

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.

PGR2019-00063
Patent 10,316,510 B2

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

BELISLE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Granting-in-Part Patent Owner's Revised Contingent Motion to Amend
35 U.S.C. § 328(a)

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I. INTRODUCTION

A. Case Posture

Simpson Strong-Tie Company Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to institute a post-grant review of claims 1–20 (“the challenged claims”) of U.S. Patent No. 10,316,510 B2 (Ex. 1001, “the ’510 patent”). Columbia Insurance Company (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 8, “Prelim. Resp.”). In addition, with prior authorization from the Board, the parties filed supplemental briefing concerning the Preliminary Response. Papers 11, 13. We instituted a post-grant review of claims 1–20 of the ’510 patent on all grounds of unpatentability alleged in the Petition. Paper 14 (“Institution Decision” or “Dec.”).

After institution, Patent Owner filed a Response. Paper 27 (“PO Resp.”). Petitioner filed a Reply. Paper 32 (“Pet. Reply”). Patent Owner filed a Sur-Reply. Paper 36 (“PO Sur-Reply”). Patent Owner filed a Contingent Motion to Amend. Paper 28. Petitioner filed an Opposition to the Contingent Motion to Amend. Paper 33. Patent Owner filed a Revised Contingent Motion to Amend. Paper 37 (“RMTA”). Petitioner filed an Opposition to the RMTA. Paper 40 (“RMTA Opp.”). Patent Owner filed a Reply to the RMTA Opposition. Paper 43 (“RMTA Reply”). Petitioner filed a Sur-Reply to the RMTA Reply. Paper 48 (“RMTA Sur-Reply”). We held a hearing on January 14, 2021, and a transcript of the hearing appears in the record. Paper 51 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 326(e) (2018); 37 C.F.R.

§ 42.1(d) (2019). 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 1–20 of the ’510 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 21–39, and therefore, we *deny* Patent Owner’s RMTA as to proposed substitute claims 21–39; and (3) 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 40, and Petitioner has not demonstrated unpatentability of this claim by a preponderance of evidence, and therefore, we *grant* Patent Owner’s RMTA as to proposed substitute claim 40.

B. Related Proceeding

The parties identify the following active matter as related to the ’510 patent (Pet. 137; Paper 4, 2):

Columbia Insurance Company et al v. Simpson Strong-Tie Company Inc., No. 3-19-cv-04683 (N.D. Cal.) (“Related Litigation”).

The parties also identify pending U.S. Patent Application No. 16/433,799, filed June 6, 2019, as claiming benefit of the ’510 patent. Pet. 137; Paper 4, 2. Although not advised by the parties,¹ we note that

¹ See 37 C.F.R. § 42.11(a) (“Parties and individuals involved in the proceeding have a duty of candor and good faith to the Office during the course of a proceeding.”).

action by the USPTO is suspended on this application at the applicant's request. *See* Letter of Suspension – Applicant Initiated, mailed Sept. 24, 2020.

C. The '510 Patent

The '510 patent is titled “Hanger For Fire Separation Wall,” and issued on June 11, 2019, from U.S. Application No. 16/225,517, filed December 19, 2018. Ex. 1001, codes (10), (21), (22), (45), (54). The '510 patent claims priority to U.S. Provisional Application No. 61/922,531, filed December 31, 2013. Ex. 1001, code (60).

The '510 patent generally relates to “a truss hanger for connecting a truss to a wall including fire retardant sheathing.” *Id.* at 1:16–18. Figure 2 of the '510 patent is reproduced below.

FIG. 2

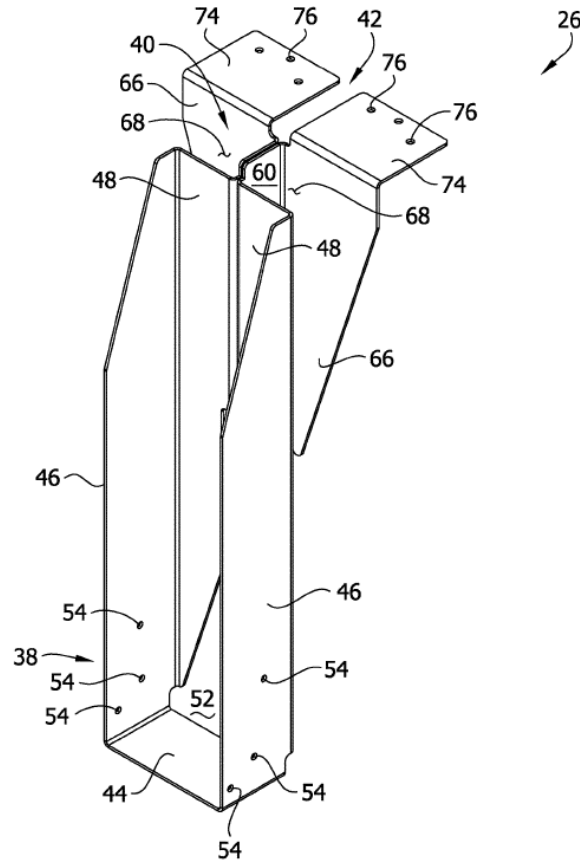


Figure 2 is a perspective view of a truss hanger.
Id. at 2:54–55.

Figure 2 shows truss hanger 26 having three main portions: channel-shaped portion 38, extension portion 40, and connection portion 42. *Id.* at 4:29–31. 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 4:31–34. When installed, base 44 is generally horizontal, and side panels 46 extend generally vertical from base 44. *Id.* at 4:34–36. 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 4:36–39. When installed, each back panel 48 extends generally parallel to interior face 50 of fire retardant sheathing 34 (not shown). *Id.* at 4:39–41.

Extension portion 40 includes two extension flanges 60 configured to extend through fire retardant sheathing 34 (not shown). *Id.* at 4:63–65. 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 4:65–5:1. Back flange 66 extends generally perpendicular from each of extension flanges 60, and is oriented generally parallel to back panels 48. *Id.* at 5:1–3.

Connection portion 42 includes a pair of connector tabs 74 extending from back flanges 66. *Id.* at 6:32–34. Each connector tab 74 extends generally perpendicular from one of back flanges 66, and is generally horizontal when hanger 26 is installed. *Id.* at 6:34–37.

Truss hanger 26 mounts to framing of a wall during construction as shown in Figure 10 of the ’510 patent, reproduced below. *Id.* at 5:27–36.

FIG. 10

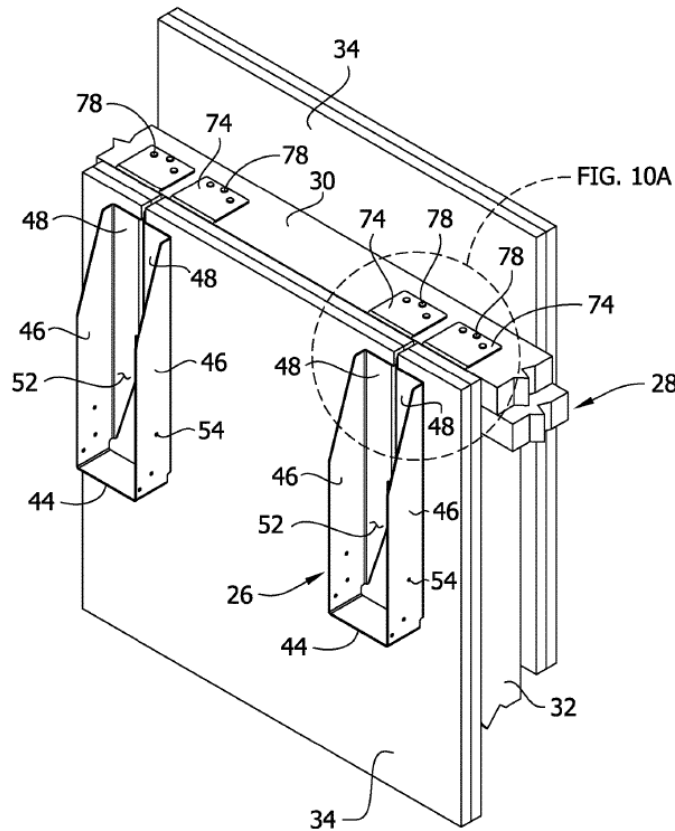


Figure 10 is a perspective view of wall 28 having fire retardant sheathing 34 with a slot cut in the sheathing to receive truss hanger 26.

Id. at 2:54–55. 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 5:33–36. According to the '510 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 4:13–19.

According to the '510 patent, the use of truss hanger 26 allows for the mounting of joists 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 id.* at 1:22–38.

D. Illustrative Claim

The '510 patent includes 20 claims, all of which are challenged. Claims 1, 13, and 20 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 sized and shaped for receiving an end of the structural component thereon to support the structural component, and side panels extending upward from the base generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane;
 - an extension portion extending from the channel-shaped portion and configured to extend through the sheathing; and
 - a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall, the connection portion further including a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion, the back flange having a front surface lying in a back flange plane, the extension portion spacing the side panels from the back flange plane by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8

inch thick sheathing to be received between the rear edge plane and the back flange plane.

Ex. 1001, 12:10–36.

E. Applied References

Petitioner relies upon the following references:

Brekke, U.S. Patent Publication No. 2015/0184370 (Ex. 1027, “Brekke ’370”), published July 2, 2015.

Tsukamoto, Japanese Patent Publication No. JPH0314482Y2 (Ex. 1009, “Tsukamoto”), published October 16, 1987 (citations herein to Tsukamoto are to the certified translation thereof included in Ex. 1009).

Bundy et al., U.S. Patent No. 9,394,680 (Ex. 1007, “Bundy”), filed December 14, 2013 and issued July 19, 2016.

Allan, U.S. Patent No. 4,827,684 (Ex. 1012, “Allan”), issued May 9, 1989.

Gilb, U.S. Patent No. 4,230,416 (Ex. 1011, “Gilb ’416”), issued October 28, 1980.

Gilb, U.S. Patent No. 4,261,155 (Ex. 1010, “Gilb ’155”), issued April 14, 1981.

Gilb, U.S. Patent No. 4,005,942 (Ex. 1032, “Gilb ’942”), issued February 1, 1977.

Timony, U.S. Patent Publication No. 2005/0155307 (Ex. 1008, “Timony”), published July 21, 2005.

Pet. 1–3.

F. Instituted Grounds of Unpatentability

We instituted post-grant review of claims 1–20 of the ’510 patent on the following grounds. Dec. 2–3, 9, 62.

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–19	112(a)	N/A
20	112(b)	N/A
1–19	102	Brekke '370
1–2, 4, 6–17, 19, 20	103	Tsukamoto, Bundy, Allan
3	103	Tsukamoto, Bundy, Allan, Gilb '416
1–20	103	Gilb '155, Bundy, Allan
12, 19	103	Gilb '155, Bundy, Allan, Gilb '942
1–4, 6–17, 19, 20	103	Timony, Bundy
3	103	Timony, Bundy, Gilb '416
12, 19	103	Timony, Bundy, Gilb '942

Petitioner relies on the Declarations of W. Andrew Fennell (Exs. 1003, 1036, 1039, 1042). Patent Owner relies on the Declarations of Reynaud Serrette, Ph.D. (Exs. 2001, 2042, 2044, 2055, 2057).

II. ANALYSIS: ORIGINAL CLAIMS 1–20

A. Applicable Law

Petitioner challenges the patentability of claims 1–20 of the '510 patent on the grounds that various claims lack written description, are indefinite, or are anticipated under 35 U.S.C. § 102 or obvious under 35 U.S.C. § 103 in light of various references including: Brekke '370, Tsukamoto, Bundy, Allan, Gilb '416, Gilb '155, Gilb '942, and Timony. To prevail in its challenges to the patentability of the claims, Petitioner must

establish unpatentability by a 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 filing 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 patent’s specification and prosecution history, fail to inform, with *reasonable certainty*, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 898–99 (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 899 (internal quotation marks 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 subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when of record, objective evidence of 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.” *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. *Id.* 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 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 ’510 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. 11 (citing Ex. 1003 ¶ 14). 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. 22; *see* Ex. 2001 ¶ 14.

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. Accordingly, we apply the level of skill set forth in the preceding paragraph, which also is consistent with the prior art before us. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error ‘where the prior art itself reflects an appropriate level and a need for testimony is not shown.’”); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interferences did not err in concluding that the level of ordinary skill in the art was best determined by the references of record).

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).

The parties dispute the meanings of five claim limitations, namely, (1) “the extension portion spacing the side panels from the back flange plane by a distance . . . too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane,” as recited in independent claim 1 (Pet. 12–13); (2) “formed as one piece,” as recited in dependent claims 12 and 19 (Pet. 13–14; PO Resp. 30–31); (3) “extend through,” as recited in independent claims 1, 13, and 20 and dependent claim 4 (PO Resp. 22–24); (4) “[extension portion / extension flanges] . . . configured to extend through the [fire barrier],” as recited in independent claims 1, 13, and 20 (PO Resp. 24–29); and (5) “extending from,” as recited in independent claims 1, 13, and 20 and dependent claims 4, 11, and 17 (PO Resp. 30). To the extent necessary to resolve the controversy before us, we address claim interpretation in our unpatentability analysis below.

D. Unpatentability of Claims 1–19 Based on Lack of Written Description

Petitioner contends claims 1–19 are unpatentable under 35 U.S.C. § 112(a) for lack of written description. Pet. 14–21; Pet. Reply 26–27. Patent Owner opposes Petitioner’s contentions. PO Resp. 93–96; PO Sur-

Reply 25–26. 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 1–19 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)). “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”). 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). Moreover, “where a specification discloses a broad range of values and a value within that range is claimed, the disclosure must allow one skilled in the art to ‘immediately discern the limitation at issue in the claims.’” *Gen. Hosp.*, 888 F.3d at 1372.

Petitioner contends the Specification of the '510 patent does not provide written description support for the “negative limitation” in independent claim 1 of “the extension portion spacing the side panels from the back flange by a distance *sized . . . too small to permit three layers of 5/8 inch thick sheathing to be received* between the rear edge plane and the back flange plane” (Ex. 1001, 12:30–36 (emphasis added)); and in independent claim 13 of “the extension portion spacing the side panels from the back flange by a distance *sized . . . too small to permit three layers of 5/8 inch thick sheathing to be received* in the space bounded by the side panels and the back flange” (Ex. 1001, 13:28–34 (emphasis added)) (collectively, the “Negative Spacing Limitation”). Pet. 14–21. Petitioner argues, based on this negative limitation, “any extension portion distances sized to permit three layers of 5/8" thick sheathing or more are explicitly excluded from the scope of the claim,” but “such an upper bound on the gap size does not appear to be described in the originally filed specification of the '510 patent.” Pet. 15 (citing Ex. 1003 ¶ 67). Petitioner also argues the '510 patent does not describe a reason to exclude three or more layers and does not disavow three or more layers. *See* Pet. 14–21.

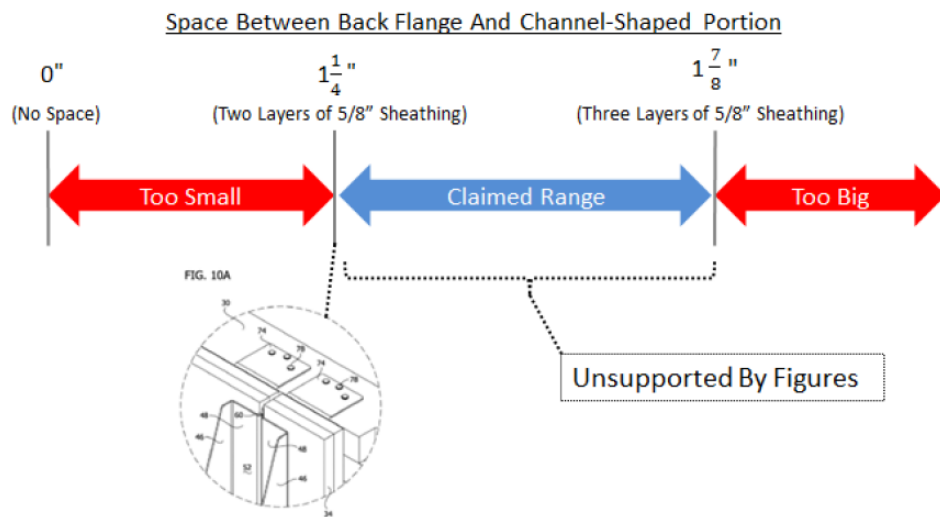
Patent Owner argues “[Petitioner] fails to account for the detailed disclosures contained in the *figures* of the '510 patent.” PO Resp. 93 (emphasis added); *see id.* at 93–96; *Lockwood v. Am. Airlines, Inc.*, 107 F.3d at 1572 (Possession is shown “by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention.”). Patent Owner argues “[Petitioner’s] analysis inexplicably ignores the detailed patent figures,” specifically, “Figures 1, 10A, 11, 13A,

14A, 35, 36, 38, and 39,” which show that “the two layers of 5/8 inch sheathing sufficiently fill the space between side panels (46) and back flange (66) such that the disclosed hanger could not possibly receive an additional third layer of 5/8 inch sheathing within the shown fixed space.” PO Resp. 94–96. Patent Owner relies on these figures, along with a statement in the Specification identifying the two layers of sheathing in the figures as 5/8" gypsum board (Ex. 1001, 4:10–19), to allege written description support. *See generally* PO Resp. 93–96; PO Sur-Reply 25–26.

In our Institution Decision, we preliminarily found Petitioner’s written description argument unpersuasive in view of certain ’510 patent figures, such as Figures 1, 10A, and 11. Dec. 17–19. However, on 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 below.

The parties agree that certain ’510 patent figures, such as Figures 1, 10A, and 11, describe a hanger with two sheets of 5/8" sheathing between a channel-shaped portion and a back flange. Pet. Reply 26 (“Petitioner recognizes that the figures disclose the claimed hanger with two sheets of 5/8" sheathing, but that is not the problem.”); PO Resp. 95 (“As is evident from the identified figures, the two layers of 5/8 inch sheathing sufficiently fill the space between side panels (46) and back flange (66).”). But, as argued by Petitioner, “[w]hile the figures support a claim for a *discrete* distance of 1 1/4" between the channel-shaped portion and the back flange, neither the figures nor the words of the specification support the claimed *range* of distance (1 1/4" to 1 7/8").” Pet. Reply 26; *see* Ex. 1003 ¶ 18

(Because “two layers of $\frac{5}{8}$ " sheathing equates to a distance of $1\frac{1}{4}$ ", and the measurement of three layers of $\frac{5}{8}$ " sheathing equates to a distance of $1\frac{7}{8}$ ", a [skilled artisan] would have understood the range recited in this claim element as equal to ‘at least $1\frac{1}{4}$ " but less than $1\frac{7}{8}$ "’.”); Ex. 1001, 4:10–28, Figs. 1, 10A, 11, 13A, 14A, 35, 36, 38, and 39. To illustrate its point here, Petitioner provides the following illustration of extension portion spacing.



The above illustration shows Petitioner’s rendering of the claimed range of extension portion spacing in claims 1 and 13.

Pet. Reply 26. The above illustration highlights the issue at hand: what disclosure in the ’510 patent describes an extension portion spacing that, for example, (1) accommodates two layers of $\frac{5}{8}$ " sheathing *and* (2) provides an additional gap of up to $\frac{5}{8}$ " (i.e., the gap defined by the difference between three layers of $\frac{5}{8}$ " sheathing or $1\frac{7}{8}$ " and two layers of $\frac{5}{8}$ " sheathing or $1\frac{1}{4}$ ")? We find the ’510 patent does not provide sufficient written description of such a spacing range (or gap as in this example).

First, as argued by Petitioner (Pet. 19–21), we find the ’510 patent does not provide any discussion of the subject extension portion spacing

range or any reason to exclude extension portion spacing larger than the claimed range, i.e., three or more layers of 5/8" drywall (1-7/8" or larger). *See* Ex. 1003 ¶ 68 (“[T]he [S]pecification does not mention three layers of 5/8" thick sheathing in any context. Nor does the specification limit the invention to any particular spacing size range, or describe any particular advantage or benefit attaching to two, three, or any number of layers of sheathing.”). Instead, the Specification simply refers to the use of two layers of 5/8" thick sheathing as an open-ended example:

In one embodiment, the fire retardant sheathing is gypsum board, *such as* two layers of 5/8" gypsum board mounted on each side of the wall 28 as illustrated, *although other configurations of fire retardant sheathing are within the scope of the present invention*. Other wall configurations, including different wall constructions and materials, are within the scope of the present invention.

Ex. 1001, 4:15–21 (emphases added); *see* Ex. 1003 ¶ 68. Notably, Patent Owner does not direct us to any such discussion or reason to exclude in the Specification. *See generally* PO Resp. 93–96; PO Sur-Reply 25–26.

