a joist hanger for mounting to “I” joists.

Id. ¶ 22, Fig. 4A. Figure 4A shows “joist hanger (10) according to the invention is formed/folded from a single piece of metal (e.g. steel).”

Id. ¶ 31. Harrison discloses that, because hanger 10 is formed from a single piece of sheet metal, “it is more economic and efficient to manufacture compared to the known joist hangers,” and “unlike a welded two[-]part hanger it does not require secondary protective coatings such as hot dip galvanizing for durability, because unlike the known products an embodiment of the invention can be produced of steel sheet which is pre-galvanized.” *Id.*

We further discuss below the disclosures of Harrison in connection with the parties' arguments.

2. *Proposed Substitute Independent Claim 24*

Patent Owner contends “Gilb ‘792 fails to disclose ‘the first and second extension flanges and the channel-shaped portion being formed as one piece of sheet metal.’” RMTA 18. In view of Petitioner’s additional reliance on Harrison in its combination of Gilb ‘792, Bundy, and Harrison to show unpatentability, Patent Owner argues, “[r]ather than there being a reasonable expectation of success [in combining these references to teach the subject limitation], it would be impossible *to make the Gilb ‘792’s hanger* ‘by folding one-piece of sheet metal.’” RMTA Reply 10 (citing Ex. 2069 ¶¶ 65–67, 74) (emphasis added). More specifically, Patent Owner argues, “the geometry and configuration of Gilb ‘792’s base 36 and seat member 13’, make it impossible *to form Gilb ‘792’s hanger as illustrated in Figs. 5–7*, out of one-piece of sheet metal.” *Id.* (citing Ex. 2069 ¶ 68) (emphasis added). Patent Owner concludes, “[g]iven it is impossible *to make the Fig. 5–7 Gilb ‘792 hanger* out of one-piece of sheet metal, [the skilled artisan] would not have had a reasonable expectation of success of modifying Gilb ‘792 in view of Harrison.” *Id.* at 11 (citing Ex. 2069 ¶ 74) (emphasis added). We find Patent Owner’s arguments unavailing, particularly because they are not commensurate with the scope of proposed substitute claim 24, which only requires “the first and second extension flanges” and “the channel-shaped portion” to be “formed as one piece of sheet metal,” *not the entire hanger* to be formed as one piece of sheet metal, as further discussed below. *See* RMTA Sur-Reply 10.

“An obviousness determination requires finding that [an ordinarily skilled artisan] would have been motivated to combine or modify the teachings in the prior art and *would have had a reasonable expectation of success in doing so.*” *Regents*, 903 F.3d at 1291 (emphasis added); *see also OSI Pharms.*, 939 F.3d at 1382–85; *Samsung Elecs. Co., Ltd. v. Elm 3DS Innovations, LLC*, 925 F.3d 1373, 1380–83 (Fed. Cir. 2019).

“‘[A] reasonable expectation of success, not absolute predictability’ supports a conclusion of obviousness.” *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1343 (Fed. Cir. 2000); *see Intel Corp. v. Alacritech, Inc.*, 817 F. App’x 1014, 1016–17 (Fed. Cir. 2020). “The reasonable-expectation-of-success analysis must be tied to the scope of the claimed invention.” *Teva Pharms. USA, Inc. v. Corcept Therapeutics, Inc.*, 18 F.4th 1377, 1381 (Fed. Cir. 2021). “Whether the prior art discloses a claim limitation, whether a skilled artisan would have been motivated to modify or combine teachings in the prior art, *and whether she would have had a reasonable expectation of success in doing so are questions of fact.*” *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021) (emphasis added).

Petitioner argues “Gilb’792, Bundy, and Harrison are from the same field—joist hangers formed from sheet metal—and include analogous features, such as a channel-shaped portion for receiving a structural member. RMTA Opp. 13–14 (citing Ex. 1035, 3:22–35; Ex. 1007, 1:5–10; Ex. 2016 ¶¶ 3, 32). Petitioner argues that the skilled artisan “would have recognized that the teachings of Harrison are analogous to both Gilb’792’s and Bundy’s hanger,” and that “Gilb’792 describes connecting its extension flanges

(gusset members 15'/22') to its channel-shaped portion (stirrup members 11'/12') by welding two pieces of sheet metal together.” *Id.* (citing Ex. 1035, 2:49–58, 3:23–25; Ex. 1045 ¶ 69). Petitioner submits that Harrison teaches both that forming a joist hanger from folding one piece of sheet metal provides economic and efficiency benefits, and that its joist hanger also may be “formed from multiple pieces which are connected by for example welding.” *Id.* at 14 (citing Ex. 2016 ¶ 31). Petitioner’s expert, Mr. Fennell, testifies that the skilled artisan “would have understood in view of Harrison that joist hangers may be constructed by two alternative processes—(1) folding one piece of sheet metal, or (2) welding two pieces of sheet metal—and that the folding process eliminates metal processing steps required in welding.” Ex. 1045 ¶ 70 (cited at RMTA Opp. 14).

Initially, Petitioner argued the skilled artisan “would have been motivated to modify Gilb’792’s hanger so as to be constructed by folding one-piece of sheet metal, as taught by Harrison, to manufacture the hanger with less costs and more efficiency.” RMTA Opp. 14 (citing Ex. 1045 ¶ 70). Petitioner also argued the skilled artisan “would have had a reasonable expectation of success in doing so because the thickness of sheet metal used to construct Gilb’792’s hanger—12 gauge steel—is suitable for bending,” and the skilled artisan “would have been able to determine, using common CAD tools, how to create a single sheet blank that maintains the fundamental shape of the Gilb’792 [hanger] and its components.” *Id.* at 14–15 (citing Ex. 1035, 2:52–53; Ex. 1045 ¶ 71).

Petitioner subsequently refined its argument, stating (correctly) that “the claims do not require that every part of Gilb ’792’s hanger must be

constructed from one piece of sheet metal,” and that “[proposed substitute] [c]laim 24 only requires ‘the first and second extension flanges and the channel-shaped portion being formed as one piece of sheet metal.’” RMTA Sur-Reply 10. Petitioner argues its combination rationale “never suggested forming depending flange 9 with the other components from one piece of sheet metal.” *Id.* at 11. Petitioner concludes that “the fundamental shape of Gilb’792’s hanger includes Gilb’792’s gusset members 15’/22’ and stirrup members 11’/12’,” and “[b]ecause the fundamental shape of Gilb’792’s hanger is maintained, [the skilled artisan] would have had a reasonable expectation of success in combining Harrison with Gilb’792-Bundy.” *Id.* at 11–12 (citing, *inter alia*, Ex. 1045 ¶¶ 71, 74); *see* RMTA Opp. 15–16 (“[The skilled artisan] would have found it obvious to modify Gilb’s hanger such that gusset members 15’/22’ and stirrup members 11’/12’ could be formed by folding one piece of sheet metal, as taught by Harrison, to eliminate the post-processing requirements required for welding metal pieces together and thus improve the manufacturing efficiency.” (citing Ex. 2016 ¶ 31; Ex. 1045 ¶ 74)).

For the foregoing reasons, we agree with Petitioner, and find Petitioner sufficiently evidences that the skilled artisan would have had a rational reason to combine the teachings of Gilb ’792, Bundy, and Harrison to achieve the limitation “the first and second extension flanges and the channel-shaped portion being formed as one piece of sheet metal,” and that the skilled artisan would have had a reasonable expectation of success in doing so. Indeed, Patent Owner does not dispute that the first and second

extension flanges and the channel-shaped portion as designated in Gilb '792 may be formed from a single piece of sheet metal.

3. *Undisputed / Remaining Limitations*

Petitioner contends, and we agree, that Petitioner's contentions regarding the Gilb '792 and Bundy combination, as applied against original independent claim 1, apply equally to the same elements in proposed substitute independent claim 24. *See supra* Section II.F; RMTA Opp. 12–19. As for the “rigidly fixed . . . as manufactured” limitation, Petitioner contends, and we agree (and Patent Owner does not dispute), that Gilb '792 and the asserted combination teach that “the connection portion (base 36) and channel-shaped portion (stirrup members 11'/12') are rigidly fixed and spaced apart at the time of manufacturing.” RMTA Opp. 15 (discussing element 24.b.3) (citing Ex. 1035, 2:49–58, 3:23–44 (“A first gusset member 15' is operatively ridgedly [sic] connected to the top flange 8' by being directly connected to stirrup member 11' by weld 31.”); Ex. 2016 ¶ 31; Ex. 1045 ¶ 72). As for the limitation “each extension flange lying in an extension flange plane throughout its extent from the channel-shaped portion to the connection portion,” our same determination applies here as for this limitation in original independent claim 1. *See supra* Section II.F.3.e; RMTA Opp. 15 (discussing element 24.c.3).