Nevertheless, Patent Owner argues it is “evident from the identified figures [i.e., Figs. 1, 10A, 11, 13A, 14A, 35, 36, 38, and 39] . . . [that] the two layers of 5/8 inch sheathing *sufficiently fill the space* between side panels (46) and back flange (66).” PO Resp. 95; *see* PO Sur-Reply 26. But this supports Petitioner’s argument here, not Patent Owner’s. Since all of the relevant figures show two 5/8" layers of sheathing “sufficiently fill[ing] the space” at issue, then none of these figures describe or show any additional gap remaining within that space, let alone a specific gap of up to 5/8", i.e., the claimed spacing range from 1-1/4" (two 5/8" layers) *up to* 1-7/8" (three 5/8" layers). Patent Owner also argues the disclosed hanger in

these figures “could not possibly receive a third layer of 5/8 inch sheathing within the shown fixed space.” PO Resp. 95–96; *see* PO Sur-Reply 26. But the disclosed hanger in these figures also “could not possibly receive” within that shown fixed space countless (undisclosed) items, such as a third layer of 1/2" sheathing or 1/4" sheathing, or four, five, or more additional layers of 5/8" sheathing, or a third layer of 1-1/4" fire brick. We do not agree, at least in this case, that the mere existence of such impossibilities alone constitute their own express disclosure and show possession by an inventor. Indeed, Patent Owner does not direct us to any “blaze marks” or discussion in the Specification that would have directed the skilled artisan to the particular claimed “tree” or extension portion spacing range of up to 1-7/8" (three layers of 5/8" sheathing) versus any of the other “trees” in the vast “forest” of impossibilities noted above, like a third layer of 1/2" sheathing (which would translate into a spacing range of up to 1-3/4" (two 5/8" layers plus one 1/2" layer). *See Purdue Pharma*, 230 F.3d at 1326–27; Ex. 1003 ¶ 70.

Second, Patent Owner amended independent claim 1 (and similarly independent claim 13) during prosecution by adding the limitation of “the extension portion spacing the side panels from the back flange plane by a distance sized [1] large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane [the lower limit], but [2] too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane [the upper limit],” and merely asserted “[n]o new matter is added.” Ex. 1002, 41, 43–44, 46. But, as argued by Petitioner (Pet. 20–21),

Patent Owner did not identify any portion of the Specification as supporting this upper limit to the extension portion spacing. *See* Ex. 1002, pp. 46–53. Rather, Patent Owner pointed only to support for *the lower limit* to the extension portion spacing: “As described in paragraphs [0055] [i.e., Ex. 1001, 4:10–21] and [0084] [i.e., Ex. 1001, 11:41–56] of the Applicant’s disclosure, the extension portion 40 spaces apart the first and second planes by a distance sized *large enough to permit two layers of 5/8 inch thick sheathing 34 to be received in the space 68*, as shown in Fig. 1.” *Id.* at 47 (emphases added). Petitioner argues Patent Owner “did not point to any portion of the [S]pecification for support of the upper bound, because they could not.” Pet. 21; *see* Ex. 1003 ¶ 71. We find Patent Owner’s failure during prosecution to identify any written description support for the added upper limit to the extension portion spacing further validates our view that no such support exists in the ’510 patent.

For the reasons expressed above, and based on the complete record before us, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 1–19 are unpatentable under 35 U.S.C. § 112(a) for lack of written description support for the Negative Spacing Limitation.

E. Unpatentability of Claim 20 Based on Indefiniteness

Petitioner contends claim 20 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness. Pet. 22–25; Pet. Reply 27. Patent Owner opposes Petitioner’s contentions. PO Resp. 96–101; PO Sur-Reply 26–27. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of

evidence that claim 20 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

Petitioner contends that the phrase “sized large enough” is indefinite in the limitation, “the extension portion spacing the channel-shaped portion from the back flange plane by a distance *sized large enough* to permit the drywall to be received between the channel-shaped portion and the back flange plane” (emphasis added), in independent claim 20 (“Large Enough Limitation”). Pet. 22–25; Ex. 1001, 14:34–39. Petitioner argues “sized large enough” is indefinite for two reasons: (1) “the term ‘large enough’ defines a minimum boundary and not an upper limit” and is a “relative term;” and (2) “defining a distance based on an indeterminate size of ‘the drywall’ is insufficient to clearly set out the metes and bounds of the claim,” because “[d]rywall comes in [a] variety of different sizes—some narrow, some thick.” Pet. 23–25. We are unpersuaded by Petitioner’s arguments.

First, like Patent Owner (PO Resp. 98–99), we do not agree with Petitioner that a claimed range with no upper limit is inherently indefinite. *Cf. Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1382 (Fed. Cir. 2001), abrogated as to the standard for indefiniteness by *Nautilus*, 572 U.S. 898. In *Exxon*, the Federal Circuit explained:

The claims do not contain any limitation on maximum particle size, and *no limitation is required as a matter of definiteness*. Thus, the claims expressly reach any composition with catalyst particles having an average diameter greater than five microns, no matter how large the particles may be; as such, there is no indefiniteness as to the scope of that limitation. The government’s real objection to the claims as written is that they may include some inoperable embodiments, such as one in which the particles have an average diameter greater than 100 microns.

However, that is an issue of enablement, and not indefiniteness. . . . A patent claim to a fishing pole would not be invalid on indefiniteness grounds if it contained a limitation requiring that the pole be “at least three feet long,” even though a 50 foot long fishing pole would not be very practical.

265 F.3d at 1382 (emphases added).

Although *Exxon* was decided using an indefiniteness standard other than the one articulated by *Nautilus*, we find the court’s above-quoted reasoning concerning claimed ranges without upper limits to be equally pertinent to the indefiniteness issue presented here under *Nautilus*. See *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1381 (Fed. Cir. 2015) (“[The *Nautilus*] standard does not render all of the prior Federal Circuit and district court cases inapplicable.” (quoting J. Bryson’s decision in *Freeny v. Apple Inc.*, No. 2:13-CV-00361-WCB, 2014 WL 4294505, at *4–*5 (E.D. Tex. Aug. 28, 2014))); *Augme Techs. v. Yahoo! Inc.*, 755 F.3d 1326, 1340 (Fed. Cir. 2014) (A limitation “clear on its face” “unquestionably meets [the *Nautilus*] standard.”); cf. *One-E-Way, Inc. v. Int’l Trade Comm’n*, 859 F.3d 1059, 1063 (Fed. Cir. 2017) (“As long as claim terms satisfy [the *Nautilus*] test, relative terms and words of degree do not render patent claims invalid.”). Also, contrary to Petitioner’s argument (Pet. 24), we find *In re Wertheim*, 541 F.2d 257 (CCPA 1976) inapposite. As acknowledged by Petitioner, *Wertheim* addressed the *written description* requirement of 35 U.S.C. § 112, not indefiniteness. See Pet. 24 (citing *Wertheim* for “finding that a claim limitation to ‘at least 35%’ did not meet the [written] description requirement because the phrase ‘at least’ had no upper limit” (emphasis added)). Notably, in asserting “Petitioner disagrees

with the Board's conclusions" here (Pet. Reply 27), Petitioner does not address *Exxon*. See generally Pet. 22–25; Pet. Reply. 27.

Second, like Patent Owner (PO Resp. 100–101), we do not agree with Petitioner that a claimed space or distance defined by the size of a well-known object available in various sizes is inherently indefinite. See *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986). In *Orthokinetics*, the Federal Circuit explained:

The claims were intended to cover the use of the invention with various types of automobiles. That a particular chair on which the claims read may fit within some automobiles and not others is of no moment. The phrase 'so dimensioned' is as accurate as the subject matter permits, automobiles being of various sizes. . . . As long as those of ordinary skill in the art realized that the dimensions could be easily obtained, [the indefiniteness standard] requires nothing more. The patent law does not require that all possible lengths corresponding to the spaces in hundreds of different automobiles be listed in the patent, let alone that they be listed in the claims.

806 F.2d at 1576 (internal citation omitted). Notably, again, in asserting "Petitioner disagrees with the Board's conclusions" here (Pet. Reply 27), Petitioner does not address *Orthokinetics*. See generally Pet. 22–25; Pet. Reply. 27.

In this case, the '510 patent's disclosure includes many figures depicting the relevant extension portion spacing being "sized large enough" to receive drywall. See, e.g., Ex. 1001, 5:33–36, Figs. 10A, 11, 13A, 14A, 35, 36, 38, 39. In addition, both Petitioner and Patent Owner agree that drywall was "common" at the time of filing of the '510 patent, and that the skilled artisan would have known that drywall was manufactured in a variety of standard thicknesses, such as 3/8" and 1/2". See Pet. 24–25, 35 (The

skilled artisan “would have been well aware of the commonality of such wall finishes.”), 67–68; PO Reply 100–101; Ex. 2001 ¶ 117 (“[D]rywall is a well-known building material available in well-known standard sizes. . . . For example, drywall (also called gypsum) typically comes in the following standard thicknesses: ¼", 5/16", 3/8", ½", 5/8", ¾", 1", and 1-3/8".” (citing, in part, Ex. 2023, p. 2; Ex. 2024, pp. 3–6)). We find the cited evidence shows that skilled artisans at the relevant time were intimately familiar with drywall and drywall thicknesses. We also find nothing to suggest that the limitation of a space “sized large enough” to receive a well-known object therein would not inform the skilled artisan, with reasonable certainty, about the scope of the claimed invention, even if that scope may cover some embodiments that may be inoperable.

Third, Petitioner alleges that Patent Owner’s declarant, Dr. Serrette, “assert[ed] [in deposition] that claim 20 could not be interpreted without knowing the intent of either a manufacturer or installer who would make or use the recited hanger”; and “[g]iven the scenario of a hanger, on a shelf, that meets all the structural limitations of claim 20 and has an extension portion spacing of 1/2", . . . confirmed it would not be possible to determine whether that hanger fell within the scope of claim 20, since one must know what size drywall an installer intends to use with the hanger.” Pet. Reply 27 (citing Ex. 1038, 55:20–57:10, 65:19–66:13). Patent Owner responds that in “[r]eviewing the cited passages, it is not evident that 65:19–66:13 of Dr. Serrette’s deposition transcript (Ex. 1038) even pertained to claim 20,” and “the passage at 55:20–57:10 merely establishes that claim 20 does not place an upper boundary on the number of sheets of drywall.” PO Sur-

Reply 26–27. We agree with Patent Owner, and find Petitioner’s liberal characterization of Dr. Serrette’s actual testimony unhelpful in deciding the issue of indefiniteness before us. We also note Petitioner’s underlying questioning here invokes claim construction and indefiniteness, both of which ultimately are questions of law, but Dr. Serrette is a fact witness. Thus, we do not agree with Petitioner that its foregoing allegations and cited testimony demonstrate indefiniteness of independent claim 20.

Based on the foregoing, and on the complete record before us, we are not persuaded that the limitation at issue, namely, “the extension portion spacing the channel-shaped portion from the back flange plane by a distance sized large enough to permit the drywall to be received between the channel-shaped portion and the back flange plane,” would not inform the skilled artisan, with reasonable certainty, about the scope of the claimed invention. *See Biosig*, 783 F.3d at 1382–83 (“[F]igures illustrating the ‘spaced relationship’ between the live and common electrodes are telling and provide sufficient clarity to skilled artisans as to the bounds of this disputed term.”).

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of evidence that claim 20 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

F. Anticipation of Claims 1–19 by Brekke ’370

Petitioner contends claims 1–19 are unpatentable under 35 U.S.C. § 102 as anticipated by Brekke ’370 (Ex. 1027), to which the ’510 patent claims priority. Pet. 1, 26–33; Ex. 1001, codes (60), (63); Ex. 1027. Petitioner’s contention here hinges on its contention that claims 1–19 are

unpatentable under 35 U.S.C. § 112(a) for lack of written description. Pet. 26 (arguing “claims 1–19 lack written description support for priority purposes for the same reasons that the claims lack written description support under § 112”); *see id.* at 26–33. Patent Owner opposes Petitioner’s contentions, but does so solely on the asserted basis that “the identified limitations in claims 1 and 13 are fully supported under 35 U.S.C. § 112(a).” PO Resp. 101–102. Patent Owner does not dispute that, absent a proper priority claim to Brekke ’370, Brekke ’370 would anticipate claims 1–19. *See generally id.*

Initially, for the same reasons we conclude Petitioner has demonstrated by a preponderance of evidence that claims 1–19 are unpatentable under 35 U.S.C. § 112(a) for lack of written description (*see supra*), we also conclude Petitioner has likewise demonstrated that claims 1–19 lack written description in Brekke ’370 for priority purposes. *See* PO Resp. 95 n.16 (“The Figures, Background, and Detailed Description of the ’510 patent are the same as in the priority ’370 application.” (citing Ex. 1002, pp. 233–303)). As such, the earliest possible filing date of claims 1–19 of the ’510 patent becomes December 19, 2018, which is the actual filing date of the ’510 patent (Ex. 1001, code (22)). Because Brekke ’370 published July 2, 2015 (Ex. 1027, code (43)), more than three years before the earliest possible filing date of claims 1–19, Brekke ’370 constitutes prior art to the ’510 patent under 35 U.S.C. § 102(a)(1).

Although we conclude Brekke ’370, like the ’510 patent, does not provide written description for an “extension portion spacing” that excludes distances capable of receiving three or more layers of 5/8 inch thick

sheathing (*see* Ex. 1001, 12:30–36 (claim 1), 13:28–34 (claim 13)), we find Brekke ’370 still anticipates this feature because, as argued by Petitioner, “it discloses an explicit value within [the] claimed range (namely, the size corresponding to two sheets of 5/8" sheathing).” Pet. 26 (citing Ex. 1003 ¶ 75); *see* Pet. 30 (citing, in part, Ex. 1003 ¶ 87); Ex. 1001, 4:10–19, Figs. 1, 10A. It is “an elementary principle of patent law” that a recitation of a range that covers several values is anticipated if *one* such value is found within the prior art. *Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 782 (Fed. Cir. 1985).

Petitioner maps each of the limitations in claims 1–19 to disclosure in Brekke ’370. Pet. 28–33. As noted above, Patent Owner, not surprisingly, does not argue that Brekke ’370 fails to disclose any limitations in these claims, as Patent Owner relies on Brekke ’370 for priority purposes. We are persuaded by Petitioner’s mapping to Brekke ’370 (Pet. 28–33), which we adopt as our own, and find that Brekke ’370 discloses each limitation of claims 1–19, arranged as recited in these claims.

For the reasons expressed above, and based on the complete record before us, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 1–19 are unpatentable under 35 U.S.C. § 102 as anticipated by Brekke ’370.

G. Obviousness of Claims 1–20 Over the Combination of Gilb ’155, Bundy, and Allan

Petitioner contends claims 1–20 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gilb ’155 (Ex. 1010), Bundy (Ex. 1007), and Allan (Ex. 1012). Pet. 67–99; Pet. Reply 2–18. Patent

Owner opposes Petitioner's contentions. PO Resp. 21–56; PO Sur-Reply 2–19. 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 1–11, 13–18, and 20 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan. We also determine that Petitioner has not demonstrated by a preponderance of evidence that claims 12 and 19 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan.

1. Overview of Gilb '155

Gilb '155 generally relates to “a hanger intended to provide for any known intersection requirement to any amount of skew and any amount of slope,” as shown, for example, in Figure 2, reproduced below. Ex. 1010, 1:6–9.

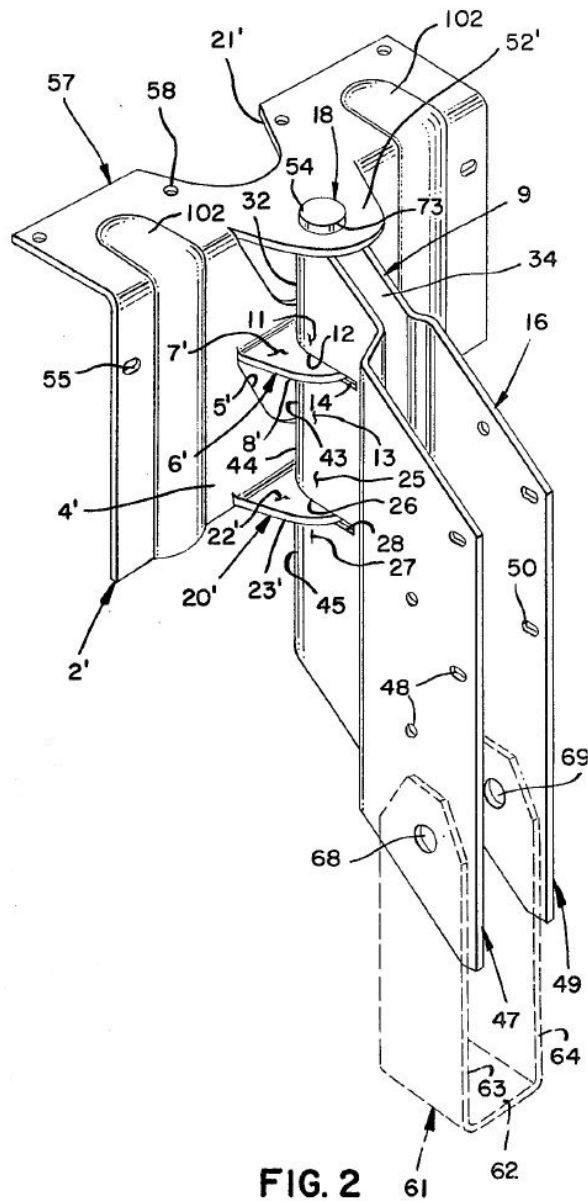


FIG. 2

Figure 2 of Gilb '155 is a perspective view of an infinite skewed hanger.

Id. at 3:5–6, 3:51–54. As shown in Figure 2, the Gilb '155 hanger includes (1) supporting member 2' formed with top flange member 57, embossments 102, and face element 4' positioned generally in a vertical plane, where top flange member 57 is formed with fastener openings 58 for

attachment to a supporting structure, like a wall; (2) supported gusset-like member 9; (3) connection means 16; and (4) pivot means 18 pivotably connected to supporting member 2' and supported gusset-like member 9. Ex. 1010, 3:51–4:3, 5:9–17, 5:29–35, 7:36–49.

Supported gusset-like member 9 connects with connection means 16, which receives and connects to a supported structure, like a joist. Ex. 1010, 3:67–4:1. Connection means 16 includes first hanger side member 47 and second hanger side member 49. Ex. 1010, 5:9–17. Connection means 16 also includes U-shaped seat member 61 having seat element 62 and upstanding leg elements 63 and 64 integrally connected to seat element 62, and connected to first and second hanger side members 47 and 49, respectively. Ex. 1010, 5:36–45.

Gilb '155 states that, once installed, friction forces effectively prevent the hanger from moving:

Unlike a hinge whose structure and function is to repeatedly rotate, the structure of the present invention is not designed to rotate after load has been imposed. In fact, the friction set up within the infinite skewed hanger is so great that after load has been imposed, it is virtually impossible to rotate the separable parts with respect to one another.

Ex. 1010, 7:13–20.

Petitioner contends Gilb '155 qualifies as prior art under 35 U.S.C. § 102(a)(1) based on its issue date. Pet. 1–2. We determine that Gilb '155 qualifies as prior art under 35 U.S.C. § 102(a)(1) because Gilb '155's issue date of April 14, 1981, is before the earliest possible effective filing date of the challenged claims, which is December 31, 2013. Ex. 1001, codes (22), (60), (63); Ex. 1010, code (45).

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.

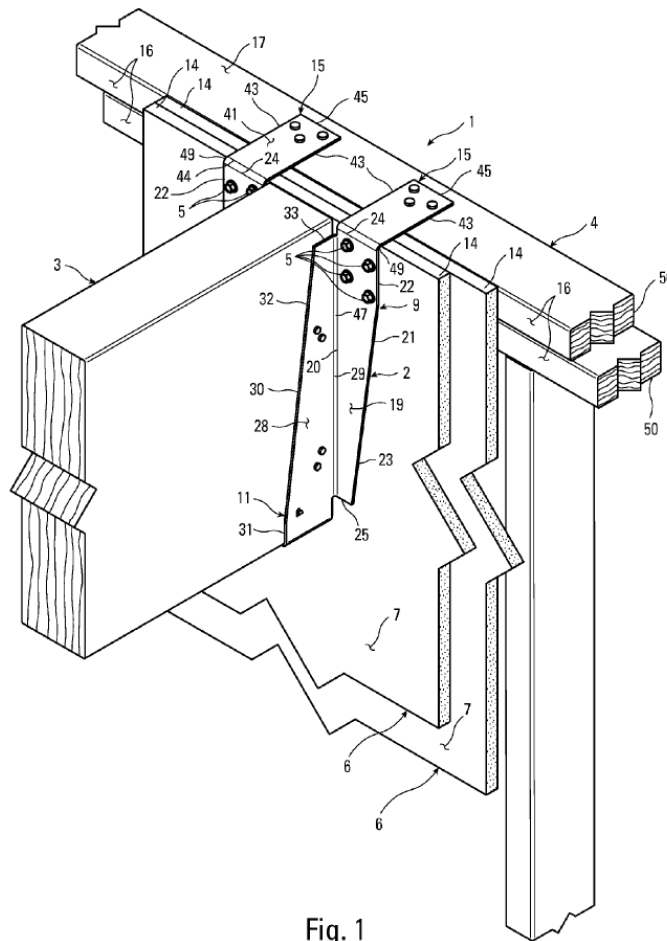


Fig. 1

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 ’155 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, 12:10–12 (emphasis added). Gilb ’155 discloses “[a]n infinite skewed and sloped sheet metal hanger for holding a supported structure to a supporting structure.” Ex. 1010, Abstract, Fig. 2; *see* Pet. 72–73 (citing Ex. 1003 ¶ 169; Ex. 1010, 7:4–25). 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. 72–73 (citing, in part, Ex. 1002, 166 (Examiner finding this phrase constitutes merely a “statement[] of intended use”); Ex. 1003 ¶ 23).