As for remaining proposed substitute claims 25–34 and 38, Petitioner contends any additional limitations in these dependent claims relative to their respective original dependent claims likewise are taught or at least suggested by the combination of Gilb '792, Bundy, and Harrison. RMTA Opp. 16–19; *see supra* Section II.F. The Opposition to the RMTA along

with the Petition provide a detailed assessment of these claims, with references to the Opposition's and Petition's analysis of original claim 1 and proposed substitute claim 24, disclosures in Gilb '792, Bundy, and Harrison, and the declaration testimony of Mr. Fennell. RMTA Opp. 16–19.

Of these dependent proposed substitute claims, the parties dispute whether the skilled artisan would have had a rational reason to combine Gilb '792, Bundy, and Harrison to achieve the invention of proposed substitute claim 32, which recites:

wherein the stop comprises first and second back panels extending toward each other, the first back panel directly attached to the first extension flange and the second back panel directly attached to the second extension flange.

RMTA, App. A, 7 (emphasis omitted).

Petitioner argues that “Gilb’792-Bundy renders obvious a stop comprising back panels (e.g., Bundy’s back plate members 9) extending toward each other,” because the skilled artisan “would have found it obvious to bend back panels from Gilb’792’s stirrup members 11’/12’ such that a first back panel is directly attached to Gilb’792’s first stirrup member 11’ and a second back panel is directly attached to Gilb’792’s second stirrup member 12.” RMTA Opp. 18 (citing Ex. 1045 ¶¶ 82–83; Pet. 47–48).

Patent Owner responds that Petitioner “has not shown or asserted any added back panels would be directly attached to Gilb ‘792’s purported extension flanges (e.g., gusset members 15’/22’).” RMTA Reply 11 (citing, *inter alia*, Ex. 1045 ¶ 83; Ex. 2069 ¶¶ 75–76). We agree with Patent Owner—Petitioner simply does not allege that the asserted art teaches a stop’s back panels are directly attached *to extension flanges*, as claimed, only that they

are attached to Gilb '792's stirrup members 11'/12' (but Petitioner identifies gusset members 15'/22' in Gilb '792 as the extension flanges (*see* Pet. 37 ("Gilb'792's gusset members 15'/22' (along with weld 31), correspond to the recited first and second extension flanges."))).

Patent Owner otherwise does not present any separate arguments that are distinct to proposed substitute claims 24–31, 33, 34, and 38, and therefore, has waived such arguments. *See* 37 C.F.R. § 42.23(a); *NuVasive*, 842 F.3d at 1379–82; *Papst Licensing*, 924 F.3d at 1250; *Bradium*, 923 F.3d at 1048. Rather, Patent Owner generally is of the view that the alleged deficiencies in the Opposition to the RMTA and in the Petition with respect to original claims 1 and 7 and proposed substitute claim 24 are also applicable to these claims. *See generally* RMTA Reply. For the same reasons provided above for original independent claim 1, original dependent claim 7, and proposed substitute claim 24, as well as the foregoing arguments and evidence submitted by Petitioner concerning proposed substitute claims 25–31, 33, 34, and 38, we conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 24–31, 33, 34, and 38 are unpatentable as obvious over the combination of Gilb '792, Bundy, and Harrison. We also conclude that Petitioner has not demonstrated by a preponderance of the evidence that proposed substitute claim 32 is unpatentable as obvious over the combination of Gilb '792, Bundy, and Harrison.

4. Conclusion

For the reasons expressed above and those in Section II.F, and based on the complete record before us, we determine that Petitioner has

demonstrated by a preponderance of the evidence that proposed substitute claims 24–31, 33, 34, and 38 (but not proposed substitute claim 32) are unpatentable as obvious over the combination of Gilb ’792, Bundy, and Harrison.

G. Obviousness of Proposed Substitute Claims 39, 44, and 45 Over Robinson and Bundy

Petitioner contends proposed substitute claims 39 and 41–45 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robinson (Ex. 1046) and Bundy (Ex. 1007). RMTA Opp. 19–25; RMTA Sur-Reply 12. Patent Owner opposes Petitioner’s contentions. RMTA Reply 11–12. Because Patent Owner proposed substitute claims 41–43 contingent upon Petitioner demonstrating the unpatentability of original claims 18–20, respectively, and because Petitioner has not demonstrated the unpatentability of claims 18–20 by a preponderance of the evidence, we do not consider proposed substitute claims 41–43. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 39, 44, and 45 are unpatentable as obvious over the combination of Robinson and Bundy. We turn first to an overview of Robinson.

1. Overview of Robinson

Robinson generally is directed to “a joist hanger for affixing a timber joist to masonry,” where the hanger “addresses the need to drill holes in a joist in order to run cables, pipes and the like past the joist,” as shown, for example, in Figure 2, reproduced below. Ex. 1046, code (57).

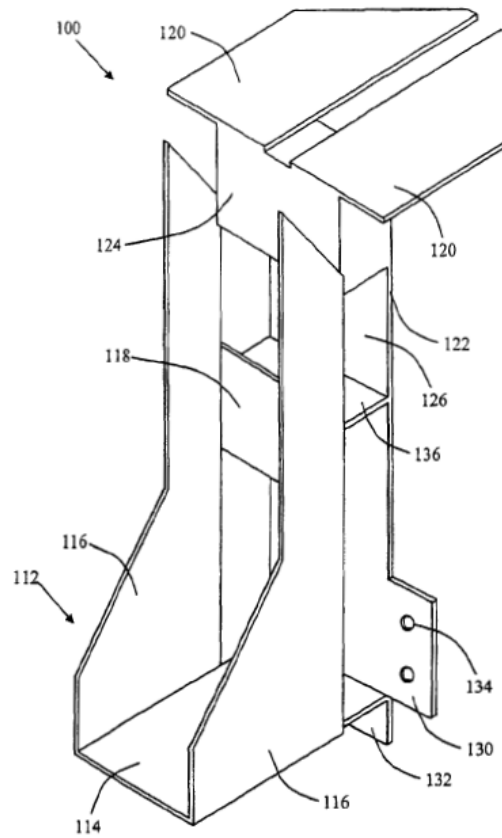


Figure 2

Figure 2 depicts a perspective view of an embodiment of a joist hanger.

Id. at 3:22–23, Fig. 2.

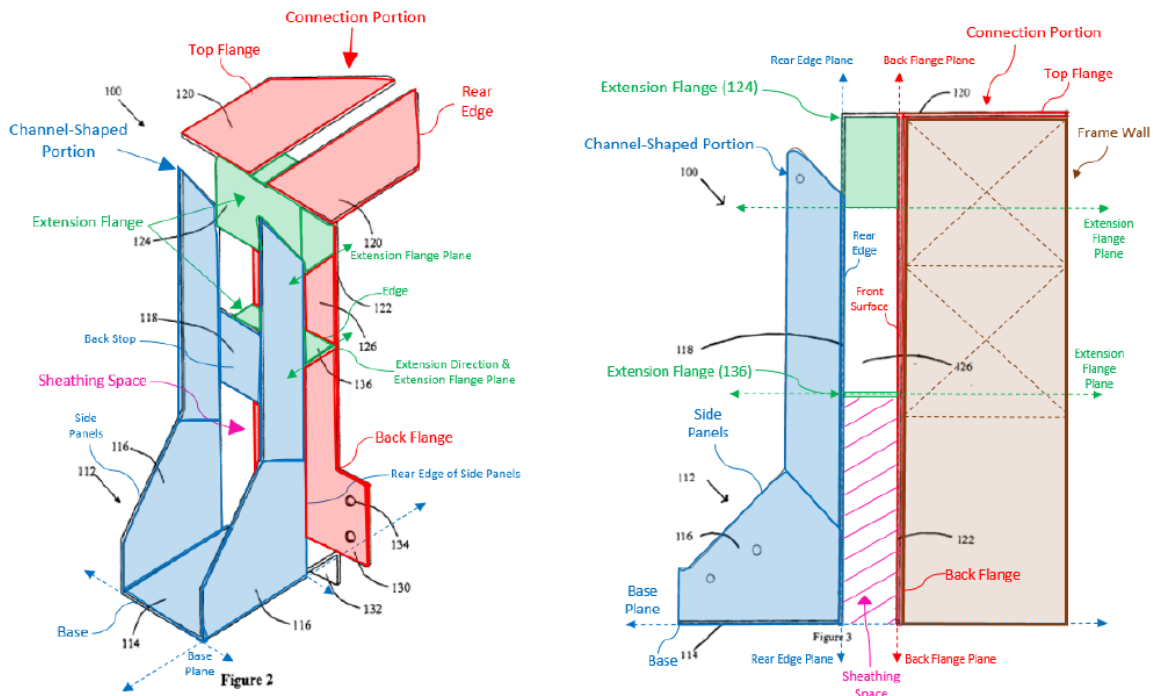
Figure 2 shows joist hanger 100 including shoe 112 for supporting a joist and flange 120 for suspending hanger 100 “from masonry or the like.” Ex. 1046, 4:1–2; *see id.* at 6:1–5 (describing invention as applicable also to “timber-to-timber” joist hangers among others). Hanger 100 includes mount 124 to which second surface 122 and two side gussets 116 are attached. *Id.* at 4:9–10. Hanger 100 also includes second surface 122 spaced from first surface 118 “in a longitudinal direction relative to the joist when attached to the hanger 100, to define a duct opening 126.” *Id.*