“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 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* RMTA Reply 7 (“[T]he claims describe a hanger prior to installation.”). Indeed, in the Related Litigation, 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 claim 1 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.*

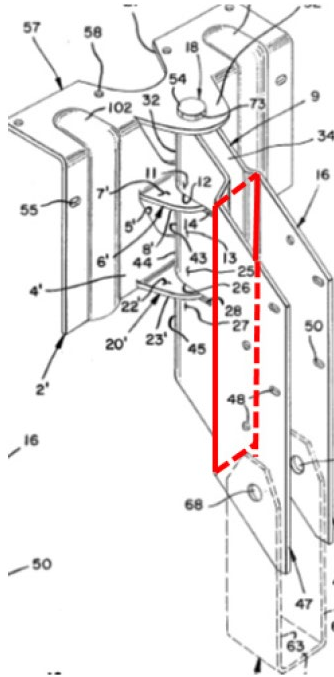
Co., 129 U.S. 530, 537 (1889)) (“[I]t has been well established for over a century that the same test must be used for both infringement and anticipation,” and “[t]his general rule derives from the Supreme Court’s proclamation 120 years ago in the context of utility patents: ‘[t]hat which infringes, if later, would anticipate, if earlier.’”). In addition, Patent Owner agrees that “the claimed structure does not itself include the sheathing or drywall recited in the claims.” PO Resp. 24.

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 ’155 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 sized and shaped for receiving an end of the structural component thereon to support the structural component, and side panels extending upward from the base generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane;”*

Gilb ’155 discloses a hanger as shown in Figure 2, reproduced above, including U-shaped seat member 61 and connection means 16 “adapted for connection to a supported structure 17,” such as a joist. Ex. 1010, 3:67–4:3, 5:35–45, 6:14–26, Figs. 2, 13, 14. U-shaped seat member 61 and connection means 16 together form a channel-shaped portion, which includes a base, seat element 62, sized and shaped for receiving an end of supported structure 17 (e.g., a joist) thereon to support supported structure 17.

Ex. 1010, 5:35–45, Figs. 2, 13, 14. Gilb '155's channel-shaped portion also includes side panels (upstanding leg elements 63 and 64, lower legs 47, 47' and 49, 49') extending upward from the base (integrally connected to seat member 61) generally perpendicular to the base. Ex. 1010, 5:36–45, Figs. 2, 13, 14. Gilb '155's side panels (upstanding leg elements 63 and 64, lower legs 47, 47' and 49, 49') have rearward edges (edges of upstanding leg elements 63 and 64) lying in a rear edge plane, as shown, for example, in Petitioner's annotated version of Figure 2, reproduced below.



The above illustration shows Figure 2 of Gilb '155 annotated in red by Petitioner to identify rearward edges of side panels lying in a rear edge plane.

Ex. 1010, 5:36–45, Fig. 2 (annotated); Pet. 76–77; *see* Pet. 73–77 (citing Ex. 1003 ¶¶ 171–174).

Patent Owner does not contend that the subject “channel-shaped portion” limitation is absent in Gilb ’155. *See* PO Resp. 31–48. 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 ’155 discloses “a channel-shaped portion configured to receive the structural component, the channel-shaped portion including a base sized and shaped for receiving an end of the structural component thereon to support the structural component, and side panels extending upward from the base generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane,” as recited in claim 1. Pet. 73–77 (citing Ex. 1003 ¶¶ 171–174).

- c) “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing; and”

Gilb ’155 discloses an extension portion (gusset-like member 9, 9’) extending from the channel-shaped portion (U-shaped seat member 61 and connection means 16), as shown, for example, in Petitioner’s annotated version of Figure 2, reproduced below.

(1) *Claim Construction: “configured to extend through the sheathing”*

Claim 1 recites that the “extension portion” is “*configured to extend through the sheathing [mounted on a wall].*” Ex. 1001, 12:10–36 (emphasis added). The parties dispute whether the phrase “*configured to extend through the sheathing*” is (1) a purpose or intended use of the “extension portion” (e.g., a *capability* of the extension portion); or (2) a function of the “extension portion” that provides additional structural attributes to the extension portion (e.g., a particular *configuration* of the extension portion); and if (2), what is that claimed configuration. See PO Resp. 8, 22–48; PO Sur-Reply 6–18; Pet. 77–79; Pet. Reply 5–16.

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

Patent Owner argues “[c]ontrolling authority[] has established that the ‘configured to’ claim language should be construed to require that the claimed structures are specifically ‘meant to’ or ‘designed to’ perform the claimed function, ‘not simply that they are capable of doing so.’” PO Resp. 25–26 (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)); PO Sur-Reply 6–8.

Petitioner argues Patent Owner “ignores more recent case law clarifying when such intended use carries patentable weight,” and that “[c]laims 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, Inc. v. Qualcomm, Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018)). Petitioner also argues “[w]here functional language, such as ‘configured to,’ is interpreted to mean ‘made to or designed to,’ the written description has to make clear the term, [as] used in the patent[,], ‘has a narrower meaning.’” Pet. Reply 7 (citing *Giannelli*, 739 F.3d at 1379). Petitioner further argues “the Federal Circuit has recently rejected a construction of ‘configured to’ as meaning ‘designed to.’” *Id.* at 7 (citing *Nevro Corp. v. Boston Scientific Corp.*, 955 F.3d 35, 40–42 (Fed. Cir. 2020)).

Patent Owner responds “Petitioner[] mischaracterize[s] [*ParkerVision*] as supporting a broad construction for the ‘configured to ...’ claim element. But [*ParkerVision*] recognized that the case law distinguished ‘between claims with language that recites capability, and those that recite configuration.’” PO Sur-Reply 7 (citing *ParkerVision*, 903 F.3d at 1361). Patent Owner also responds, “[i]n [*ParkerVision*], the claims at issue did **not** use the language ‘configured to’ and instead merely recited the capabilities of a ‘switch module.’” PO Sur-Reply 7 (citing *ParkerVision*, 903 F.3d at 1358). Patent Owner further responds, “[w]hile [*Nevro*] did reject a construction of ‘configured to’ as meaning ‘designed to,’ it did so to adopt an even *narrower* claim construction,” namely, “‘programmed to generate’” in the context of the claim limitation of “a signal generator *configured to* generate a therapy signal.” PO Sur-Reply 7 (citing *Nevro*, 955 F.3d at 40–41). Patent Owner argues “not only did the signal generator need to be designed to perform its function, the

Nevro Court specified which aspects of the signal generator—its programming and parameter settings—were required to be configured to meet the claimed function.” PO Sur-Reply 7–8.

As recently 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 supports 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). Petitioner does not adequately explain how “configured to” can be construed as requiring a mere capability under this precedent. Although Petitioner contends the court in *Nevro* “rejected a construction of ‘configured to’ as meaning ‘designed to’” (Pet. 7), Petitioner does not adequately explain how the court’s construction of “configured to” to instead mean “programmed to generate” in that case supports construing the phrase to require a mere capability in this case.

Based on the foregoing, and our review of the cases cited in the parties' briefs, we agree with Patent Owner that the most natural reading of "configured to" in the claim 1 limitation of "an extension portion . . . configured to extend through the sheathing" requires additional structure configured or designed to accomplish the claimed function. 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 (PO Resp. 24 ("[T]he claimed structure does not itself include the sheathing or drywall recited in the claims."))).

(b) "*Extend Through*"

Claim 1 recites that the "extension portion" is "configured to *extend through* the sheathing [mounted on a wall]." Ex. 1001, 12:10–36 (emphasis added). Prior to our Institution Decision, neither party proffered a construction for the phrase "extend through." Post-institution, Patent Owner contends "'extend through' (*i.e.*, element A 'extend[ing] through' element B) should be construed to mean that element A extends into one side and out the other side of element B." PO Resp. 22 (citing Ex. 2044 ¶ 22). Patent Owner argues "[t]his definition represents the plain and ordinary meaning of 'through' as would be understood by [the skilled artisan]," and also cites to a dictionary definition of "through" that defines the term as "'moving in one side and out of the other side of (an opening, channel, or location).'" Pet. Resp. 22–23 (citing Ex. 2044 ¶¶ 23–24; quoting Ex. 2049, p. 2 (p. 1758 of dictionary)). Patent Owner also argues "[s]uch a

construction is supported by the specification of the '510 patent,” and cites, for example, to Figure 11, which “illustrat[es] the truss hanger extending through the fire retardant sheathing” (Ex. 1001, 3:3–4, Fig. 11). PO Resp. 23. Petitioner does not offer a competing construction for the phrase “extend through,” or otherwise dispute Patent Owner’s proposed construction. We find Patent Owner’s proposed construction reasonable.

Based on the foregoing, we construe “extend through,” in the context of element A “extend[ing] through” element B, to mean “element A extends into one side and out the other side of element B.”

(c) *Structural Attributes of an “Extension Portion” Allowing It to Extend Through Sheathing*

We determine above that the phrase “configured to extend through the sheathing” further limits the “extension portion” by requiring the extension portion to have structural attributes for extending through “the sheathing,” or more particularly, for extending into one side of “the sheathing” and out the other side of “the sheathing.” Next, we determine what additional *structural* attributes are required to do so.

Patent Owner contends “an extension portion . . . configured to extend through the sheathing” means “an extension portion that is designed to extend through a fire barrier *while being in close conformance with the exposed edges of the opening in the fire barrier when installed.*” PO Resp. 29 (emphasis added). Patent Owner also contends this phrase means “an extension portion designed to extend through a fire barrier *by being shaped and arranged on the hanger so that the extension portion is in close conformance with the exposed edges of the opening in the fire barrier when*

installed, thereby blocking flames and smoke from passing into the opening and through the fire barrier.” PO Sur-Reply 11 (emphasis added). Patent Owner alleges support for these proposed constructions based on statements in the Specification (which are not recited in claim 1) and alleged best practices for installing the claimed hanger to minimize firewall gaps (which also are not recited in claim 1). *See, e.g.*, PO Resp. 26 (“The title of the patent is ‘Hanger for a Fire Separation Wall.’” (citing Ex. 1001, code (54)), 27 (“Being aware of the building code requirements for these analogous projections, [the skilled artisan] would have been strongly biased against creating gaps in the fire barrier to accommodate a hanger.” (citing Ex. 2016, 27–29 (2012 International Building Code))), 28 (“[T]he installation of the hanger must ‘minimally disrupt . . . the continuity of the sheathing [such that it] does not reduce the fire resistive rating of a fire rated assembly.” (citing, in part, Ex. 1001, 11:25–28))), 29 (“[T]he extension portions minimize the discontinuity in the fire barrier by being shaped and arranged to follow along the exposed edges of the opening in the fire barrier such that only a very small gap in the fire barrier is exposed next to the hanger.”); *see generally* PO Resp. 8, 22–48; PO Sur-Reply 6–18.

Petitioner characterizes Patent Owner’s proposed constructions of “an extension portion . . . configured to extend through the sheathing” as “convoluted construction[s] [that] eschew[] long-standing tenets of claim construction and attempt[] to improperly import multiple limitations far beyond the plain and ordinary meaning of this term.” Pet. Reply 5. Petitioner argues Patent Owner’s proposed constructions “ask[] the Board to import new limitations into the claims, such as ‘close conformance’ and

‘open edges,’ that are not recited in the claims, not described in the specification, and not definable even by [Patent Owner’s] own expert.” Pet. Reply 5–6. Petitioner argues Patent Owner contends “its hanger is specifically designed for and intended to be used only with fire barriers and that this intended use should be read into the claims,” but “fails to provide any evidence of why a hanger structurally configured to extend through sheathing and/or drywall would not be configured to extend through fire-rated drywall.” Pet. Reply 6. Petitioner argues “[n]ot only are types of fire retardant sheathing other than gypsum board explicitly ‘within the scope of the present invention,’ but ‘[o]ther wall configurations, *including different wall constructions and materials*, are within the scope of the present invention.” Pet. Reply 8 (citing Ex. 1001, 4:15–24 (“[T]he truss hangers 26 can be used with *any wall assembly or* fire-rated wall assembly.” (emphases added))). Petitioner also argues “[e]ven if the Board interprets the term ‘configured to’ to mean ‘adapted to,’ ‘constructed to,’ or ‘designed to,’ the Board should interpret the term as designed to create sufficient *spacing*, not designed to achieve some intended use applying only to fire-rated barriers.” Pet. Reply 9. We are persuaded by Petitioner’s argument.

The Federal Circuit “explained long ago that ‘[a]pparatus claims cover what a device is, not what a device does.’” *ParkerVision*, 903 F.3d at 1361 (quoting *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990)). Claim 1 is an apparatus claim directed to “[a] hanger”—just the hanger—and there is no evidence of record that the *structure* of that hanger includes a “structural component” (like a joist), a “wall,” or “sheathing” (like gypsum board), mounted on a wall. See PO

Resp. 24 (Patent Owner agreeing that “the claimed structure does not itself include the sheathing or drywall recited in the claims.”); RMTA Reply 7 (“[T]he claims describe a hanger prior to installation.”). Claim 1 also explicitly recites use with “sheathing” generally, not “fire resistant sheathing” like claim 13, not “drywall” like claim 20, and not a “fire barrier” as in Patent Owner’s proposed construction of the subject limitation.² Similarly, claim 1 recites no limitation on the size, shape, or conformance of any sheathing cutout necessary for a hanger’s extension portion to “extend through the sheathing.” In other words, claim 1 recites a hanger with an extension portion 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 ’510 patent. As such, we find the claimed hanger’s extension portion necessarily exists structurally independent of whether an installer later decides to install one or more layers of sheathing around the hanger, let alone install a fire barrier as some or all of the sheathing, and independent of how the installer later chooses to conform such sheathing around the hanger. We find the foregoing weighs against Patent Owner’s proposed construction.

Patent Owner acknowledges that we must determine what additional *structural* or *physical* attributes are required of the “extension portion” for the extension portion to extend through the sheathing. *See* PO Resp. 35 (“‘[C]onfigured to’ . . . require[es] *structure* designed specifically to

² Patent Owner does not explain why or how the type of sheathing affects the *structure* of the claimed extension portion.

accomplish the specified objective.”); PO Sur-Reply 7 (The extension portion “pertain[s] to a *structure* that must be *physically* ‘configured to’ extend through a fire barrier.”). But, Patent Owner never identifies or explains what additional structural or physical attributes are required to do so. Instead, Patent Owner liberally rewrites the function that the extension portion is configured to perform from what’s explicitly recited in the claim, “extend through *the sheathing*,” to “extend through *a fire barrier while being in close conformance with the exposed edges of the opening in the fire barrier when installed*.” PO Resp. 29 (emphasis added). Having done so, Patent Owner still does not identify or explain what additional structural or physical attributes of the extension portion are required to do so. We find the foregoing also weighs against Patent Owner’s proposed construction. Moreover, we find no basis in the record before us for rewriting claim 1 to unnecessarily import limitations from the Specification or from alleged best practices for installing hangers to minimize firewall gaps into the recited function of the extension portion. *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))). Accordingly, we do not adopt Patent Owner’s proffered claim construction for “configured to extend through the sheathing.”

We turn to Petitioner’s proposed construction for the subject limitation, namely, “designed to create sufficient *spacing*.” Pet. Reply 9. We note Patent Owner agrees that the extension portion does provide for

“spacing.” *See* PO Resp. 8 (“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)). Petitioner neither explains its proposed construction nor identifies or explains what additional structural or physical attributes of the extension portion are required to “create sufficient spacing.”

Nevertheless, we find the prosecution history of the ’510 patent and its family most instructive here. In related U.S. Patent No. 10,184,242 B2, the hanger’s “extension portion” is characterized and claimed as “extending from the channel-shaped portion *to the connection portion and interconnecting the channel-shaped portion and the connection portion*, the extension portion separating 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.*” Ex. 1014, 11:57–63 (emphases added). In related U.S. Patent No. 10,024,049 B2, the hanger’s “extension portion” is characterized and claimed as “extending from the channel-shaped portion and *configured to extend through the sheathing to engage the wall at a first location.*” Ex. 1006, 11:32–37 (emphases added). In prosecution of the ’510 patent, Patent Owner amended the “extension portion” limitation of “extending from the channel-shaped portion and configured to extend through the sheathing *to engage the wall at a first location,*” by deleting “to engage the wall at a first location” and adding the limitation of the “extension portion spacing” of more than two but less than three layers of 5/8" sheathing. Ex. 1002, 41.

Based on the foregoing, we find that “configured to extend through the sheathing,” or more particularly, “configured to extend into one side of the sheathing and out the other side of the sheathing” requires the “extension portion” to have structural attributes that extend towards the “connection portion” and define a space to receive sheathing. *Cf.* PO Resp. 53 (“[A]n extension portion . . . spaces the channel-shaped portion from the connection portion by a distance dimensioned to receive and fit the sheathing.”). We find this construction supported by the Specification. *See* Ex. 1001, 1:64–67 (“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)), Abstract (“An extension portion extends from the channel-shaped portion and is configured to extend through the sheathing *to engage the wall at a first location.*” (emphasis added)), Figs. 1, 2, 10A. Accordingly, we construe “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.”³ Unlike the parties’ proposed constructions, we find this construction stays true to

³ Petitioner did not contend that the limitation “an extension portion . . . configured to extend through the sheathing” is indefinite under 35 U.S.C. § 112. Yet both parties appear to struggle to give any meaning to this phrase under governing claim construction principles.

defining apparatus claim 1 for “what [the hanger] *is*,” not “what [the hanger] *does*.” *See ParkerVision*, 903 F.3d at 1361 (emphases added).

(2) *Disclosure of Gilb ’155*

Patent Owner argues “gusset-like member (9/9’) of Gilb ’155 fails to disclose ‘an extension portion . . . configured to extend through the [fire barrier]’ limitation for two reasons: (1) the gusset-like member would not extend into one side and out the other side of the fire barrier, and (2) the gusset-like member is not designed to extend through the fire barrier in close conformance with an edge of the opening in the fire barrier.” PO Resp. 32; *see* PO Resp. 31–47; PO Sur-Reply 12–18. Patent Owner’s arguments here are based on its proposed construction for “an extension portion . . . configured to extend through the sheathing,” which as discussed above, we do not adopt. Under the construction of this limitation that we do adopt (*see supra*), we are unpersuaded by Patent Owner’s arguments directed to this limitation, as discussed below.

Gilb ’155 discloses “an extension portion extending from the channel-shaped portion” as explained above, and also discloses “an extension portion extending . . . towards the connection portion and defining a space to receive sheathing.” As shown in Figure 2 (reproduced above), for example, an extension portion (gusset-like member 9, 9’) extends from the channel-shaped portion (U-shaped seat member 61 and connection means 16) towards the connection portion (supporting member 2, 2’, which attaches to supporting structure 3) and defines a space to receive sheathing (the space defined between the channel-shaped portion (U-shaped seat member 61 and connection means 16) and the connection portion (supporting member 2, 2’).

See Ex. 1010, 3:51–54, 5:30–35, Fig 2. In its Petition, Petitioner provides an isometric rendering of Gilb ’155’s hanger showing where and how its extension portion extends towards supporting member 2, 2’ and defines a space to receive or accommodate sheathing. See Pet. 72, 78–79; Ex. 1003 ¶¶ 175–177. Patent Owner also effectively agrees Gilb ’155 defines a space to receive sheathing (*see, e.g.*, PO Resp. 35 (“[I]f a fire barrier was installed around the Gilb ’155 hanger, the cutout in the fire barrier would need to account for the width of the tabs.”)), and proffers annotated figures from Gilb ’155 showing a space to receive sheathing (*see, e.g.*, PO Resp. 38).

During prosecution in the ’510 patent family, in the first Office Action in the family, the Examiner found the limitation of “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing” to be anticipated (explicitly disclosed) by Gilb ’155. Specifically, the Examiner found: “Gilb [’155] provides in figure 2 *a hanger for connecting a structural component to a wall adapted to have sheathing mounted thereon*, the hanger comprising: . . . an extension (34) portion extending from the channel-shaped portion and *configured to extend through the sheathing* to engage the wall at a first location (at 11).” Ex. 1019, 114 (emphases added). In response, Patent Owner *amended* this limitation to further recite “the extension portion including extension flanges extending from the channel-shaped portion, each of the extension flanges being configured to extend through the sheathing,” and “wherein the extension flanges define planar surfaces in opposed face-to-face relation and directly engaging each other along a juncture between the connection portion and the

channel-shaped portion.” Ex. 1019, 102. Rather than dispute the Examiner’s above finding, Patent Owner argued:

Gilb [’155] fails to show or suggest the hanger as set forth in claim 1 for at least the reason that it does not describe an extension portion including the extension flanges define planar surfaces in opposed face-to-face relation and directly engaging each other along a juncture between the connection portion and the channel-shaped portion. *Gusset-like projections 11 and 34 of gusset-like member 9 of Gilb are spaced apart and do not define planar surfaces that engage each other in this manner. Therefore, Gilb does not provide the low-profile extension portion of Applicant's invention. It is believed a very wide opening would be required to have the gusset like member 9 extend through a wall board.*

Ex. 1019, 108 (emphasis added). In view of this amendment, the Examiner withdrew the anticipation rejection based on Gilb ’155, but proceeded to reject the claims on other grounds. Ex. 1019, 87–95. Interestingly, neither Petitioner nor Patent Owner directed the panel to the Examiner’s citation and application of Gilb ’155 during prosecution of the ’510 patent family.⁴

Based on the foregoing evidence, we find Gilb ’155 discloses “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing,” as recited in claim 1.