at 4:13–15. Duct opening 126 may include internal dividing wall 136 “to separate copper pipes carrying hot water from electrical cables, for example,” and “is sufficiently wide to accommodate copper pipe, for example 22mm pipe, in addition to fixings for the pipe.” *Id.* at 4:15–19. “[H]anger 100 may include one, both or neither of the first flange 130 and second flange 132.” *Id.* at 5:2–3. Hanger 100 “may be made of metal, for example steel or stainless steel, or carbon fibre, and may be pressed, stamped, cast, bent or moulded.” *Id.* at 4:25–26.

We further discuss below the disclosures of Robinson in connection with the parties’ arguments.

2. *Proposed Substitute Independent Claim 39*

Petitioner contends that Robinson’s hanger “defines a space between the channel-shaped portion (shoe 112) and the back flange (second surface 122) to receive other structures (e.g., pipes) between the joist end and the wall,” and “is applicable to a ‘timber-to-timber’ setting, in which hanger 100 would be mounted to the wall frame’s top plate,” as shown, for example, in Petitioner’s annotated versions of Figures 2 and 3, reproduced below. RMTA Opp. 19–20 (citing Ex. 1046, 5:10–14, 6:1–15).



The above illustration shows Figures 2 and 3 of Robinson annotated by Petitioner to show sheathing in a sheath space.

Id. Petitioner also contends “Bundy describes a known way to shield a wooden wall frame by placing sheathing in a space defined between the joist hanger’s channel-shape[d] portion and the wall frame.” *Id.* (citing Ex. 1007, 2:14–59).

As for the reason(s) the skilled artisan would have combined the teachings of Robinson and Bundy to achieve the invention of proposed substitute claim 39, and would have had a reasonable expectation of success in doing so, Petitioner argues:

When using Robinson’s hanger in a timber-to-timber setting, [the skilled artisan] would have been motivated to install sheathing in the space below dividing wall 136 defined between Robinson’s backstop (first surface 118) and back flange (second surface 122), as taught by Bundy, to “cover and protect” the

wood frame. EX1045, ¶¶87–88; EX1007, 5:10–18. [] While Robinson discloses a back part of platform 114 as extending all the way to second surface 122, [the skilled artisan] would have been motivated to terminate Robinson’s platform 114 at the level of the backstop (first surface 118), as taught by Bundy, thereby opening the duct below dividing wall 136 through the bottom of the hanger to receive sheathing. EX1045, ¶¶88–89. *Indeed, Figure 6 of Robinson, where duct 226 of hanger 200 is open, shows this exact modification to the hanger which would allow sheathing to be received therein.* EX1046, FIG. 6. This modification would have been nothing more than applying a known technique (leaving the space between the hanger’s channel-shaped portion and the wall frame open and disposing sheathing therein) to a similar device (Robinson’s hanger) to “*protect the structural members of a building.*” EX1007, 5:18–20; EX1045, ¶¶88–89.

RMTA Opp. 20–21 (emphases added).

Patent Owner contends Petitioner’s Robinson–Bundy challenge fails for two reasons, both of which we find unavailing, as discussed below.

First, Patent Owner argues the asserted combination does not disclose “*the first and second extension flanges* and the channel-shaped portion *defining a sheathing space* sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing.” RMTA Reply 11 (emphases added). In particular, Patent Owner argues the term “defining” “is synonymous with ‘bounding.’” *Id.* (citing Ex. 2069 ¶¶ 77–79; Ex. 1001, Figs. 2 and 7, 1:62–64, 5:25–27). According to Patent Owner, per Petitioner’s annotated Robinson figures (above), “only the [dividing] wall 136—one of the two identified extension flanges—bounds the purported sheathing space, while the other purported extension flange—

mount 124—does not bound this space.” *Id.* at 12 (citing Ex. 2069 ¶¶ 80–82). We disagree, and find no basis in the ’867 patent or the rest of the record before us to restrictively redefine “defining” to mean “bounding.” See RMTA Sur-Reply 12 (“Never using the word ‘bound,’ the specification also does not describe the extension flanges performing such containment.”).

Rather, we agree with Petitioner: “In light of the specification, ‘defining’ a sheathing space simply means creating a space by separating the noted portions,” and “[p]roperly construed, Robinson’s mount 124 [i.e., one extension flange] defines sheathing space in conjunction with dividing wall 136 [i.e., another extension flange] by stably separating its channel-shaped and connection portions.” RMTA Sur-Reply 12 (citing Ex. 1045 ¶¶ 97–100); *see* Ex. 1001, 1:64–2:3 (“The extension portion separates the back wall . . . from the back flange . . . to define the space sized to receive the sheathing.”). Thus, we find Petitioner evidences sufficiently that the combination of Robinson and Bundy teaches or at least suggests the limitation “the first and second extension flanges and the channel-shaped portion defining a sheathing space sized and shaped to receive the sheathing therein so that the channel-shaped portion is located on one side of the sheathing and the back flange is located on an opposite side of the sheathing,” as recited in proposed substitute independent claim 39. See RMTA Opp. 23–24 (discussing element 39.c.4).

Second, Patent Owner argues that combining the teachings of Robinson and Bundy as argued by Petitioner would have rendered Robinson inoperable for its intended purpose, namely, to provide duct opening 126

through which to run cables, pipes and the like past the joist (Ex. 1046, code (57), 4:15–19). RMTA Reply 12. In particular, Patent Owner argues:

[Petitioner] modifies the duct opening 126 to receive sheathing Paper 56: 20. As any sheathing would extend “up to [dividing] wall 136 on [the] portion of the wall covered by the hanger” and “to the top or the top plate of the wall” everywhere else, the sheathing would block cables and pipes from accessing to the space between Robinson’s shoe 112 and second surface 122. EX2069: ¶¶85-86; EX1045: ¶89. Thus, Simpson’s modification “would change the basic principles under which the prior art was designed to operate, [and] . . . render the prior art inoperable for its intended purpose.”

Id. at 12. We disagree and find Patent Owner’s arguments unavailing.

The skilled artisan would “be able to fit the teachings of multiple patents together like pieces of a puzzle” since the skilled artisan is “a person of ordinary creativity, *not an automaton*.” *KSR*, 550 U.S. at 420–21 (emphasis added). As argued by Petitioner and acknowledged by Patent Owner’s expert, “inserting sheathing having a thickness less than the thickness of the space (i.e., narrower than dividing wall 136) maintains a gap between the sheathing’s exterior side and Robinson’s first surface 118, thereby allowing a pipe to pass therethrough.” RMTA Sur-Reply 12 (citing Ex. 1047, 58:1–60:8, 51:16–55:19). Thus, we find that combining the teachings of Robinson and Bundy as set forth by Petitioner would not have rendered Robinson inoperable for its intended purpose.