⁴ See 37 C.F.R. § 42.11(a)(“Parties and individuals involved in the proceeding have a duty of candor and good faith to the Office during the course of a proceeding.”).

- d) *“a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall, the connection portion further including a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion, the back flange having a front surface lying in a back flange plane,”*

Gilb '155 discloses a hanger as shown in Figure 2, reproduced above, including a connection portion (supporting member 2, 2') having a top flange (top flange 57) configured for attachment to a top surface (supporting structure 3) of a top plate of a wall. Ex. 1010, 7:35–49, 8:20–32, Fig. 2; *see* Pet. 79–81 (citing Ex. 1003 ¶¶ 178–179). Gilb '155 discloses the connection portion (supporting member 2, 2') includes a back flange (face element 4, 4') extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion (plane of U-shaped seat member 61). Ex. 1010, 5:29–35, 8:20–32, Fig. 2; *see* Pet. 81–82. Gilb '155 discloses the back flange having a front surface lying in a back flange plane. In particular, for example, Gilb '155's back flange (face element 4, 4') has a front surface facing toward the rest of the hanger, and Gilb '155 discloses that its back flange (face element 4, 4') is “positioned generally in a vertical plane.” Ex. 1010, 3:53–54, Fig. 2; *see* Pet. 82–83 (citing Ex. 1003 ¶ 180).

Patent Owner does not contend that the subject “connection portion” limitation is absent in Gilb '155. *See* PO Resp. 31–48. 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 '155 discloses “a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall, the connection

portion further including a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion, the back flange having a front surface lying in a back flange plane,” as recited in claim 1. Pet. 79–83 (citing Ex. 1003 ¶¶ 178–180).

- e) *“the extension portion spacing the side panels from the back flange plane by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane.”*

Claim 1 recites the extension portion “*spacing the side panels from the back flange plane by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane*” (emphases added) (hereinafter the “Spacing Dimension Limitation”). Petitioner contends “Gilb ’155 does not expressly disclose a *dimension* of the gap between the side panels 63/64 and face element 4/4’,” but “Bundy discloses an extension portion sized to accommodate two layers of 5/8" thick sheathing,” and “it would have been obvious to a [skilled artisan] to size Gilb ’155’s extension portion distance to allow two sheets of 5/8" sheathing to be received between the rear edge plane and the back flange plane, as taught by Bundy.” Pet. 84–85 (emphasis added). Patent Owner opposes Petitioner’s contentions. PO Resp. 39–47; PO Sur-Reply 17–18.

(1) *Spacing Dimension Limitation*

Bundy discloses sheathing (e.g., panels 6) installed between the back of a joist hanger and wall framing for mounting the hanger, as shown in Figure 1, reproduced above. Ex. 1007, 1:5–11, 3:55–67, Fig. 1. Bundy also 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).

Based on the foregoing evidence, Petitioner contends, and we find, Bundy discloses the Spacing Dimension Limitation, as recited in claim 1. Pet. 84–86 (citing Ex. 1003 ¶ 183).

(2) *Reason to Combine Gilb ’155 and Bundy*

Petitioner argues “Bundy discloses a hanger providing an extension portion that allows precisely two layers of 5/8" thick sheathing to be received between the rear edge plane and the wall,” and that “it would have been obvious for [the skilled artisan] to size Gilb ’155’s extension distance to receive two layers of 5/8" thick sheathing” to support “fire-rated [wall] construction.” Pet. 71. More specifically, Petitioner argues “[t]his would have been nothing more than a *simple substitution of one [known] element* (Bundy’s preferred sizing for the extension distance) *for another* (Gilb ’155’s indeterminate sizing for the extension distance) *to obtain predictable results.*” Pet. 71–72 (citing Ex. 1003 ¶ 167) (emphasis added); Pet. 83–86. Petitioner contends “the reference to two 5/8" layers of sheathing is not itself inventive,” as “[t]his dimension of fire-rated construction has already been standardized in international and well-known

building code requirements, and in any event would have involved routine optimization to arrive at this value.” Pet. 86; *see* Ex. 1003 ¶ 46 (“[A] wall composed of two layers of 5/8" sheathing is a well-known standard for fire-rated construction”).

Patent Owner argues in various forms that the skilled artisan would not have been motivated to combine Gilb ’155’s hanger with Bundy’s disclosure of the Spacing Dimension Limitation, because allegedly Gilb ’155 doesn’t explicitly disclose *use* of its hanger in conjunction with a fire barrier or firewall, and installing Gilb ’155’s hanger in a firewall scenario would result in gaps in the firewall that reduces its fire rating. *See, e.g.*, PO Resp. 40 (“As Gilb ’155 makes no reference to fire ratings or resistance[,] Gilb ’155 provides no suggestion that the disclosed infinite skew hanger would have any particular applicability for use with firewalls.”), 40–41 (“[U]sing the Gilb ’155 hanger in conjunction with a fire barrier as suggested in the Petition would leave a portion of the wood framing exposed and a portion of the wall cavity completely open, unprotected and uncovered,” and “[l]eaving a portion of the wood frame wall exposed negatively impacts, if not eliminates, the entire wall’s fire rating.”), 41 (“[The skilled artisan] would not even look to modify the hanger disclosed in Gilb ’155 to extend through a fire barrier because doing so would compromise the ability of the fire barrier to prevent the spread of a fire.”). We are not persuaded by Patent Owner’s argument. Again, Patent Owner’s argument is not commensurate in scope with the independent claims (under claim constructions we adopt above) and ignores the breadth of these claims—apparatus claim 1 is directed only to a hanger, not to a hanger in

combination with sheathing (or drywall, firewalls, or fire barriers), and not to a method of installing a hanger to minimize gaps in sheathing. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (limitations not appearing in the claims cannot be relied upon for patentability). Moreover, Patent Owner does not meaningfully address Petitioner’s obviousness contentions based on simple substitution of a dimension.

Contrary to Patent Owner’s framing of the obviousness argument at hand (*see, e.g.*, PO Resp. 39–47; PO Sur-Reply 17–18), Petitioner contends Gilb ’155 itself already discloses the extension portion structure but for explicitly disclosing the claimed Spacing Dimension Limitation (*see* Pet. 83 (“Gilb ’155 teaches the extension portion . . . spaces the side panels away from the back flange plane by a distance.”)), and argues the skilled artisan could have simply substituted *the dimension* of the extension portion disclosed in Bundy to obtain the predictable result of Gilb ’155’s extension portion providing space for two but not three sheets of 5/8" drywall for any purpose, including fire protection purposes. *See, e.g.*, Pet. 70–72.

As outlined in our Institution Decision (Dec. 29–30), we find that Petitioner shows persuasively and Patent Owner still does not persuasively controvert:

(1) Gilb ’155 discloses a *structure* of an “extension portion spacing . . . side panels from [a] back flange plane by [a] distance,” as recited in claim 1 (Ex. 1001, 12:30–36) (i.e., the prior art contains a hanger which differs from the *claimed* hanger by the substitution of one dimension of the hanger’s extension portion);

(2) firewall composition and thickness of two layers of 5/8" drywall as measured between side panels of a hanger's channel-shaped portion and wall framing for mounting the hanger are shown, for example, in Figures 1–3, 10, 11, and 18 of Bundy (Ex. 1007) (we note Patent Owner argues its similar patent drawings provide written description support for the ‘two but not three layers’ Spacing Dimension Limitation (*see* PO Resp. 93–96; PO Sur-Reply 25–26)) (*cf.* Prelim. Resp. 3–6 (“Section 706.6 of the 2012 International Building Code specifies that the fire resistant partitions must have vertical continuity extending from the foundation to the roof of the structure. . . . [F]or fire separation walls, the double layer of 5/8 inch thick Type-X Gypsum wallboard is installed”)) (i.e., the substituted dimension and the function of that dimension were known in the prior art); or

(3) the skilled artisan could have substituted the extension portion (firewall thickness) dimension from Bundy for the relevant dimension of Gilb ’155’s “extension portion” structure to predictably result in a spacing accommodating two but not three sheets of 5/8" drywall. *See KSR*, 550 U.S. at 416 (“The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.”); *see generally* PO Resp. 78–88.

(3) *Operable for Intended Purpose*

Patent Owner also argues “[Petitioner’s] proposed modification and application of the Gilb ’155 hanger in view of Bundy would have greatly *reduced* the ability of the hanger to operate according to its intended

purpose,” namely, for the channel-shaped portion to pivot or provide for “any amount of skew” relative to the connection portion. PO Resp. 41, 46 (emphasis added); *see* PO Resp. 41–47. Notably, Patent Owner does not argue that the modification (or more accurately in view of Petitioner’s argument, the substitution) would render Gilb ’155 *inoperable*, but rather, allegedly *less operable* relative to its intended purpose. *See* PO Resp. 43 (Placing sheathing within the space defined by the extension portion of Gilb ’155 “could *still allow for near perpendicular use* of the Gilb ’155 hanger.” (emphasis added)), 44 (“Sizing the gusset 9/9' of Gilb ’155 to allow more space than exactly two sheets of sheathing *would permit some pivoting of the hanger*, but the gusset swivel would still be limited to approximately 30°.” PO Resp. 44 (emphasis added). But Patent Owner argues “[the skilled artisan] would not choose to sacrifice the ability to reach 45° so that the Gilb ’155 hanger could extend through a fire barrier—which is not even a purpose of the Gilb ’155 hanger or a task for which the Gilb ’155 hanger is suitable for.” PO Resp. 47; PO Sur-Reply 17–18.

We are unpersuaded by Patent Owner’s argument that combining Gilb ’155 and Bundy would render Gilb ’155 *inoperable* for its intended purpose (PO Resp. 41–47). Specifically, we are not persuaded that the Gilb ’155 hanger would be rendered “*inoperable*” by making *the spacing* of its extension portion sized to accommodate two but not three sheets of 5/8" drywall. First and foremost, *claim 1 does not require sheathing*, so making the extension portion spacing in Gilb ’155 align with the dimension requirements of claim 1 likely would have little to no effect on the operation of its hanger. Second, even if sheathing were present, the Gilb ’155 hanger

still would be operable to attach a joist perpendicularly to a wall, as conceded by Patent Owner. *See* PO Resp. 43. Third, because the claimed extension portion spacing allows for more space than the thickness of exactly two sheets of 5/8" drywall, any additional space beyond the thickness of installed sheathing also would render the hanger operable to attach a joist to a wall at some angles other than 90 degrees, as conceded by Patent Owner. *See* PO Resp. 44. Fourth, because claim 1 does not limit the size of any sheathing cutout, recite any particular sheathing-to-hanger conformance requirements, or recite fire rating requirements, for example, sheathing may be adjusted (cut out) to allow pivoting of the Gilb '155 hanger. *See* PO Sur-Reply 17–18; Pet. Reply 16 (citing, in part, Ex. 1038, 179:5–180:5, 182:23–183:3); Ex. 1039 ¶¶ 36–37; *see also, e.g., Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (“Although modification of the movable blades may impede the quick change functionality disclosed by Caterpillar, ‘[a] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.’”).

In addition, to the extent that Patent Owner attempts to refute Petitioner’s obviousness showing based on allegedly different objectives or purposes of the hangers of Gilb '155, Bundy, and the '510 patent (*see, e.g.,* PO Resp. 16–18, 41–47), we are not persuaded. It is sufficient that the skilled artisan would have had a rational reason to combine Gilb '155 and Bundy to arrive at the invention of claim 1 (discussed above), even if the particular purpose of the invention of claim 1 is different from that of the references. *See In re Heck*, 699 F.2d 1331, 1333 (Fed. Cir. 1983) (citing

In re Gershon, 372 F.2d 535, 538–39 (CCPA 1967)); *In re Graf*, 343 F.2d 774, 777 (CCPA 1965) (“Obviousness is not to be determined on the basis of purpose alone.”).

(4) *Allan*

As explained above, based on the complete record before us, we are persuaded that the combination of Gilb ’155 and Bundy discloses all structural limitations in claim 1, and therefore, Petitioner’s reliance on Allan (Ex. 1012) to teach sheathing installed around an extension portion is unnecessary. Accordingly, we do not address Allan in this obviousness ground.

f) *Objective Evidence of Nonobviousness*

Patent Owner presents evidence that, in Patent Owner’s view, demonstrates the non-obviousness of the challenged claims. PO. Resp. 51–56; PO Sur-Reply 18.

First, Patent Owner submits (1) “it has been a common fire proofing tactic to use two layers of 5/8" thick drywall on firewalls dating back to at least 1993” (PO Resp. 52) (in its Preliminary Response, Patent Owner argues this dated back to “at least 2000” (Prelim. Resp. 104, 106)); and (2) Petitioner and Patent Owner allegedly “started with the same goal (*i.e.*, develop a hanger to accommodate drywall) but each contemporaneously came up with a different solution to achieve the goal,” and contends “[t]his situation . . . is probative of the non-obviousness of the two different solutions” (PO Resp. 54). However, the record before us does not adequately evidence this alleged “situation.” For example, (1) according to the Declaration of Petitioner’s declarant Sam Hensen (Ex. 2020), “[i]n 2013,

building codes changed, allowing for wood structures to be built taller and more dense, leading to increased demand for hangers that would allow larger wood-framed structures to meet the new fire-resistance regulations” (Ex. 2020 ¶ 9); (2) “[Petitioner] has been working on the development of fire wall hangers or drywall hangers since at least as early as around 2013 [not 1993 or 2000]” (Ex. 2020 ¶ 8); and (3) Patent Owner’s allegation that Petitioner and Patent Owner started with the “same goal” (i.e., “develop a hanger to accommodate drywall”) is vague and conflicts with testimony of Petitioner’s declarant, Mr. Hensen, who stated that, unlike Patent Owner’s goal, Petitioner’s initial goal was to “develop[] a new hanger that was installed *over* the typical two layers of 5/8 inch drywall *without damaging the drywall*” (Ex. 2020 ¶ 9 (emphasis added)). Based on the foregoing, and on the complete record before us, we are unpersuaded by Patent Owner’s argument, and find Patent Owner does not adequately evidence the above “situation.”

Second, Patent Owner submits that ““demand existed for the patented invention, and that others tried but failed to satisfy that demand.”” PO Resp. 55. According to Patent Owner, evidence of this consists of “[Petitioner’s] customers request[ing] a firewall hanger that could be installed *before* the drywall,” “[h]aving been presented with competing products ([Petitioner’s] DHUTF Hangers embodying the Bundy patent and [Patent Owner’s] FWH Hanger embodying the invention of the ’510 patent).” PO Resp. 54–55 (emphasis added).

“Longfelt need is closely related to the failure of others. Evidence is particularly probative of obviousness when it demonstrates both that a

demand existed for the patented invention, and that others tried but failed to satisfy that demand.” *Eurand, Inc. v. Mylan Pharms., Inc. (In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.)*, 676 F.3d 1063, 1082 (Fed. Cir. 2012). Establishing a longfelt need requires objective evidence that the invention has provided a long-awaited, widely accepted, and promptly adopted solution to a problem existent in the art, or that others had tried but failed to solve that problem. *See In re Mixon*, 470 F.2d 1374, 1377 (CCPA 1973). Furthermore, one must demonstrate that “widespread efforts of skilled workers having knowledge of the prior art had failed to find a solution to the problem.” *In re Allen*, 324 F.2d 993, 997 (CCPA 1963).

In this case, the testimony of Petitioner’s declarant, Mr. Hensen, evidences that Petitioner’s DHU Hangers, which install *over or after* drywall, “were successful in the market,” but “some [of Petitioner’s] customers requested a firewall hanger that could be installed *before* the drywall, [and] which would achieve a fire-resistance rating that was closer to the DHU Hanger.” Ex. 2020 ¶ 11 (emphases added). According to Mr. Hensen, due to that customer feedback received “after the DHU Hangers were developed and released, [Petitioner] worked on the design, development, and testing of the products [accused of infringing the ’510 patent in the Related Litigation].” Ex. 2020 ¶ 11; *see id.* ¶ 9. As such, any unmet need here realized by Petitioner went unresolved for a time far less than the time since 2000 as suggested by Patent Owner. *See* Ex. 2020 ¶¶ 9 (stating building codes changed in 2013), 8–13. Patent Owner does not cite evidence of the actual time needed by Petitioner to design the hangers

accused of infringement in the Related Litigation. *See* PO Resp. 54–55. Also, Petitioner’s declarant, Mr. Hensen, did not assert (nor has Patent Owner) that anyone in the industry tried repeatedly but failed to create a hanger as claimed in the ’510 patent.

Based on the foregoing, and on the complete record before us, we are unpersuaded by Patent Owner’s argument, and find Patent Owner does not adequately evidence widespread, failed efforts by others to solve any particular problem or that the asserted claims of the ’510 patent demonstrate a widely accepted solution to such a problem.

Third, Patent Owner argues “[Petitioner’s] use of [Patent Owner’s] FWH Hanger embodying the invention of the ’510 patent and the ’510 patent’s parent patent and applications as a guide in the design of their own hangers is the essence of copying and is further indicia of nonobviousness.” PO Resp. 56. According to Patent Owner, evidence of this “copying” consists of Petitioner’s knowledge of parent patent applications to the ’510 patent, and Petitioner’s admission to intending to “design around” (Ex. 2020 ¶ 17) patents issuing from such applications. *See* PO Resp. 55–56.

Although “copying of a claimed invention can be evidence of nonobviousness,” *Panduit Corp. v. Dennison Manufacturing*, 774 F.2d 1082, 1099 (Fed. Cir. 1985), “a showing of copying is only equivocal evidence of non-obviousness in the absence of more compelling objective indicia of other secondary considerations,” *Ecolochem, Inc. v. S. California Edison Co.*, 227 F.3d 1361, 1380 (Fed. Cir. 2000); *see In re GPAC*, 57 F.3d 1573, 1580 (Fed. Cir. 1995) (“[M]ore than the mere fact of copying by an

accused infringer is needed to make that action significant to a determination of the obviousness issue.”). In this case, Patent Owner itself admits “[Petitioner] *was careful to design around* the claims of the ’510 patent’s parent applications and patents.” Prelim. Resp. 107 (emphasis added). Further, the ’510 patent issued June 11, 2019 (Ex. 1001, code (45)), but Petitioner’s hangers accused of copying the claims in the ’510 patent were released to the market in June 2017—about two years *before* the patent. *See* Ex. 2020 ¶ 13. In addition, Patent Owner does not evidence that Petitioner’s accused hangers are *physically* the same (or even substantially the same) as any embodiment disclosed in the ’510 patent.

Based on the foregoing, and on the complete record before us, we are unpersuaded by Patent Owner’s argument, and find Patent Owner does not adequately evidence copying by Petitioner. *See Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 317 (Fed. Cir. 1985) ([Defendant’s] effort to develop their own solution was not shown to have been extensive, its product is not identical to the claimed invention, and it vigorously denied infringement. [Plaintiff’s] copying argument can, accordingly, be given little weight.” (We note Patent Owner here alleges “[Petitioner] has not vigorously denied infringement.” (PO Resp. 56))).

We have considered the secondary considerations of nonobviousness presented by Patent Owner and accorded them, along with all of the *Graham* factors, appropriate weight in reaching our determination below.

g) Conclusion

For the reasons expressed above, we conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb '155 and Bundy render claim 1 unpatentable as obvious.

4. Independent Claims 13 and 20

Petitioner contends that independent claims 13 and 20 would have been obvious over Gilb '155, Bundy, and Allan. Pet. 72–86, 98–99. Patent Owner argued claims 13 and 20 together with independent claim 1, discussed above. *See* PO Resp. 31–48.

The preamble of claim 13 recites “[a] hanger for connecting a structural component to a wall adapted to have fire resistant sheathing mounted thereon.” Ex. 1001, 13:12–14. Claim 13’s preamble differs from claim 1 by reciting “*fire resistant sheathing*” rather than “sheathing.” Regardless, we conclude that the preamble of claim 13 is not a limitation, for the same reasons expressed above for the preamble of claim 1. Compared to claim 1, although claim 13 recites a “channel-shaped portion including . . . side panels extending upward from the base,” it does not recite “side panels extending upward from the base *generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane.*” Compare Ex. 1001, 13:15–19, with Ex. 1001, 12:13–20. Also, claim 13 recites “the extension portion spacing the side panels from the *back flange*,” rather than “from the back flange *plane*,” as in claim 1; and recites that this spacing is sized to permit sheathing to be received “in a space bounded by the side panels and the back flange,” rather than to be received “between the rear edge *plane* [defined by rearward edges of the side panels] and the back

flange *plane*,” as in claim 1. *Compare* Ex. 1001, 13:28–34, *with* Ex. 1001, 12:30–36. In other words, claim 13 recites these limitations in a broader manner than claim 1. Petitioner contends, and we find, Gilb ’155 discloses these limitations for the same reasons as set forth above for claim 1.

Pet. 73–77 (citing Ex. 1003 ¶¶ 171–174).