3. *Undisputed / Remaining Limitations*

Petitioner contends the remaining limitations of proposed substitute independent claim 39 also are taught or at least suggested by the combination of Robinson and Bundy. RMTA Opp. 21–24 (discussing

elements 39.P through 39.c.5). Petitioner provides a detailed assessment of where it believes the features of these limitations reside in Robinson or how they are otherwise taught or suggested by the combination of Robinson and Bundy, and where relevant, provides sufficient rational reason(s) for modifying Robinson's teachings to arrive at the subject limitations, all with references to the declaration testimony of Mr. Fennell. *See id.* (citing, *inter alia*, Ex. 1045 ¶¶ 90–101). Patent Owner does not contend that these remaining limitations in proposed substitute independent claim 39 are absent in the combination of Robinson and Bundy (*see generally* RMTA Reply 11–12), and therefore, has waived such arguments. *See* 37 C.F.R. § 42.23(a); *NuVasive*, 842 F.3d at 1379–82; *Papst Licensing*, 924 F.3d at 1250; *Bradium*, 923 F.3d at 1048. For the reasons set forth in the Opposition and Sur-Reply to the RMTA (RMTA Opp. 19–24; RMTA Sur-Reply 12), and based on the evidence cited therein (*see, e.g.*, Ex. 1045 ¶¶ 90–101), we are persuaded that Petitioner establishes that both (a) Robinson teaches or at least suggests each of these remaining limitations; and (b) where relevant, the skilled artisan would have had a rational reason to combine the teachings of Robinson and Bundy to achieve the invention as recited in proposed substitute independent claim 39 (i.e., to include the features of certain of the remaining limitations with the other features of claim 39). Accordingly, we conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute independent claim 39 is unpatentable as obvious over the combination of Robinson and Bundy.

Petitioner also contends proposed substitute dependent claims 44 and 45 would have been unpatentable as obvious over the combination of

Robinson and Bundy. RMTA Opp. 24–25. The Opposition to the RMTA provides a detailed assessment of these claims, with references to the Opposition’s analysis of proposed substitute independent claim 39, disclosures in Robinson and Bundy, and the declaration testimony of Mr. Fennell. *Id.* Patent Owner does not present any separate arguments that are distinct to any of these claims, and therefore, has waived such arguments. *See* 37 C.F.R. § 42.23(a); *NuVasive*, 842 F.3d at 1379–82; *Papst Licensing*, 924 F.3d at 1250; *Bradium*, 923 F.3d at 1048. Rather, Patent Owner generally is of the view that the alleged deficiencies in the Opposition with respect to proposed substitute independent claim 39 are also applicable to proposed substitute dependent claims 44 and 45. *See generally* RMTA Reply. For the same reasons provided above for proposed substitute independent claim 39, as well as the foregoing arguments and evidence submitted by Petitioner concerning proposed substitute dependent claims 44 and 45, we conclude that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute dependent claims 44 and 45 are unpatentable as obvious over the combination of Robinson and Bundy.

4. *Conclusion*

For the reasons expressed above, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that proposed substitute claims 39, 44, and 45 are unpatentable as obvious over the combination of Robinson and Bundy.

H. Summary of Analysis of Proposed Substitute Claims 24–35, 38–40, and 44–46

In our analysis above of proposed substitute claims 24–35, 38–40, and 44–46, we determine that Patent Owner *has* satisfied the statutory and regulatory requirements for:

- (1) reasonable number of claims;
- (2) responding to a ground of unpatentability;
- (3) not enlarging the scope of original claims; and
- (4) written description support, for proposed substitute claims 24, 26, 27, 29–35, 38, 39, and 44–46.

We determine that Patent Owner *has not* satisfied the statutory and regulatory requirements for:

- (1) written description support, for proposed substitute claims 25, 28, and 40.

On the merits, we determine that Petitioner *has* demonstrated by a preponderance of the evidence:

- (1) proposed substitute claims 28, 35, 39, 40, and 44–46 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness;
- (2) proposed substitute claims 24–31, 33, 34, and 38 are unpatentable as obvious over the combination of Gilb '792, Bundy, and Harrison; and
- (3) proposed substitute claims 39, 44, and 45 are unpatentable as obvious over the combination of Robinson and Bundy.

We determine that Petitioner *has not* demonstrated by a preponderance of the evidence:

- (1) proposed substitute claims 24–35 are unpatentable under 35 U.S.C. § 112(a) for lack of enablement;
- (2) proposed substitute claims 24–27, 29–34, and 38 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness; and
- (3) proposed substitute claim 32 is unpatentable as obvious over the combination of Gilb ’792, Bundy, and Harrison.