The preamble of claim 20 recites “[a] hanger for connecting a structural component to a wall adapted to have drywall mounted thereon.” Ex. 1001, 14:21–23. Claim 20’s preamble differs from claim 1 by reciting “drywall” rather than “sheathing.” Regardless, we conclude that the preamble of claim 20 is not a limitation, for the same reasons expressed above for the preamble of claim 1. Compared to claim 1, claim 20 does not include the limitation “the channel-shaped portion including a base sized and shaped for receiving an end of the structural component thereon to support the structural component, and side panels extending upward from the base generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane.” *Compare* Ex. 1001, 14:25–39, *with* Ex. 1001, 12:13–36. Claim 20 also does not include the complete Spacing Dimension Limitation of claim 1, and instead recites only “spacing the channel-shaped portion from the back flange plane by a distance sized large enough *to permit the drywall to be received* between the channel-shaped portion and the back flange plane,” rather than “sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane,” as recited in claim 1. *Compare* Ex. 1001, 14:25–39, *with* Ex. 1001,

12:13–36. In other words, claim 20 recites these limitations in a broader manner than claim 1. Petitioner contends, and we find, Gilb ’155 discloses these limitations for the same reasons as set forth above for claim 1. Pet. 98–99 (citing Ex. 1003 ¶¶ 206–210).

We agree with Petitioner that independent claims 13 and 20 otherwise recite limitations commensurate in scope with independent claim 1. *See* Pet. 72–99. We find that Gilb ’155 and Bundy disclose the limitations that overlap with claim 1 for the same reasons given above for claim 1.

Accordingly, we conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render independent claims 13 and 20 unpatentable as obvious.

5. Dependent Claims 2–12 and 14–19

Petitioner contends that dependent claims 2–12 and 14–19 would have been obvious over Gilb ’155, Bundy, and Allan. Pet. 86–98. Patent Owner opposes Petitioner’s contentions as to dependent claims 4, 12, and 19. PO Resp. 48–56. 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 dependent claims 2–11 and 14–18 are unpatentable as obvious over the combination of Gilb ’155, Bundy, and Allan, but has not demonstrated by a preponderance of evidence that dependent claims 12 and 19 are unpatentable as obvious over the combination of Gilb ’155, Bundy, and Allan.

a) Claims 2 and 14

Claims 2 and 14 further recite “a portion of [the rearward edge of] at least one of the side panels is in opposed, spaced apart relation with the back

flange.” Gilb ’155 discloses that upstanding leg elements 63 and 64 and first hanger side members 47 and 49 are facing and spaced apart from face element 4’. Ex. 1010, Fig. 2; *see* Ex. 1003 ¶ 189. Based on this evidence, Petitioner contends, and we find, that such description discloses “a portion of [the rearward edge of] at least one of the side panels is in opposed, spaced apart relation with the back flange,” as recited in claims 2 and 14. Pet. 86–88. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claims 2 and 14 unpatentable as obvious.

b) Claim 3

Claim 3 further recites “the channel-shaped portion is disposed with respect to the extension portion to mount the structural component at a non-orthogonal angle relative to the wall.” Gilb ’155 discloses that gusset-like member 9 (extension portion) may be skewed either right or left. Ex. 1010, 7:9–28, Fig. 8; *see* Ex. 1003 ¶ 191. Based on this evidence, Petitioner contends, and we find, that such description discloses “the channel-shaped portion is disposed with respect to the extension portion to mount the structural component at a non-orthogonal angle relative to the wall,” as recited in claim 3. Pet. 88–89. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claim 3 unpatentable as obvious.

c) Claim 4

Claim 4 further recites “the extension portion includes extension flanges extending from the channel-shaped portion, each of the extension flanges being configured to extend through the sheathing.” Gilb ’155

discloses that an extension portion (gusset-like member 9) includes extension flanges (gusset-like projections 34) extending from a channel-shaped portion. Ex. 1010, Fig. 8; *see* Ex. 1003 ¶¶ 192–193. Based on this evidence, Petitioner contends, and we find, that such description discloses “the extension portion includes extension flanges extending from the channel-shaped portion, each of the extension flanges being configured to extend through the sheathing,” as recited in claim 4. Pet. 89–90. Although Patent Owner argues Gilb ’155 does not disclose extension flanges configured to extend through sheathing, we are not persuaded by this argument for the same reasons expressed above regarding the claim 1 limitation of “an extension portion extending from the channel-shaped portion and configured to extend through the sheathing.” *See* Section II.G.3.c, *supra*. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claim 4 unpatentable as obvious.

d) Claims 5 and 18

Claims 5 and 18 further recite “[the extension portion includes extension flanges extending away from the channel-shaped portion,] the extension flanges are configured to engage each other along a juncture positioned within the [fire resistant] sheathing.” Gilb ’155 discloses that an extension portion (gusset-like member 9) includes extension flanges (gusset-like projections 34) extending away from a channel-shaped portion and are configured to engage each other along a juncture positioned between the channel-shaped portion and a connecting portion, specifically around and behind pivot means 18. Ex. 1010, Fig. 8; *see* Ex. 1003 ¶ 194. Based on this

evidence, Petitioner contends, and we find, that such description discloses “[the extension portion includes extension flanges extending away from the channel-shaped portion,] the extension flanges are configured to engage each other along a juncture positioned within the [fire resistant] sheathing,” as recited in claims 5 and 18. Pet. 90–91. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claims 5 and 18 unpatentable as obvious.

e) Claim 6

Claim 6 further recites “the extension flanges are parallel to one another.” Gilb ’155 discloses that extension flanges 34 are parallel to one another. Ex. 1010, Fig. 8; *see* Ex. 1003 ¶ 195. Based on this evidence, Petitioner contends, and we find, that such description discloses “the extension flanges are parallel to one another,” as recited in claim 6. Pet. 91. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claim 6 unpatentable as obvious.

f) Claim 7

Claim 7 further recites “the extension flanges are connected to the channel-shaped portion at an end of the channel-shaped portion opposite an end where the base is disposed.” Gilb ’155 discloses that extension flanges connect to an end of a channel-shaped portion opposite its base. Ex. 1010, Fig. 2; *see* Ex. 1003 ¶ 196. Based on this evidence, Petitioner contends, and we find, that such description discloses “the extension flanges are connected to the channel-shaped portion at an end of the channel-shaped portion

opposite an end where the base is disposed,” as recited in claim 7. Pet. 91–92. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claim 7 unpatentable as obvious.

g) Claim 8

Claim 8 further recites “the top flange comprises a first connector tab and a second connector tab, the first and second connector tabs being spaced apart from each other.” Gilb ’155 discloses that top flange 57 comprises a first connector tab (left side of 21’) and a second connector tab (right side of 21’), the first and second connector tabs being spaced (portion 21’) apart from each other. Ex. 1010, Fig. 8; *see* Ex. 1003 ¶ 197. Based on this evidence, Petitioner contends, and we find, that such description discloses “the top flange comprises a first connector tab and a second connector tab, the first and second connector tabs being spaced apart from each other,” as recited in claim 8. Pet. 92–93. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claim 8 unpatentable as obvious.

h) Claims 9 and 15

Claims 9 and 15 further recite “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 two layers of 5/8 inch thick sheathing to be received between the end of the structural component and the back flange [plane].” Gilb ’155 discloses a stop (e.g., the rear face portion element 77, 80) configured to engage end 78 of supported structure 17 to space the end of structure 17 from the back

flange plane (e.g., face element 4'), where the stop spaces end 78 of structure 17 substantially the same distance from the back flange plane as the side panels in claim 1 (namely, the thickness dimension of two but not three layers of 5/8" sheathing). Ex. 1010, 5:54–60, Fig. 8; *see* Ex. 1003 ¶¶ 198–200. Based on this evidence, Petitioner contends, and we find, that such description discloses “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 two layers of 5/8 inch thick sheathing to be received between the end of the structural component and the back flange [plane],” as recited in claims 9 and 15. Pet. 93–94. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb '155 and Bundy render dependent claims 9 and 15 unpatentable as obvious.

i) Claims 10 and 16

Claims 10 and 16 further recite “the stop comprises back panels extending toward each other.” Gilb '155 discloses the stop with face portion element 77 extending toward face portion element 80. Ex. 1010, Fig. 8; *see* Ex. 1003 ¶ 201. Based on this evidence, Petitioner contends, and we find, that such description discloses “the stop comprises back panels extending toward each other,” as recited in claim 8. Pet. 94–95. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb '155 and Bundy render dependent claims 10 and 16 unpatentable as obvious.

j) Claims 11 and 17

Claims 11 and 17 further recite “the back panels include a first back panel and a second back panel, the first back panel extending from a first of the side panels toward the second back panel and the second back panel extending from a second of the side panels toward the first back panel.” Gilb ’155 discloses the stop with face portion element 77 (first back panel) extending from a first side panel (upstanding leg elements 63 and lower leg 47) toward face portion element 80 (second back panel) extending from a second side panel (upstanding leg elements 64 and lower leg 49) toward the first back panel. Ex. 1010, 5:54–60, Fig. 8; *see* Ex. 1003 ¶ 202. Based on this evidence, Petitioner contends, and we find, that such description discloses “the back panels include a first back panel and a second back panel, the first back panel extending from a first of the side panels toward the second back panel and the second back panel extending from a second of the side panels toward the first back panel,” as recited in claims 11 and 17. Pet. 96. We conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb ’155 and Bundy render dependent claims 11 and 17 unpatentable as obvious.

k) Claims 12 and 19

Claims 12 and 19 further recite “the channel-shaped portion, the extension portion, [and] the connection portion[, and the stop] are *formed as one piece* [of sheet metal]” (emphasis added).

In our Institution Decision, for purposes of institution, we construed “formed as one piece” to mean “formed as a single, unitary piece of material.” Dec. 40–43. Patent Owner agrees with the Board’s construction.

See PO Resp. 30–31 (“Patent Owner agrees that ‘one piece’ ordinarily means ‘a single, unitary piece’ and that this definition is consistent with the teachings of the specification.” (citing Ex. 1001, Figs. 15, 40, 7:10–17, 10:17–26; Ex. 2044 ¶ 45)). To clarify, by “formed as a single, unitary piece of material” we mean “shaped or molded as a single, unitary piece of material,” as discussed below.

We determine the appropriate construction by initially looking to the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1364 (Claim limitations must be read “in light of the specification as it would be interpreted by one of ordinary skill in the art.”). The ’510 patent describes “formed as one piece” in the context of Figures 15 and 40, reproduced below.

FIG. 15

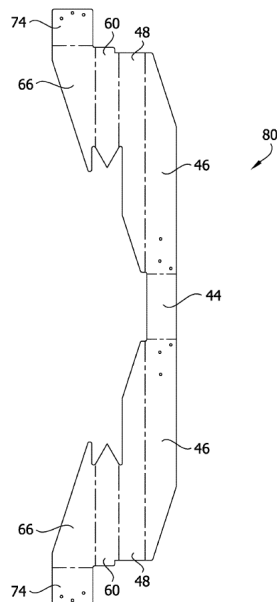
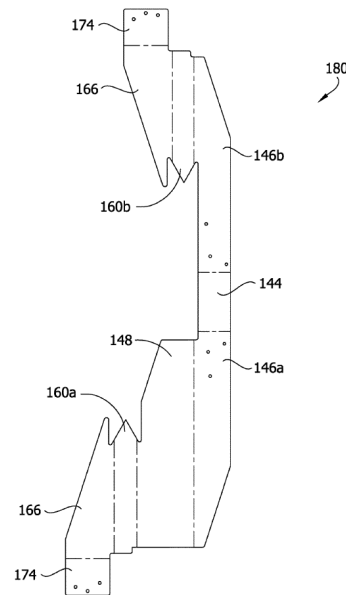


FIG. 40



Figures 15 and 40 are views of stamped metal blanks for forming truss hangers “according to the present invention” of the ’510 patent.

Ex. 1001, Figs. 15, 40, 3:15–16, 3:51–52. According to the ’510 patent, as shown in Figure 15 above, “a truss hanger 26 . . . can be *formed as one piece from a metal blank 80 that is stamped from a sheet metal roll and bent into shape*,” and in an exemplary embodiment, “the truss hanger 26 is stamped from 12–14 gauge steel, although other suitable materials are within the scope of the present invention.” *Id.* at 7:10–17 (emphasis added), Fig. 15; *see id.* at 10:17–26 (“As seen in FIG. 40, a truss hanger 126 . . . can be *formed as one piece from a metal blank 180 that is stamped from a sheet metal roll and bent into shape*. . . . In one embodiment, the truss hanger 126 is stamped from 12–14 gauge steel.” (emphasis added)). The ’510 patent also describes benefits of being “formed as one piece,” stating: “The truss hanger 26, 126 can be *formed from a metal blank 80, 180*, which *reduces the number of parts required* to hang the floor truss 12 and simplifies the manufacturing process.” *Id.* at 11:37–40 (emphasis added).

We find the Specification of the ’510 patent describes the phrase “formed as one piece” in a manner consistent with the ordinary and customary meaning of that phrase, where “formed” ordinarily means “shaped or molded” and “one piece” ordinarily means just that, “a single, unitary piece.” We find the term “formed” is used in the Specification in a manner that distinguishes it from other related terms like “built,” “constructed,” or “assembled.” For example, we are unpersuaded that a bolt and a nut are “formed as one piece” upon threading the nut onto the bolt, or even upon welding the nut onto the bolt (even though this welded bolt and nut may be “assembled” into a single, unitary piece). Accordingly, we reaffirm and construe “formed as one piece” to mean “shaped or molded as a

single, unitary piece of material.” Because this issue of claim scope is sufficient to resolve the unpatentability issues raised in connection with claims 12 and 19, we need not further construe this phrase for purposes of this Decision. *See Nidec*, 868 F.3d at 1017.

Petitioner argues “‘formed as one piece’ is different from ‘formed from one piece,’ a distinction that appears to be unappreciated by the Board.” Pet. Reply 3. Petitioner argues “Patent Owner has taken the position that the term ‘one piece’ includes components that were originally separate but later joined together,” based on Patent Owner’s product infringement contentions in the Related Litigation. Pet. 13 (citing Ex. 1031, 11), 97; *see* Pet. Reply 3. Petitioner further argues “Patent Owner asserts that the term ‘formed as one piece’ applies to hangers whose welds are clearly visible.” Pet. 13; *see* Pet. Reply 3. Petitioner also argues, and finds great value in, “[b]oth experts . . . agree that the proper construction of the term ‘formed as one piece’ means that all of the parts are in a fixed position when installed.” Pet. Reply 3 (citing Ex. 1039 ¶¶ 6–8). We have considered Petitioner’s arguments, but are not persuaded by them in view of the intrinsic evidence discussed above.

Petitioner argues Gilb ’155 discloses a channel-shaped portion, an extension portion, and/or a connection portion, and/or a stop are formed as one piece (Claim 12), and even formed as one piece of sheet metal (Claim 19). *See* Pet. 96–98 (“[O]nce Gilb ’155’s pin is put in place, the extension portion (gusset-like member 9/9’) also ‘cannot be separated from’ the connection portion (supporting member 2).”); Pet. Reply 18–19. We find this argument unpersuasive. Here, Petitioner does not show

sufficiently how Gilb '155, or the combination of Gilb '155, Bundy, and Allan, teaches a channel-shaped portion, an extension portion, and/or a connection portion, and/or a stop shaped or molded as a single, unitary piece of material. *See, e.g.*, Ex. 1010, Fig. 2.

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of evidence that the combined teachings of Gilb '155 and Bundy render dependent claims 12 and 19 unpatentable as obvious.

6. *Summary*

For the reasons expressed above, we conclude that Petitioner has demonstrated by a preponderance of evidence that the combined teachings of Gilb '155 and Bundy render claims 1–11, 13–18, and 20 unpatentable as obvious. We also conclude that Petitioner has not demonstrated by a preponderance of evidence that claims 12 and 19 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan.

H. Obviousness of Claims 12 and 19 Over the Combination of Gilb '155, Bundy, Allan, and Gilb '942

Petitioner contends claims 12 and 19 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gilb '155 (Ex. 1010), Bundy (Ex. 1007), Allan (Ex. 1012), and Gilb '942 (Ex. 1032). Pet. 99–102; *see* Pet. Reply 18–19. Patent Owner opposes Petitioner's contentions. PO Resp. 30–31, 50–51, 56; PO Sur-Reply 19. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that claims 12 and 19 are unpatentable as obvious over the combination of Gilb '155, Bundy, Allan, and Gilb '942.

Petitioner argues Gilb '942 teaches welding originally separate hanger components together into one piece, which, according to Petitioner, teaches a hanger “formed as one piece.” Pet. 99–102. Patent Owner argues Petitioner’s contentions are based on a construction for “formed as one piece” not adopted by the Board. *See* PO Resp. 56 (referring to arguments at PO Resp. 50–51). Because we construe “formed as one piece” to mean “shaped or molded as a single, unitary piece of material” (*see supra*), we find Petitioner’s arguments here unpersuasive. Although Gilb '942 may teach welding separate components together to create a hanger, we are not persuaded Gilb '942 teaches a hanger shaped or molded as a single, unitary piece of material.

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of evidence that the combined teachings of Gilb '155, Bundy, Allan, and Gilb '942 render dependent claims 12 and 19 unpatentable as obvious.

I. Summary of Analysis of Original Claims 1–20

In our analysis above of original claims 1–20 of the '510 patent, we determined that Petitioner has demonstrated by a preponderance of evidence:

- (1) claims 1–19 are unpatentable under 35 U.S.C. § 112(a) for lack of written description;
- (2) claims 1–19 are unpatentable under 35 U.S.C. § 102 as anticipated by Brekke '370; and
- (3) claims 1–11, 13–18, and 20 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan.

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

(4) claim 20 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness;

(5) claims 12 and 19 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan; and

(6) claims 12 and 19 are unpatentable as obvious over the combination of Gilb '155, Bundy, Allan, and Gilb '942.

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 unpatentability arguments directed to original claims 1–20, and instead hereinafter turn to proposed substitute claims 21–40, 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 the 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 21–40, which correspond to original claims 1–20. RMTA 1, App. A, 1. In particular, Patent Owner requests that “[i]f after considering Patent Owner’s Response and Sur-Reply the Board finds *any* of issued claims 1–20 unpatentable, Patent Owner respectfully requests that the Board *replace* claims 1–20 with respective proposed substitute claims 21–40.” RMTA 1 (emphases added).

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 21–40 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 21 would replace independent claim 1, and is reproduced below with underlining indicating text added to claim 1.

21. 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 sized and shaped for receiving an end of the structural component thereon to support the structural component, and side panels extending upward from the base generally perpendicular to the base, the side panels having rearward edges lying in a rear edge plane;

an extension portion extending from the channel-shaped portion and configured to extend through the sheathing; and

a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall, the connection portion further including a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion, the back flange having a front surface lying in a back flange plane, the extension portion spacing the side panels from the back flange plane by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane;

wherein the extension portion includes an extension flange extending from the back flange of the connection portion to the channel-shaped portion;

wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another.

RMTA, App. A, 3–4.

Proposed substitute independent claim 33 would replace independent claim 13, and is reproduced below with underlining indicating text added to claim 13.

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

a channel-shaped portion configured to receive the structural component, the

channel-shaped portion including a base sized and shaped for receiving an end portion of the structural component thereon and side panels extending upward from the base;

an extension portion extending from the channel-shaped portion and configured to extend through the fire resistant sheathing; and

a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall, the connection portion further including a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion, the extension portion spacing the side panels from the back flange by a distance sized large enough to permit two layers of $\frac{5}{8}$ inch thick sheathing to be received in a space bounded by the side panels and the back flange, but too small to permit three layers of $\frac{5}{8}$ inch thick sheathing to be received in the space bounded by the side panels and the back flange;

wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another.

RMTA, App. A, 6–7.

Proposed substitute independent claim 40 would replace independent claim 20, and is reproduced below with underlining indicating text added to claim 20.

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

a channel-shaped portion configured to receive the structural component;

an extension portion extending from the channel-shaped portion and configured to extend through the drywall; and

a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall and a back flange extending from an edge of the top flange, the back flange having a front surface lying in a back flange plane, the extension portion spacing the channel-shaped portion from the back flange plane by a distance sized large enough to permit the drywall to be received between the channel-shaped portion and the back flange plane;

wherein the extension portion includes an extension flange extending from the back flange of the connection portion to the channel-shaped portion.

RMTA, App. A, 9.

According to Patent Owner, “no substitute claim enlarges the scope of the claim that is [sic: it] replaces in any respect,” because “the amendments only add elements to the issued claims of the ’510 patent that narrow their scope” and “do not delete any elements.” 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 1–20 of the ’510 patent, and Patent Owner proposes claims 21–40, as potential substitutes for claims 1–20, respectively.

RM TA 1. Patent Owner thus proposes no more than 1 substitute claim for each challenged claim, and proposes to replace three independent claims and seventeen dependent claims with three independent claims and seventeen dependent claims. *See* RM TA, 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 21–40 are responsive to the grounds in this trial because they “address [Petitioner’s] 35 U.S.C. § 103 obviousness grounds (Grounds 4–10).” RM TA 15. Patent Owner contends the independent claims are “amended [with narrowing limitations] to further distinguish the claim[s] from the prior art cited in the Petition.” RM TA 16; *see* RM TA 22–23. We agree that proposed substitute claims 21–40 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 is [sic: it] replaces in any respect,” because “the amendments only add elements to the issued claims of the ’510 patent that narrow their scope” and “do not delete any elements.” RMTA 2; *see* RMTA, App. A. We agree that proposed substitute independent claims 21, 33, and 40 include additional limitations not recited in challenged claims 1, 13, and 20, respectively, and do not strike any original limitations. Proposed substitute claims 22–32 and 34–39 merely change the dependency of challenged claims 2–12 and 14–19 of the ’510 patent. RMTA, App. A. Thus, we agree with Patent Owner that proposed substitute claims 21–40 are of narrower scope than challenged claims 1–20, 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”)⁵ 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 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) (emphasis added).

a) Citations to Show Written Description Support

In its RMTA, Patent Owner provides citations to U.S. Patent Application No. 16/225,517 (Ex. 1002 (file history) at 233–303 (“’517 application”)), and to its earlier-filed benefit applications on which the ’510 patent relies for priority, to show written description support for proposed substitute claims 21–40. *See* RMTA 3–12. Patent Owner also provides explanation of alleged written description support of the newly added “rigidly fixed” limitation. RMTA 12–15.

⁵ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

Petitioner argues that Patent Owner’s citations to the ’517 and earlier applications are insufficient because Patent Owner does not explain how the cited disclosures allegedly support the limitations of each proposed substitute claim, individually or as a whole. RMTA Opp. 1–3; RMTA Sur-Reply 3–5. Although noting “[w]here the claim language is near-identical to the specification, string cites pointing to that same language in the specification may be sufficient” (RMTA Sur-Reply 4), Petitioner argues (1) Patent Owner “nowhere explains how the 2 paragraphs and 6 figures listed support the claimed ‘top flange,’ even though the term ‘top flange’ appears nowhere in the cited paragraphs or the portions of the specification corresponding to the 6 figures listed” (RMTA Opp. 2); and (2) “none of the paragraphs cited by [Patent Owner] use [the term ‘back flange plane’] (indeed, the word ‘plane’ does not appear anywhere in the ’510 patent specification despite its varied use throughout the claims)” (RMTA Opp. 2). We address these arguments in turn below.

As for the “top flange,” as recited in proposed substitute independent claims 21, 33, and 40, Patent Owner cites to paragraphs 65 and 77 and figures 1, 2A, 10A, 25, 26, and 35 in the ’517 application. RMTA 6. In the context of proposed substitute claim 40, for example, “top flange” is recited in the limitation “a connection portion including *a top flange* configured for attachment to a top surface of a top plate of the wall.” RMTA App. A, 9. Paragraph 65 states:

Referring again to FIGS. 2-8, *the connection portion of the hanger includes a pair of connector tabs 74 extending from the back flanges 66. Each connector tab 74 extends generally perpendicular from one of the back flanges 66. The connector*

tabs 74 are generally horizontal when the hanger 26 is installed. *The connector tabs 74 are configured to engage an upper surface of the top plate 30 of the wall 28 at a second location L₂ spaced from the first location L₁.*

Ex. 1002, 249 (¶ 65) (emphases added). Although the claim uses the term “top flange” and the specification uses the term “connector tab,” we are persuaded that at least this disclosure, in conjunction with the cited and referenced figures, would *reasonably* convey to the skilled artisan that the inventor here possessed the “top flange” as of the relevant filing date. *See Univ. of Rochester*, 358 F.3d at 923 (description need not recite the claimed invention *in haec verba*); RMTA Reply 3 (citing Ex. 2057 ¶¶ 32–36); Ex. 2057 ¶ 36 (The skilled artisan “recognizes that the ‘tabs’ could be called a flange. The location of the tabs is at the top of the hanger.”). We find Patent Owner’s citations, in this instance, allow us to determine how the specification and drawings support the proposed substitute claims.

As for the “back flange plane,” as recited in proposed substitute independent claims 21, 33, and 40, Patent Owner cites to paragraphs 59 and 75 and figures 2, 4, 7, 26, 28, and 32 in the ’517 application. RMTA 7. In the context of proposed substitute claim 40, for example, “back flange plane” is recited in the limitation “a connection portion including . . . a back flange extending from an edge of the top flange, the back flange having a front surface lying in *a back flange plane*.” RMTA App. A, 9. Paragraph 59 states:

A back flange 66 extends from each of the extension flanges 60. *Each back flange 66 extends generally perpendicular from the extension flange 60 and is oriented generally parallel to the back panels 48. . . .* [T]he back flanges 66 engage the wall 28 at a first location L₁, which in the illustrated embodiment

is a vertical face of the top plate 30 of the wall. The back panels 48, extension flanges 60, and back flanges 66 form a pair of sheathing channels 68. Each sheathing channel 68 is configured to receive a portion of the fire retardant sheathing 34 to secure the sheathing between the hanger 26 and the wall 28. As seen in FIG. 7, the sheathing channels 68 extend generally perpendicular to the truss-receiving channel 52.

Ex. 1002, 246 (¶ 59) (emphases added). Although the claim introduces the term “plane,” which is not recited in the specification, it does so in the context of identifying geometric properties for reference purposes, i.e., that the explicitly disclosed back flange 66 has a front surface, as shown, for example, in figure 2, and this surface defines or lays in a geometric plane, also as reflected in figure 2. We are persuaded that at least this disclosure, in conjunction with the cited and referenced figures, would *reasonably* convey to the skilled artisan that the inventor here possessed the “back flange plane” as of the relevant filing date. *See Univ. of Rochester*, 358 F.3d at 923; RMTA Reply 3 (citing Ex. 2057 ¶¶ 39–40); Ex. 2057 ¶ 40 (“[T]he back flange has a front surface that lies in a back flange plane,” and “[t]his would be readily understood by [the skilled artisan] reviewing Figs. 2, 4, and 7 and the description at paragraph [0059].”). We again find Patent Owner’s citations, in this instance, allow us to determine how the specification and drawings support the proposed substitute claims.

In addition, Patent Owner amended proposed substitute claim 40, for example, by adding the limitation “wherein the extension portion includes an extension flange extending from the back flange of the connection portion to the channel-shaped portion.” RMTA App. A, 9. Patent Owner cites to paragraphs 58, 59, 74, and 75 and figures 2, 4, 7, 26, 28, and 32 in the

'517 application. RMTA 8. Paragraphs 58 and 59 refer to Figures 2–8 and disclose: (a) “extension portion 40 includes two extension flanges 60 configured to extend through the fire retardant sheathing 34”; (b) “[e]ach flange 60 extends from one of the back panels 48”; (c) “back flange 66 extends from each of the extension flanges 60”; and (d) “[e]ach back flange 66 extends generally perpendicular from the extension flange 60 and is oriented generally parallel to the back panels 48.” Ex. 1002, 246 (¶¶ 58–59). We are persuaded that at least this disclosure, in conjunction with the cited and referenced figures, would *reasonably* convey to the skilled artisan that the inventor here possessed this additional limitation as of the relevant filing date. We again find Patent Owner’s citations, in this instance, allow us to determine how the specification and drawings support the proposed substitute claims.

Based on the foregoing, and in the context of this case and Petitioner’s challenges noted above, we find Patent Owner’s citations to show written description support do not render the Board unable to determine whether the specification and drawings support the proposed substitute claims.

We turn to Petitioner’s substantive written description challenges below.

*b) Written Description Support for “Rigidly Fixed”
and Negative Spacing Limitation in Claims 21–39*

Patent Owner’s proposed substitute independent claims 21 and 33 add the limitation, “wherein the channel-shaped portion, the extension portion and the connection portion are *rigidly fixed* with respect to one another” (emphasis added); and maintain from original claims 1 and 13, respectively,

the limitation of “the extension portion *spacing . . . sized . . . too small* to permit three layers of 5/8 inch thick sheathing to be received . . .” (emphases added) (we labeled this the “Negative Spacing Limitation” in our analysis in Section II.D, *supra*, and use the same shorthand hereinafter). RMTA, App. A, 3–4, 6–7. Petitioner contends that Patent Owner fails to show sufficient written description support for this newly added limitation of “rigidly fixed” and, as with the original claims, for the Negative Spacing Limitation. RMTA Opp. 3–7; RMTA Sur-Reply 5–7. Patent Owner opposes Petitioner’s contentions. RMTA Reply 3–8.

(1) *Negative Spacing Limitation*

As for the Negative Spacing Limitation, which we already addressed in connection with original claims 1–19 in Section II.D, *supra*, we are not persuaded that the ’510 patent adequately supports the Negative Spacing Limitation in proposed substitute claims 21–39, for the same reasons provided in Section II.D. Accordingly, we find that the Negative Spacing Limitation in proposed substitute claims 21–39 introduces new matter, which runs afoul of the requirements of 35 U.S.C. § 326(d)(3) and 37 C.F.R. § 42.221(a)(2)(ii). For this reason, we deny Patent Owner’s RMTA as to proposed substitute claims 21–39.

(2) *“Rigidly Fixed” Limitation*

As for the “rigidly fixed” limitation, Petitioner’s contention raises two intertwined issues: (1) what is the meaning of “rigidly fixed” in “wherein the channel-shaped portion, the extension portion and the connection portion are *rigidly fixed* with respect to one another” (claim construction issue); and (2) given that meaning, whether the Specification contains written

description support for such a “rigidly fixed” construction (written description issue). We address these two issues in turn.

(a) *Claim Construction: Meaning of
“rigidly fixed”*

Although Patent Owner introduced the term “rigidly fixed” into certain proposed substitute claims, and despite the ’510 patent not explicitly reciting that term anywhere, Patent Owner does not provide a proposed construction for “rigidly fixed” in its RMTA. Petitioner argues “rigidly fixed” is indefinite (RMTA Opp. 7–8), but in the alternative, proposes that the term’s plain and ordinary meaning is “components cannot move at all with respect to each other” (RMTA Opp. 9–10 (citing Ex. 1042, ¶ 28)). In Reply, Patent Owner contends “rigidly fixed” means “components are connected in a stiff manner such that they do not move freely with respect to one another.” RMTA Reply 3 (citing Ex. 2057 ¶¶ 5–6); *see* RMTA Reply 4 (citing Ex. 2057 ¶ 9 (“[The skilled artisan] would understand that ‘rigidly fixed’ applies to hangers whose components come from the factory at set orientations – *i.e.*, to hangers whose corresponding components are connected in a stiff manner such that they do not move freely.”)). Patent Owner also argues that the skilled artisan understands, “while ‘rigidly fixed’ requires the components not move freely with respect to one another, the limitation does not require the claimed hanger to be so rigid that it absolutely cannot be deformed.” RMTA Reply 5 (citing Ex. 2057 ¶¶ 10–17; Ex. 2056, 26). Petitioner responds that Patent Owner and its declarant cannot clearly explain the difference between “fixed” and “rigidly fixed,” and that Patent Owner allegedly advances “multiple wide-ranging and

contradictory concoctions of what ‘rigidly fixed’ means.” RMTA Sur-Reply 7.

Patent Owner’s and Petitioner’s proposed constructions appear to meaningfully differ only in that Patent Owner defines “rigidly fixed” in terms of components connected so as not to “move freely” with respect to one another, whereas Petitioner defines the term to require no movement “at all.” *Compare* RMTA Reply 3, *with* RMTA Opp. 9–10. We find Petitioner’s requirement for absolute rigidity here to be divorced from realities of mechanics and materials and from the knowledge and skill of the skilled artisan, because as explained by Patent Owner’s declarant, with enough force, anything will deform, move, or break. *See* Ex. 2057 ¶¶ 10–15 (providing the example of “a tree is rigidly fixed to the ground yet a strong enough wind (e.g., hurricane, tornado, etc.) can still blow the tree over”). We also note that in discussing the hanger in the Tsukamoto reference, Petitioner explains that the Tsukamoto hanger is made by *bending* a sheet metal blank (as with the hanger in the ’510 patent), and then argues the Tsukamoto hanger components are “rigidly fixed” because they “do not move with respect to each other”—this argument tends to support Patent Owner’s proposed construction, not Petitioner’s. RMTA Opp. 17–18; *see* Ex. 2057 ¶ 50.

Turning next to the Specification, the term “rigidly fixed” is not explicitly recited therein. However, considering this claim term in the context it is used, “wherein the channel-shaped portion, the extension portion and the connection portion are *rigidly fixed* with respect to one another,” we find at least Figures 2 and 15 and description thereof in the

'510 patent support Patent Owner's proposed construction. In particular, Figure 15 depicts stamped metal blank 80 for forming truss hanger 26 (shown in Figure 2) (Ex. 1001, 3:15–16, 7:10–17), which includes as part of the one-piece blank the channel-shaped portion (base 44 and side panels 46), extension portion (extension flanges 60), and connection portion (connector tabs 74 and back flanges 66) (Ex. 1001, 4:29–34, 4:63–65, 6:32–37). *See* RMTA 12–15. Figure 15 also depicts that the channel-shaped portion, extension portion, and connection portion are connected (as part of the same metal blank) such that they do not move freely with respect to one another. *See* Ex. 2055 ¶¶ 13–16 (¶ 14: “When a bend is formed in the metal blank by a die, the portions on either side of the bend are rigidly fixed relative to one another.”); RMTA 14–15.

Turning next to the prosecution history, this is of no help in construing “rigidly fixed,” as the term was not in the original claims (now the challenged claims), which were allowed without discussion relevant to the term. *See generally* Ex. 1002.

Accordingly, based on the complete record before us, we are persuaded by Patent Owner's proposed construction of “rigidly fixed,” and determine that “rigidly fixed” as recited in the proposed substitute claims means “components are connected such that they do not move freely with respect to one another.” We do not adopt Patent Owner's phrasing of “in a stiff manner” in our construction, because we find the phrase redundant of “not move freely,” and “stiff” may unnecessarily introduce a term of degree.

(b) *New Matter: “rigidly fixed”*

To satisfy the “new matter” or written description requirement, the disclosure must *reasonably convey* to skilled artisans that the inventor possessed the claimed invention as of the filing 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). “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) (emphasis omitted). 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”).

As noted above, the invention for which the inventor must provide written description support is whatever is now claimed. In this case, we ask whether the ’517 and benefit applications underlying the ’510 patent show that the inventor possessed a channel-shaped portion, extension portion, and connection portion that are “rigidly fixed” with respect to one another, or in view of our construction of “rigidly fixed,” possessed a channel-shaped portion, extension portion, and connection portion that are connected such

that they do not move freely with respect to one another. We are persuaded by Patent Owner that the underlying applications do show possession of this feature by the inventor, for the same reasons provided above for why the Specification supports Patent Owner's proposed construction of "rigidly fixed." *See* Section III.C.4.b.2.a, *supra*; RMTA 12–15; Ex. 2055 ¶¶ 10–18.

In particular, we are persuaded by Patent Owner's explanation that *the skilled artisan*: (a) would have had knowledge of metal stamping, "a common and routine manufacturing technique for forming an object out of a flat piece of sheet metal" (Ex. 2055 ¶ 14); (b) would have known that "stamping involves cutting a metal blank from a piece of sheet metal and then bending the metal blank using a folding machine, or one or more dies, to form the object" (Ex. 2055 ¶ 14); (c) would have recognized that Figure 15 of the '517 and benefit applications illustrates metal blank 80 used to form hanger 26 (shown in Figure 2) by bending metal blank 80 along the dash-dot-dash fold lines shown in Figure 15 (Ex. 2055 ¶ 14); (d) would have recognized that the underlying applications describe the one-piece metal blank 80 as including the channel-shaped portion (base 44 and side panels 46), extension portion (extension flanges 60), and connection portion (connector tabs 74 and back flanges 66) (Ex. 2055 ¶ 13); and (e) would have recognized that "[s]ince the hangers of [the] '517 [and benefit] application[s] are described as being made from a single piece of sheet metal bent into shape by stamping, . . . the elements (e.g., channel-shaped portion, extension portion and connection portion) of the hanger are rigidly fixed relative to one another," i.e., connected such that they do not move freely with respect to one another (Ex. 2055 ¶ 16–17). *See* RMTA 12–15; RMTA Reply 6–8.

Petitioner argues against “rigidly fixed” having written description support based on its proposed construction for this term, which requires that connected components cannot move “at all” with respect to each other. *See* RMTA Opp. 3, 4 (“[Patent Owner] would need to show that the positions of those elements are so rigid that they **cannot** move at all”; “[T]he specification nowhere states that the channel-shaped portion **cannot** move at all with respect to the connection portion.”), 5–6; RMTA Sur-Reply 5–7; Ex. 2057 ¶ 43 (Patent Owner’s declarant testifying that “[Petitioner’s] argument that the ‘rigidly fixed’ limitation lacks written description support is premised entirely on its proposed claim construction of the phrase, specifically requiring absolute rigidity. . . . But . . . the ‘rigidly fixed’ limitation is not so extreme so as to exclude any movement under any circumstances.”). As explained above, we do not adopt Petitioner’s proposed construction requiring absolute rigidity, and consequently, are not persuaded by Petitioner’s written description arguments based on the alleged need for such absolute rigidity.

Based on the foregoing, and on the complete record before us, we are persuaded that the ’517 and benefit applications adequately support the term “rigidly fixed,” and more specifically, the limitation “wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another.” Accordingly, we find the limitation, “wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another,” 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).

5. *Conclusion*

For the reasons expressed above, we conclude Patent Owner has failed to meet its burden to identify written description support for the Negative Spacing Limitation in proposed substitute claims 21–39 (Section III.C.4.b.1), but has met its burden to identify written description support for remaining proposed substitute claim 40. Accordingly, we deny Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claims 21–39.

For completeness, we address below Petitioner’s unpatentability arguments directed not only to proposed substitute claim 40, but all proposed substitute claims 21–40.

D. Unpatentability of Proposed Substitute Claims 21–40 as Indefinite

Petitioner contends the following terms or phrases in the proposed substitute claims are indefinite: (1) “rigidly fixed,” as recited in proposed substitute claims 21–39; and (2) “distance sized large enough to permit the drywall to be received” in the limitation of “the extension portion spacing the channel-shaped portion from the back flange plane by a *distance sized large enough to permit the drywall to be received* between the channel-shaped portion and the back flange plane” (we labeled this the “Large Enough Limitation” in our analysis in Section II.E, *supra*, and use the same shorthand hereinafter), as recited in proposed substitute claim 40. RMTA Opp. 7–9; RMTA Sur-Reply 7–9. Patent Owner opposes Petitioner’s contentions. RMTA Reply 8, 12.

1. “*Rigidly Fixed*”

Petitioner argues proposed substitute claims 21–39 “should be found indefinite, as it is unclear how much rigidity is needed for a hanger’s channel-shaped, extension, and connection portions to be considered ‘rigidly fixed with respect to each other.’” RMTA Opp. 7–8; RMTA Sur-Reply 7–8. We are not persuaded by Petitioner’s argument, as discussed below.

The limitation at issue here in proposed substitute claim 21, for example, is “wherein the channel-shaped portion, the extension portion and the connection portion are *rigidly fixed* with respect to one another.” As explained above, we construe “rigidly fixed” to mean “components are connected such that they do not move freely with respect to one another.” Taken together, the issue at hand becomes whether the skilled artisan would have been informed, with reasonable certainty, as to the scope of the phrase “wherein the channel-shaped portion, the extension portion and the connection portion are connected such that they do not move freely with respect to one another.” Petitioner does not address this key issue. *See* RMTA Opp. 7–8; RMTA Sur-Reply 7–8. Patent Owner argues that “[the skilled artisan] would understand that the phrase ‘rigidly fixed’ simply requires the hanger’s design is such that its components do not move freely with respect to one another.” RMTA Reply 8 (citing Ex. 2057 ¶¶ 53–55); *see Nautilus*, 572 U.S. at 910 (“The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.”); *Minerals Separation v. Hyde*, 242 U.S. 261, 270 (1916) (“[T]he certainty which the law requires in patents is not greater than is reasonable, having regard to their subject matter.”). Patent Owner also

responds, “[a]s acknowledged by [Petitioner], [the skilled artisan] can easily determine that certain hangers—such as the Tsukamoto hanger—are ‘rigidly fixed’ and while other hangers—such as Gilb ’155 hanger (Ex. 1010)—are not rigidly fixed.” RMTA Reply 8 (citing Ex. 2057 ¶ 55; RMTA Opp. 18, 22–23).

Based on the foregoing, and on the complete record before us, we are not persuaded that the limitation at issue, namely, “wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another,” would not inform the skilled artisan, with reasonable certainty, about the scope of the claimed invention.

Accordingly, we conclude that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21–39 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness.

2. Large Enough Limitation

As for the Large Enough Limitation, which we already addressed in connection with original claim 20 in Section II.E, *supra*, we conclude that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claim 40 is unpatentable under 35 U.S.C. § 112(b) for indefiniteness, for the same reasons provided in Section II.E.

E. Obviousness of Proposed Substitute Claims 21, 22, 24, 26–37, 39, and 40 Over the Combination of Tsukamoto, Bundy, and Allan

Petitioner contends proposed substitute claims 21, 22, 24, 26–37, 39, and 40 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Tsukamoto (Ex. 1009), Bundy (Ex. 1007), and Allan

(Ex. 1012). RMTA Opp. 14–19; RMTA Sur-Reply 9–12; *see* Pet. 33–63; Pet. Reply 19–25. Patent Owner opposes Petitioner’s contentions. RMTA Reply 9–10; *see* PO Resp. 57–78; PO Sur-Reply 19–23. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21, 22, 24, 26–37, 39, and 40 are unpatentable as obvious over the combination of Tsukamoto, Bundy, and Allan.