Accordingly, because Patent Owner has not satisfied all statutory and regulatory requirements for proposed substitute claims 25, 28, and 40, we *deny* Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claims 25, 28, and 40. Because Petitioner has demonstrated unpatentability of proposed substitute claims 24–31, 33–35, 38–40, and 44–46 by a preponderance of the evidence, we *deny* Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claims 24–31, 33–35, 38–40, and 44–46. Because Patent Owner has satisfied all statutory and regulatory requirements for proposed substitute claim 32 and Petitioner has not demonstrated unpatentability of this claim by a preponderance of the evidence, we *grant* Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claim 32. Because Petitioner has not established by a preponderance of the evidence that original claims 13, 14, and 18–20 are unpatentable, we *dismiss* as moot Patent Owner’s RMTA as to contingent proposed substitute claims 36, 37, and 41–43, which correspond to original claims 13, 14, and 18–20, respectively.

IV. PATENT OWNER’S MOTION TO EXCLUDE EVIDENCE

Patent Owner moves to exclude page 132, line 10 through page 145, line 5 of Exhibit 1038 (August 22, 2022 Deposition Testimony of Patent Owner’s expert, Dr. Reynaud Serrette) as having been elicited through the use of improper questions. Mot. Excl. 1–4. We dismiss this motion as moot because, in this Decision, we do not rely upon any of Dr. Serrette’s testimony that Patent Owner seeks to exclude to the detriment or prejudice of Patent Owner.

V. CONCLUSION¹⁰

Claims	35 U.S.C. §	Reference(s) / Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
5, 17	112(a)	Written Description	5, 17	
1–23	112(b)	Indefiniteness	5, 17	1–4, 6–16, 18–23
1–12, 15–17, 21–23	103	Gilb ’792, Bundy	1–12, 15–17, 21–23	

¹⁰ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. §§ 42.8(a)(3), (b)(2).

Claims	35 U.S.C. §	Reference(s) / Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–4, 6, 10, 11	102 ¹¹	Timony		
5, 7–9, 12, 15–17, 21–23	103 ¹²	Timony, Bundy		
1–12, 15–17, 21–23	103 ¹³	Tsukamoto, Bundy		
Overall Outcome			1–12, 15–17, 21–23	13, 14, 18–20

¹¹ As explained above, we do not reach this instituted prior art ground, because Petitioner already has prevailed on its challenge to the patentability of original claims 1–12, 15–17, and 21–23 based on the combination of Gilb ’792 and Bundy, and this ground does not challenge any additional claims. *See SAS Inst.*, 138 S. Ct. at 1359 (holding a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci.*, 2020 WL 2071962, at *4 (agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”). Also, the parties’ dispute over this ground includes, *inter alia*, the same heavily contested issue of whether the art discloses extension flanges configured to extend through sheathing.

¹² *See supra* n.11 (same). The parties’ dispute over this ground also includes, *inter alia*, substantially the same challenge to whether a rational reason exists to combine the asserted prior art.

¹³ *See supra* n.12 (same).

Revised Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	24–46
Substitute Claims: Motion to Amend Granted	32
Substitute Claims: Motion to Amend Denied	24–31, 33–35, 38–40, 44–46
Substitute Claims: Not Reached	36, 37, 41–43 ¹⁴

VI. ORDER

Upon consideration of the record, it is:

ORDERED that claims 1–12, 15–17, and 21–23 of U.S. Patent No. 11,021,867 B2 are unpatentable;

FURTHER ORDERED that Patent Owner’s Revised Contingent Motion to Amend is *granted* as to proposed substitute claim 32;

FURTHER ORDERED that Patent Owner’s Revised Contingent Motion to Amend is *denied* as to proposed substitute claims 24–31, 33–35, 38–40, and 44–46;

¹⁴ Because Patent Owner proposed substitute claims 36, 37, and 41–43 contingent upon Petitioner demonstrating the unpatentability of original claims 13, 14, and 18–20, respectively, and because Petitioner has not demonstrated the unpatentability of claims 13, 14, and 18–20 by a preponderance of the evidence, we do not consider proposed substitute claims 36, 37, and 41–43.

FURTHER ORDERED that Patent Owner's Revised Contingent Motion to Amend is *dismissed* as moot as to proposed substitute claims 36, 37, and 41–43;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence (Paper 63) is *dismissed* as moot; and

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

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