1. Structure Disclosed by Tsukamoto

Tsukamoto generally is directed to a “beam hanger” for connecting a beam to a wall, as shown, for example, in Figure 5, reproduced below.

Ex. 1009, 1–3, Fig. 5.

FIG. 5

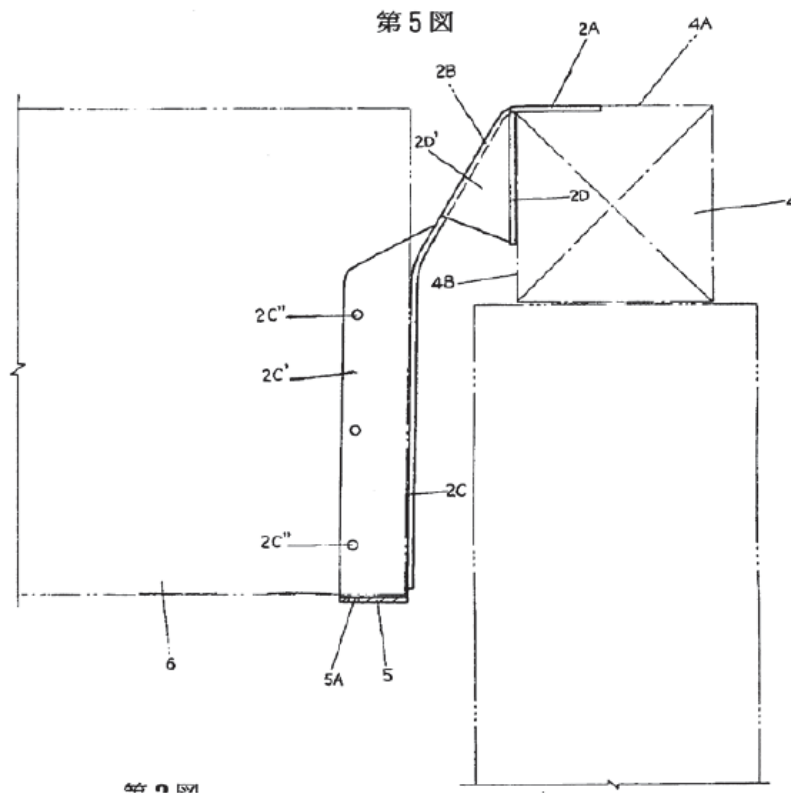


Figure 5 of Tsukamoto is a cross-sectional view of a beam hanger connecting a beam to a wall.

Id. at 3.

Petitioner contends “Tsukamoto discloses each and every element listed in claim 1 of the ’510 Patent [and proposed substitute claim 21, for example], but does not explicitly provide disclosure regarding the [Spacing Dimension Limitation].” Pet. 33–34; *see* RMTA Opp. 14–19; RMTA Sur-Reply 9–12. Patent Owner disputes, *inter alia*, whether Tsukamoto discloses the limitations in proposed substitute claim 21 of (1) a “connection portion further including a back flange *extending from an edge of the top flange in a direction toward* a plane of the base of the channel-shaped portion” (RMTA Reply 9–10; *see* PO Resp. 57–62; PO Sur-Reply 19–21); and (2) “an extension flange extending from the back flange of the connection portion to the channel-shaped portion” (RMTA Reply 10). We find this dispute turns on whether Tsukamoto discloses “a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion,” and in part on the meaning of “extending from” as used in context therein, as discussed below.

2. *Meaning of “Extending From”*

In our Institution Decision, for purposes of institution, we construed “extending from” to mean “the starting point of one element’s extension is on another element,” and noted that this construction was sufficient to resolve the unpatentability issues raised at that stage of the proceeding. Dec. 47. To clarify, by this construction we mean “in the context of element B extending from element A, the beginning of element B’s

extension is on element A.” Patent Owner agrees with the Board’s construction. *See* RMTA Reply 5–6.

Petitioner argues “extending from” “should be construed to include elements that connect either directly *or through intervening components.*” RMTA Opp. 14; *see* RMTA Opp. 10–14. Although the limitation at issue (“a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion”) recites “extending from,” Petitioner argues (a) the ’510 patent also includes the phrase “extending away from”; (b) “the Board overlooked a key point—the two phrases include the same fundamental word: ‘from’”; (c) since both phrases use the same word “from,” they both must include or allow for the same “starting point[s]” for an extension; (d) the ’510 patent uses the phrase “extending away from” in a context where element B is described as extending away from element A, but the starting point of element B’s extension is *not* on element A, but rather on an intervening component; and (e) therefore, “extending from” must allow not only for the “starting point” of element B’s extension to be on element A, but also for the “starting point” of element B’s extension to be on one or more intervening elements with the last of those being on element A (i.e., according to Petitioner, if element Z were connected through intervening elements Y through B ultimately to element A, then element Z would “extend from” element A). *See* RMTA Opp. 10–14; RMTA Sur-Reply 9–10. We did not overlook Petitioner’s “key point,” and still are not persuaded by Petitioner’s argument, as discussed below.

First, we turn to proposed substitute claim 21, and the limitation at issue, which recites, in part, “a back flange *extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion.*” In this context, we find the added emphasis on the back flange not only “extending from” the top flange, but “extending from” “an edge of” the top flange, suggests that the beginning of the back flange’s extension is directly on the top flange, indeed on *an edge of* the top flange, and not on some indeterminate number of intervening components that eventually connect onto the top flange. We also find that the added emphasis on the back flange not only “extending from” the top flange, but also doing so “in a direction toward” another component, further suggests that the beginning of the back flange’s extension is directly on the top flange (i.e., that the orientation of the back flange is directly relative to the top flange from which it extends, not some intervening component). Also, proposed substitute claim 21 includes three instances of element B “extending from” element A, and in each instance, the beginning of element B’s extension is on element A, as follows: (1) “extension portion [40] extending from the channel-shaped portion [38]”; (2) “back flange [66] extending from an edge of the top flange [connector tabs 74]”; and (3) “extension flange [60] extending from the back flange [66],” all as shown in Figure 2 of the ’510 patent. *See* RMTA, App. A, 3–4; Ex. 1001, Fig. 2. We find the claim language itself supports the Board’s construction, not Petitioner’s.

Second, we turn to the specification of the ’510 patent, which although it does not expressly define “extending from,” does use the term many times in describing various element B’s “extending from” various

element A's. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (Claim limitations must be read "in light of the specification as it would be interpreted by one of ordinary skill in the art."). Tellingly, as conceded by Petitioner, in *every* instance in the '510 patent where "extending from" is used in that context, the beginning of an element B's extension is on element A (and not on any intervening component). *See* Tr. 18:7–11 (Q: "Is there an example in the specification that uses the language 'extending from' applied to something with an intermediate structure between the two things?" A: "No, Your Honor. There's not an example of anything where the term 'extending from' applies to two separate structures."). We find the specification of the '510 patent also supports the Board's construction, not Petitioner's.

Third, in the context of element B directly connected to element A, we find no conflict under our construction in characterizing element B as "extending from" element A or as "extending away from" element B (accepting for illustration purposes that "extending away from" may contemplate intervening components, although we do not construe "extending away from" herein); or in the context of element B indirectly (via intervening components) connected to element A, characterizing element B as "extending away from" element A, but not as "extending from" element A. Indeed, "extending away from," at least in the present context, is simply a broader relationship than "extending from." *See* Ex. 2057 ¶ 30 ("[T]he phrase 'extending away from' is actually broader than the phrase 'extending from.'"). For example, in our view and under our construction, a human arm may be characterized both as "extending from" the shoulder

(i.e., the beginning of the arm's extension is on the shoulder) and as "extending away from" the shoulder; but although one's finger may be characterized as "extending away from" the shoulder, we find it strains credibility to assert that one's finger "extends from" the shoulder (or more so that one's foot "extends from" one's head). *See* Tr. 19:21–21:12 (discussing shoulder-arm-finger analogy). Thus, we are not persuaded by Petitioner's arguments involving comparisons of the phrases "extending from" and "extending away from."

Based on the foregoing, we reaffirm and construe "extending from" to mean "in the context of element B extending from element A, the beginning of element B's extension is on element A."

3. *"a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion"*

Petitioner argues Tsukamoto teaches "the connection portion (e.g., horizontal portions 2A/3A, vertical plates 2D/3D) includes *a back flange* (vertical plates 2D/3D) *extending from an edge of the top flange* (horizontal portions 2A/3A)," as allegedly shown in Figure 3, reproduced below. Pet. 48–49 (citing Ex. 1003 ¶ 122; Ex. 1009, 2–3, Figs. 1–6) (emphasis added).

FIG. 3

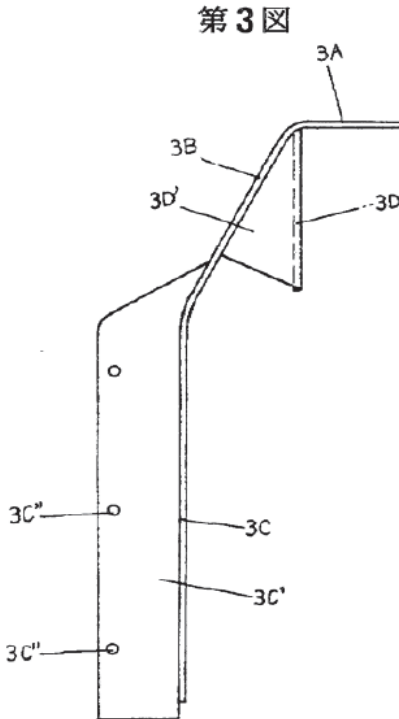
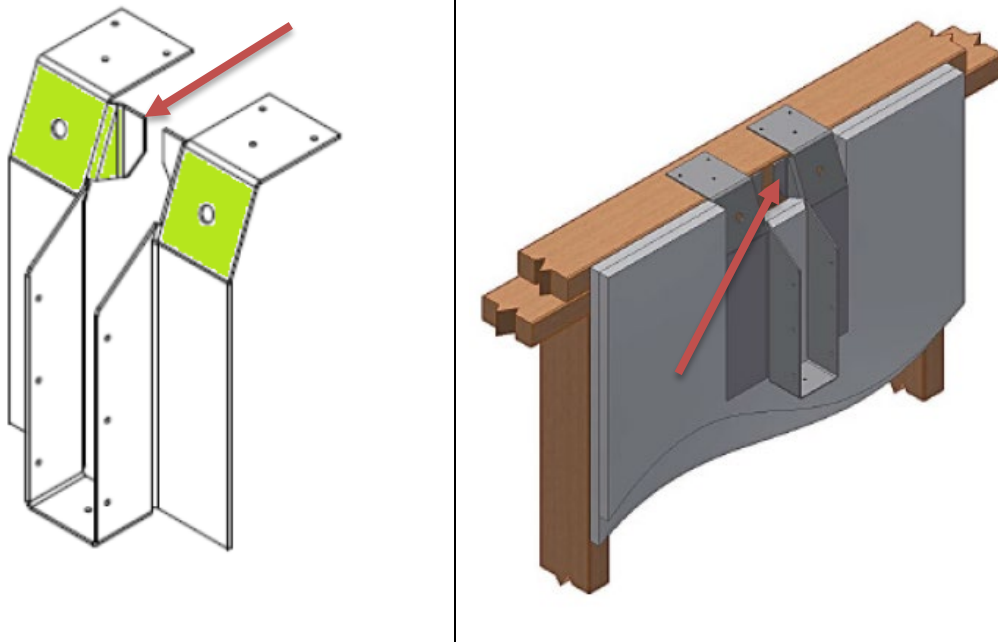


Figure 3 of Tsukamoto is a right side view
of a beam hanger.

Ex. 1009, 3, 5.

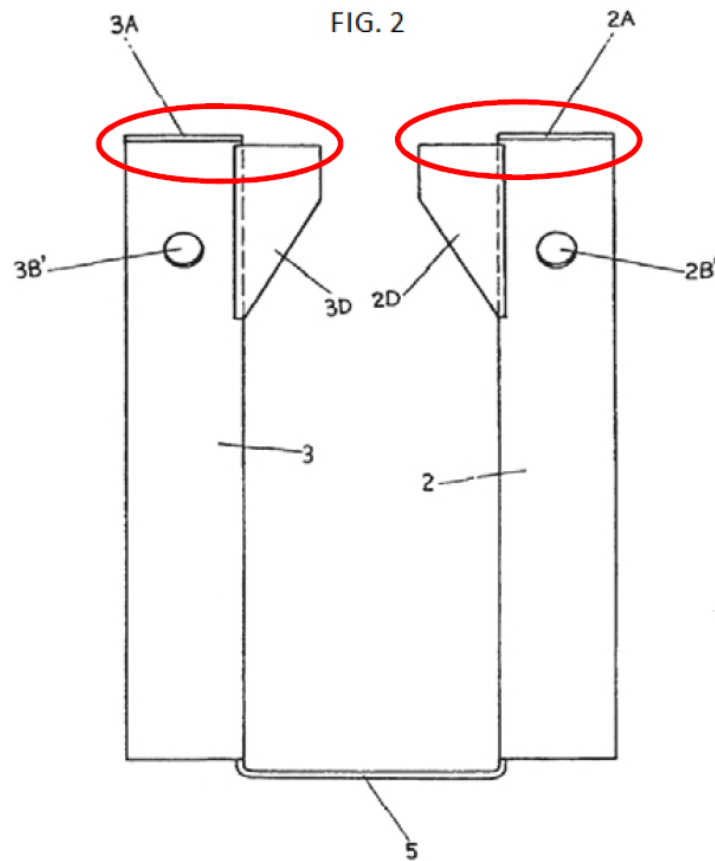
However, as argued by Patent Owner (PO Resp. 57–62), we find Tsukamoto's cross-sectional drawings, taken together, as well as Petitioner's own three-dimensional illustrations of such drawings, belie Petitioner's position here. Petitioner's illustrations of the Tsukamoto beam hanger are reproduced below (with red arrows added).



The illustrations at left and right above show Petitioner's understanding of the structure of Tsukamoto's beam hanger.

Pet. 45 (illustration at above left is a "three-dimensional (3D) rendering of Tsukamoto's hanger, highlighting the extension portion"), 46 (illustration at above right is an "isometric rendering of Tsukamoto used in conjunction with sheathing"). Patent Owner argues:

Fig. 3 [of Tsukamoto, reproduced above] is a side view that is misleading as to the actual arrangement of the hanger disclosed in Tsukamoto. [Petitioner] equates the vertical plates (2D, 3D) of Tsukamoto with the claimed back flange and the horizontal portions (2A, 3A) of Tsukamoto with the claimed top flange. However, as shown more clearly in Fig. 2 below, the vertical plates (2D, 3D) of Tsukamoto do not extend from an edge of the horizontal portions (2A, 3A).



Instead, the vertical plates (2D, 3D) are ‘continuously connected to the inclined portions 2B, 3B via connection plates (2D’, 3D’,’ and thus extend from the connection plates (2D’, 3D’) instead of the horizontal portions (2A, 3A).

PO Resp. 59–60 (citing Ex. 2001 ¶¶ 125–126) (emphasis added); see Ex. 1009, 3–4, Figs. 1–5. We are persuaded by Patent Owner’s argument.

Petitioner identifies the green-shaded angled region in the above left illustration of Tsukamoto’s beam hanger as an “extension portion” (Pet. 45–46 (referencing Tsukamoto’s connection plates 2D’/3D’, 2B/3B), and identifies Tsukamoto’s vertical plates 2D/3D, identified by the red arrow in the above illustrations, as a “back flange” (Pet. 48–49). As such, Tsukamoto plainly discloses a back flange (red arrow) extending from an *edge* of an

extension portion (green-shaded region). But we are not persuaded by Petitioner's contention that Tsukamoto's back flange *extends from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion*. The *beginning* of Tsukamoto's back flange's extension is on an *edge* of the extension portion, not an *edge* of the top flange. Further, Tsukamoto's back flange not only extends from the extension portion, but extends in a direction toward the other back flange (i.e., left / right), *not in a direction toward a plane of the base of the channel-shaped portion* (i.e., downward). Petitioner ignores these distinctions, particularly the limitation's requirement to not only "extend from" the top flange but to "extend from an *edge* of" the top flange, and to extend in a particular direction. Petitioner does not argue that Bundy or Allan remedies these deficiencies in Tsukamoto.

Faced with Patent Owner's and the Board's use of Petitioner's own three-dimensional (3D) rendering and isometric rendering of Tsukamoto's drawings against Petitioner's contentions here, Petitioner argues: "The *isometric rendering* was simply used to illustrate how two sheets of sheathing would fit inside the extension space, and was not relied on for nor meant to be used as a precise measure for any other element in the claims." RMTA Opp. 17 (emphasis added). Notably, Petitioner does not appear to denigrate the three-dimensional (3D) rendering with the green-highlighted extension portion, which as noted above, we find to support Patent Owner, not Petitioner. Regardless, Petitioner's backtracking now is contradicted by its original representation to the Board, where Petitioner represented the green-highlighted 3D rendering without disclaimer as "[a] three-dimensional

(3D) rendering of Tsukamoto’s hanger, highlighting the extension portion” (Pet. 45; Ex. 1003 ¶ 118 (Petitioner’s declarant testifying to this)); and where Petitioner represented the isometric rendering with sheathing on wall framing without disclaimer as “[a]n isometric rendering of Tsukamoto used in conjunction with sheathing” (Pet. 46; Ex. 1003 ¶ 119 (Petitioner’s declarant testifying to this)). When Petitioner argued Tsukamoto’s back flange extends from an edge of the top flange *through intervening components* (Pet. Reply 20), Petitioner did not characterize its renderings as imprecise or otherwise; yet now that Petitioner argues Tsukamoto’s back flange extends from a corner or vertex of the top flange without intervening components, Petitioner declares its own renderings (specifically, only the isometric rendering) unreliable. We find Petitioner’s change of heart here not fully credible, and its denigration of its own renderings entitled to little probative weight. *See* 37 C.F.R. §§ 42.11(c), 11.18(b).

Petitioner argues that, even under the Board’s construction of “extending from,” Tsukamoto discloses the subject limitation, because allegedly in Tsukamoto “the starting *corner* of Tsukamoto’s back flange is ‘on’ the top flange.” RMTA Opp. 15 (emphasis added); *see* RMTA Opp. 14–15, 16 (“So even under [Patent Owner’s] definition, Tsukamoto teaches that back flanges 2D/3D start from a *point* ‘on’ top flanges 2A/3A.” (emphasis added)), 17 (“[T]he top flange, the extension portion, and the back flange all meet at one *vertex*.” (emphasis added)), 18. But because Tsukamoto’s Figure 2 (above) appears to contradict Petitioner’s argument that the starting *corner* of Tsukamoto’s back flange is ‘on’ the top flange (i.e., Petitioner’s “three intersecting planes” theory), Petitioner argues

Tsukamoto's Figure 2 is "imprecise" (but of course not Figures 3 and 4 on which Petitioner relies). RMTA Opp. 16. Petitioner also argues "none" of Tsukamoto's figures appear to be computer-aided design (CAD) drawings, but rather "sketches." RMTA Opp. 16. We find Petitioner's challenge to the integrity and reliability of Tsukamoto's drawings favors Patent Owner, not Petitioner, as it is Petitioner's burden to prove unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378; *see* RMTA Reply 9 ("But this alleged imprecision only further weaken[s] [Petitioner's] 'intersecting planes' theory, as the figures that [Petitioner] chooses to rely on both feature orientations in which the alleged intersection of the top flange and the back flange is obscured.").

Both parties have offered competing renderings of a "blank" that allegedly would have been used to manufacture the Tsukamoto hanger. *See* RMTA Opp. 17–18 (citing Ex. 1042 ¶¶ 50–51); RMTA Reply 9–10 (citing Ex. 2057 ¶¶ 66–69). These "blank" renderings are neither in Tsukamoto nor prior art themselves. Not surprisingly, Petitioner's rendering depicts a back flange "sharing a corner" with a top flange (RMTA Opp. 17–18), and Patent Owner's depicts those components not sharing a corner (Ex. 2057 ¶ 67). Patent Owner characterizes Petitioner's "blank" rendering as "a fictional rendering that is not representative of the hanger as disclosed in Tsukamoto." RMTA Reply 9–10. Petitioner likewise denigrates Patent Owner's "blank" rendering. RMTA Sur-Reply 10–11. Given these "blank" renderings are not prior art, are based on "imprecise" "sketches" of the Tsukamoto hanger as argued by Petitioner (RMTA Opp. 16), and the parties' experts disagree on the specific design of the "blank" used to make the

Tsukamoto hanger, we find the parties' renderings entitled to little probative weight.

We return to Tsukamoto itself, which as noted above explicitly states: "Reference numerals 2D, 3D are vertical plates for abutting the base *continuously connected to the inclined portions 2B, 3B* via connection plates 2D', 3D' that have triangular side surfaces." Ex. 1009, 2 (emphasis added). We find this disclosure teaches, using Petitioner's allocation of components, back flanges 2D/3D "continuously connected" to an extension portion (2D'/2B, 3D'/3D), or as stated, to triangular connection plates 2D'/3D' which in turn are "continuously connected" to inclined portions 2B/3B. Notably absent in this disclosure, and indeed refuted by this disclosure, is any suggestion that the beginning of back flanges 2D/3D's extension is on horizontal portions 2A/3A. We find this disclosure in Tsukamoto favors Patent Owner, not Petitioner.

Nevertheless, even if "Tsukamoto's back flange shares a *corner* with the top flange" as argued by Petitioner (RM TA Opp. 15 (emphasis added)), we are not persuaded by this argument. Petitioner does not show persuasively that a back flange "extending from" a "corner" discloses "extending from" an "edge" let alone "extending from an *edge* of the top flange," as recited, for example, in proposed substitute claim 21 (and original claim 1). Petitioner also does not show persuasively that back flanges 2D/3D extend *in a direction toward a plane of the base of the channel-shaped portion* (i.e., downward), particularly given that Tsukamoto depicts such back flanges as extending from extension portions in a direction toward each other (i.e., left/right).

Based on the foregoing, on our review of the complete record before us, and in light of Petitioner's burden to evidence unpatentability, we find Petitioner does not show persuasively that Tsukamoto discloses "a back flange extending from an edge of the top flange in a direction toward a plane of the base of the channel-shaped portion," as recited in proposed substitute independent claims 21 and 33 (and original claims 1 and 13), or "a back flange extending from an edge of the top flange," as recited in proposed substitute independent claim 40 (and original claim 20).

4. *Conclusion*

For the reasons expressed above, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21, 22, 24, 26–37, 39, and 40 (and corresponding original claims 1, 2, 4, 6–17, 19, and 20) are unpatentable as obvious over the combination of Tsukamoto, Bundy, and Allan.

F. Obviousness of Proposed Substitute Claim 23 Over the Combination of Tsukamoto, Bundy, Allan, and Gilb '416

Petitioner contends proposed substitute claim 23 is unpatentable under 35 U.S.C. § 103 as obvious over Tsukamoto (Ex. 1009), Bundy (Ex. 1007), Allan (Ex. 1012), and Gilb '416 (Ex. 1011). RMTA Opp. 19; *see* Pet. 64–67. Patent Owner opposes Petitioner's contentions. PO Resp. 78. Proposed substitute claim 23 depends from proposed substitute independent claim 21. RMTA App. A, 4. As discussed above, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claim 21 is unpatentable as obvious over the combination of Tsukamoto,

Bundy, and Allan. Petitioner does not argue that Gilb '416 remedies the noted deficiency in Tsukamoto. *See* Pet. 64–67. Accordingly, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claim 23 (and corresponding original claim 3) is unpatentable as obvious over the combination of Tsukamoto, Bundy, Allan, and Gilb '416.

G. Obviousness of Proposed Substitute Claims 21–40 Over the Combination of Gilb '155, Bundy, Allan, and Gilb '942

Petitioner contends proposed substitute claims 21–40 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gilb '155 (Ex. 1010), Bundy (Ex. 1007), Allan (Ex. 1012), and Gilb '942 (Ex. 1032). RMTA Opp. 19–24; RMTA Sur-Reply 12. Patent Owner opposes Petitioner's contentions. RMTA Reply 10–12. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21–40 are unpatentable as obvious over the combination of Gilb '155, Bundy, Allan, and Gilb '942.

We determined in Section II.G, *supra*, that Petitioner has demonstrated by a preponderance of evidence that original independent claims 1, 13, and 20 are unpatentable as obvious over the combination of Gilb '155, Bundy, and Allan. In its RMTA, Patent Owner amended proposed substitute claim 21 by adding (1) “wherein the channel-shaped portion, the extension portion and the connection portion are rigidly fixed with respect to one another” (“Rigidly Fixed Limitation”); and (2) “wherein the extension portion includes an extension flange extending from the back

flange of the connection portion to the channel-shaped portion” (“Extension Flange Limitation”). *See* RMTA, App. A, 3–4. Patent Owner amended proposed substitute claim 23 by adding the Rigidly Fixed Limitation. RMTA, App. A, 6–7. Patent Owner also amended proposed substitute claim 40 by adding the Extension Flange Limitation. RMTA, App. A, 9.

1. Rigidly Fixed Limitation

a) Impermissible Hindsight

Petitioner argues Gilb ’942 discloses that components of a hanger can be fixed into place by welding, and argues the skilled artisan would have had rational reasons to weld together Gilb ’155’s channel-shaped portion, extension portion, and connection portion, rendering these portions rigidly fixed with respect to one another. *See* RMTA Opp. 19–23. Petitioner argues the reasons to do so are: (1) “identifying particular angles to be used in building specifications;” (2) “minimizing adjustments at installation”; and (3) “ensuring the accuracy of angle setting in controlled environments.” RMTA Sur-Reply 12; *see* RMTA Opp. 20–23.

Patent Owner responds “[t]here is no *legitimate* reason to fix the angle of the Gilb ’155 hanger in place by welding,” as the hanger “can already be adjusted in the field to the exact right angle.” RMTA Reply 10–11 (emphasis added). Patent Owner also argues “the unmodified Gilb ’155 hanger can rotate in the field to make adjustments for misalignments, as Simpson has repeated[ly] stated are often necessary.” RMTA Reply 10 (citing, in part, RMTA Opp. 4–5 (Petitioner arguing that “sheet metal hangers are commonly bent in the field to account for slight angle misalignments during beam installation.”)). Patent Owner further argues,

“[f]ailing to identify any genuine motivation to modify the Gilb ’155 hanger, [Petitioner’s] suggestion that the hanger could be welded to meet the ‘rigidly fixed’ limitation is simply a hindsight aided reconstruction of the claimed invention.” RMTA Reply 11. We are persuaded by Patent Owner’s argument.

The Board 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 Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“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.’” *Intercontinental 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).

Heeding these cautions, we first turn to Gilb ’155. Gilb ’155 “is a hanger intended to provide for any known intersection requirement to any amount of skew and any amount of slope.” Ex. 1010, 1:5–9. Gilb ’155 states that “[t]he sheet metal connector industry is a multi-million dollar business with hundreds of designers *furnishing connectors for almost every conceivable intersection requirement,*” and “[i]n spite of the employment of a great many people over many years in this field *not a single production sheet metal universal skewed and sloped hanger is known to Applicant.*” Ex. 1010, 1:10–20 (emphases added). Gilb ’155 explains that a “connector capable of being custom formed on the construction site for fixed skew and slope angles” existed, but “[o]nce the connector is bent, however, it is impractical to use the connector at another angle.” Ex. 1010, 1:37–42. Gilb ’155 also expresses concern that a hanger “formed at the factory at a fixed angle . . . cannot be used for intersections of different angles.” Ex. 1010, 1:43–48. Gilb ’155 concludes “[i]t was obvious that a potential solution had to involve *two separate parts*, and that the support element *had to rotate* in respect to the supporting element *in order to solve the basic requirement of the device.*” Ex. 1010, 2:3–6 (emphases added). Based on the foregoing disclosures and context of Gilb ’155, we are not persuaded that Gilb ’155 itself suggests or contemplates taking its purposefully designed multi-part, universal skewed and sloped hanger and rendering it a rigidly fixed hanger, which is the very type of hanger to which Gilb ’155 provided an alternative.

Petitioner’s argument that it would have been obvious to the skilled artisan to fix Gilb ’155’s hanger to a desired angle by welding is premised on “Gilb ’155’s disclosure that it can be preassembled prior to installation, and *that it is not intended to be rotatable afterwards.*” RMTA Opp. 20 (emphasis added); RMTA Opp. 22 (“Gilb ’155 hanger is not intended to move once it is installed.”). But we find this premise flawed, because Gilb ’155 touts its feature of being able to remove the pin and separate, for example, a joist from a wall, without uninstalling the hanger components: “*After the supported structure and skewed hanger has been attached to the supporting structure, it is possible to remove pin 18 and lift the supported structure away from the supporting member without unfastening the supported member 2 from the supporting structure 3 or unfastening the connecting means 16 from the supported structure 17.*” Ex. 1010, 7:29–35 (emphases added).

Based on the foregoing, particularly Petitioner’s flawed premise underlying its purported obviousness rationale here and its admission that “sheet metal hangers are commonly bent in the field to account for slight angle misalignments during beam installation” (RMTA Opp. 4–5), we are not persuaded that Petitioner’s obviousness rationale is not infected with hindsight bias. Petitioner asks the Board to take a huge leap in accepting that the skilled artisan, without holding the ’510 patent’s blueprints, would have taken a purposefully pivotable hanger and eliminated its primary feature. Based on the complete record before us, including the parties’ competing testimony from their declarants, we are not persuaded to jump that far.

b) Inoperability for Intended Purpose

Patent Owner argues “welding the Gilb ’155 hanger prior to installation would render the hanger inoperable for its intended purpose.” RMTA Reply 11 (citing, in part, Ex. 2057 ¶¶ 88–89). Petitioner argues Gilb ’155’s purpose “would not be frustrated or lost by assembling the rotatable hanger as taught by Gilb ’155, and using that rotatable hanger as a stock hanger whose angle can then be set according to a custom order and then fixed in place.” RMTA Opp. 20–21 (citing, in part, Ex. 1042 ¶ 36); *see* RMTA Sur-Reply 12.

A combination of prior art elements under *KSR* cannot “change the basic principles under which the prior art was designed to operate, or . . . render the prior art inoperable for its intended purpose.” *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 758 (Fed. Cir. 2015) (citations and quotation marks omitted); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); *In re Ratti*, 46 CCPA 976, 270 F.2d 810, 813 (1959); *cf. DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (Although predictability is a touchstone of obviousness, “the ‘predictable result’ discussed in *KSR* refers not only to the expectation that prior art elements are capable of being physically combined, but also that the combination would have worked for its intended purpose.”). Similarly, although one of ordinary skill in the art may understand that multiple references *could have been* combined as reasoned by the Petitioner, this does not imply a reason one of ordinary skill in the art *would have* combined the multiple references. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993–94 (Fed. Cir. 2017); *see Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064,

1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

In this case, for the same reasons expressed above in discussing impermissible hindsight, we are not persuaded by Petitioner’s argument that welding together Gilb ’155’s channel-shaped portion, extension portion, and connection portion would have been obvious, because doing so would render Gilb ’155’s resulting hanger inoperable for its intended purpose, which included having a separable channel-shaped portion and connection portion even *after* installation (*see* Ex. 1010, 7:29–35).

2. *Extension Flange Limitation*

Petitioner’s argument that the combination of references at hand disclose the Extension Flange Limitation is based on (1) a construction of “extending from” that we do not adopt (*see* RMTA Opp. 23–24 (relying on “extending from” to contemplate intervening components); Section III.E.2, *supra*); and (2) welding together Gilb ’155’s channel-shaped portion, extension portion, and connection portion, which we are not persuaded is obvious to do based on the complete record before us (*see* RMTA Opp. 24; Section III.G.1, *supra*).

3. *Conclusion*

For the reasons expressed above, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21–40 are

unpatentable as obvious over the combination of Gilb '155, Bundy, Allan, and Gilb '942.

H. Obviousness of Proposed Substitute Claims 21–24, 26–37, 39 and 40 Over the Combination of Timony and Bundy

Petitioner contends proposed substitute claims 21–24, 26–37, 39 and 40 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Timony (Ex. 1008) and Bundy (Ex. 1007). RMTA Opp. 25; *see* Pet. 102–132; Pet. Reply 25. Patent Owner opposes Petitioner's contentions. RMTA Reply 12; *see* PO Resp. 78–92; PO Sur-Reply 24–25. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21–24, 26–37, 39, and 40 are unpatentable as obvious over the combination of Timony and Bundy.

1. Structure Disclosed by Timony

Timony generally is directed to “a hanger in an insulated concrete system,” and as applied by Petitioner, more particularly to “*a retrofit hanger* [for] an insulated concrete system,” as shown, for example, in Figure 8, reproduced below. Ex. 1008 ¶ 2 (emphasis added), Fig. 8.

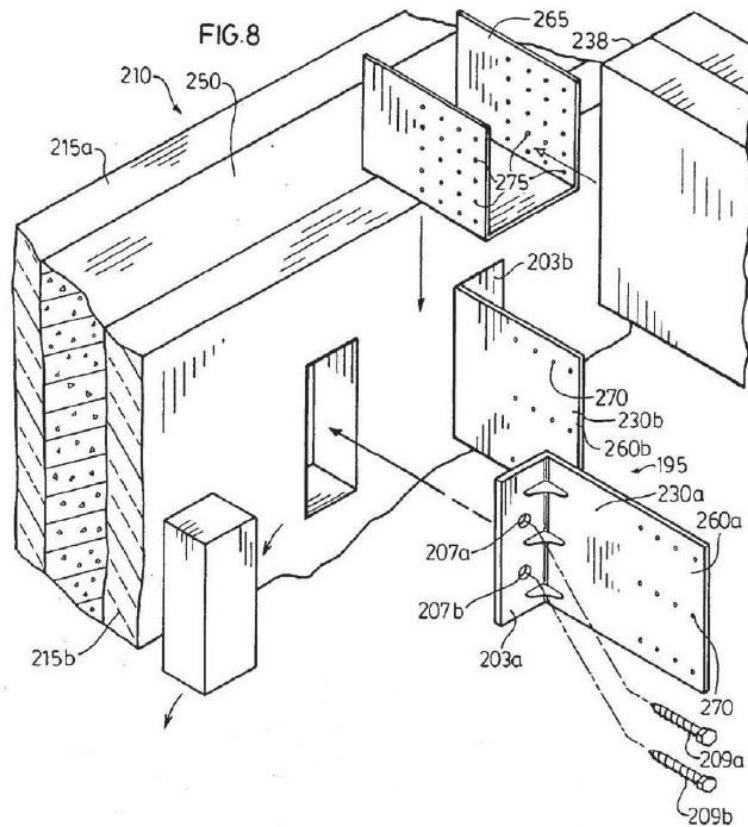


Figure 8 of Timony is a perspective view of a partially assembled retrofit bracket.

Id. ¶ 29. Petitioner contends that the limitations of the claims at issue “were already substantially disclosed by Timony at the time of invention, *except for a top flange* widely taught by other structural hangers, and the spacing of an extension portion, which is evidenced by numerous building codes and taught explicitly by Bundy.” Pet. 102 (emphasis added); *see* Pet. Reply 25. Patent Owner disputes, *inter alia*, whether Petitioner identifies a valid rationale for why the skilled artisan would have combined the top flange of Bundy with the hanger of Timony. PO Resp. 78–84; PO Sur-Reply 24–25. We address this dispute below.

2. *Rationale For Combining Bundy's "Top Flange" With Timony's Hanger*

Petitioner argues “[the skilled artisan] would have appreciated that adding top flanges to Timony’s hanger would help to stabilize the hanger and counteract the shear force resulting from the weight of the joist pulling on the back flange wall connection, as taught by Bundy.” Pet. 103. More specifically, Petitioner argues “[w]ith the addition of a top flange to the retaining portion 203, Timony’s back flange (203a and 203b) naturally extends from an edge of a top flange (based on Bundy) in a direction toward a plane of the base of the channel-shaped portion (U-shaped bracket 265).” Pet. 104. Petitioner further argues “[s]uch a combination would have been nothing more than combining prior art elements (the top flange of Bundy and Timony’s hanger having a back flange) according to known methods (e.g., welding or cutting the sheet metal from which Timony’s hanger is made) to yield predictable results.” Pet. 104–105 (citing Ex. 1003 ¶¶ 224–225); *see* Pet. Reply 25–26.

As explained above, a combination of prior art elements under *KSR* cannot “change the basic principles under which the prior art was designed to operate, or . . . render the prior art inoperable for its intended purpose.” *Plas-Pak Indus.*, 600 F. App’x at 758 (citations and quotation marks omitted). Similarly, although one of ordinary skill in the art may understand that two references *could have been* combined as reasoned by the Petitioner, this does not imply a reason one of ordinary skill in the art *would have* combined the references. *Personal Web Techs.*, 848 F.3d at 993–94. In addition, “it 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.” *KSR*, 550 U.S. 418.

In this case, Patent Owner argues “[Petitioner’s] proposed modification of Timony in view of Bundy to include a top flange would render the retrofit bracket of Timony *inoperable for its intended purpose*.”

PO Resp. 78–79 (emphasis added). In particular, Patent Owner argues:

The intended purpose of the retrofit bracket is to be able to hang or connect the joist on a composite wall (210) after the wall has already been constructed. Because the retrofit bracket installs flush with the face of the concrete core (250), the retrofit bracket can be installed at any position on the composite wall. This ability is required in retrofit construction because the existing configuration of building components, such as composite walls (210), may not align or match the changes being made by the retrofit construction. Having the ability to attach the retrofit bracket (195) at any position on the composite wall allows the retrofit bracket to be used in any type of retrofit construction of a building, regardless of the existing configuration of the building’s building components (*e.g.*, the building structure built on top of the foundation).

Adding a top flange to the retrofit bracket would prevent the retrofit bracket from being able to be mounted at any position on the composite wall, making the retrofit bracket inoperable for its intended purpose.

PO Resp. 79 (internal citations omitted). We are persuaded by Patent Owner’s above argument, as discussed below.

Timony discloses installing a hanger via retrofit bracket 195 by fastening it to concrete core 250, and also discloses that the design of the hanger “permit[s] an installer to accommodate moderate discrepancies in the heights of retrofit plates 230a and 230b after they are fastened to composite wall 210.” Ex. 1008 ¶¶ 48–49. That is, the disclosed purpose of Timony’s

hanger is for mounting objects, like beams or joists, to sides of concrete walls, and to provide means for adjusting the mounting height of such objects due to bracket mounting height discrepancies. Ex. 1008 ¶¶ 46–52. Timony provides no disclosure, text or figures, of mounting its hanger via a flange or otherwise via the top (not side) of a concrete wall. Petitioner even admits “Timony relates to a composite wall where [hanger] embodiments [without flanges] are shown *attaching to a [wall] portion below the top of the wall,*” not to hangers mounted (via flanges) to the top of a wall. Pet. 111 (emphasis added). Petitioner also provides no explanation as to how Timony’s hanger could continue to be operable to mount *to the side* of a concrete wall (the very purpose disclosed in Timony) if the hanger included top flanges as urged by Petitioner. Based on the foregoing, we are not persuaded by Petitioner’s argument that combining the top flange of Bundy with the back flange of Timony’s hanger would have been obvious, because doing so would render Timony’s resulting hanger inoperable for its intended purpose. *See Plas-Pak Indus.*, 600 F. App’x at 760 (“[M]odifying [prior art A] to accommodate the spray nozzle of [prior art B] would render [prior art A] ‘inoperable for its intended purpose,’ and a person of ordinary skill would thus not have been motivated to pursue the combination.”).

3. Conclusion

For the reasons expressed above, and based on the complete record before us, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21–24, 26–37, 39, and 40 (and corresponding original claims 1–4, 6–17, 19 and 20) are unpatentable as obvious over the combination of Timony and Bundy.

I. Obviousness of Proposed Substitute Claim 23 Over Timony, Bundy, and Gilb '416

Petitioner contends proposed substitute claim 23 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Timony (Ex. 1008), Bundy (Ex. 1007), and Gilb '416 (Ex. 1011). RMTA Opp. 25; *see* Pet. 132–134; Pet. Reply 25. Patent Owner opposes Petitioner's contentions. RMTA Reply 12; *see* PO Resp. 92–93; PO Sur-Reply 24–25. Proposed substitute claim 23 depends from proposed substitute independent claim 21. RMTA App. A, 4. As discussed above, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claim 21 is unpatentable as obvious over the combination of Timony and Bundy. Petitioner does not argue that Gilb '416 remedies the noted deficiency in combining Timony and Bundy. *See* Pet. 132–134. Accordingly, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claim 23 (and corresponding original claim 3) is unpatentable as obvious over the combination of Timony, Bundy, and Gilb '416.

J. Obviousness of Proposed Substitute Claims 32 and 39 Over Timony, Bundy, and Gilb '942

Petitioner contends proposed substitute claims 32 and 39 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Timony (Ex. 1008), Bundy (Ex. 1007), and Gilb '942 (Ex. 1032). RMTA Opp. 25; *see* Pet. 134–136; Pet. Reply 25. Patent Owner opposes Petitioner's contentions. RMTA Reply 12; *see* PO Resp. 93; PO Sur-Reply 24–25. Proposed substitute claims 32 and 39 depend, directly or indirectly, from proposed substitute independent claim 21 and 33,

respectively. RMTA App. A, 6, 9. As discussed above, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 21 and 33 are unpatentable as obvious over the combination of Timony and Bundy. Petitioner does not argue that Gilb '942 remedies the noted deficiency in combining Timony and Bundy. *See* Pet. 134–136. Accordingly, we determine that Petitioner has not demonstrated by a preponderance of evidence that proposed substitute claims 32 and 39 (and corresponding original claims 12 and 19) are unpatentable as obvious over the combination of Timony, Bundy, and Gilb '942.

K. Summary of Analysis of Proposed Substitute Claims 21–40

In our analysis above of proposed substitute claims 21–40, we determined 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 claim 40.

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

- (5) written description support, for proposed substitute claims 21–39 due to the Negative Spacing Limitation.

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

- (1) proposed substitute claims 21–39 are unpatentable under 35 U.S.C. § 112(b) for indefiniteness;
- (2) proposed substitute claims 21, 22, 24, 26–37, 39, and 40 (and corresponding original claims 1, 2, 4, 6–17, 19, and 20) are unpatentable as obvious over the combination of Tsukamoto, Bundy, and Allan;
- (3) proposed substitute claim 23 (and corresponding original claim 3) is unpatentable as obvious over the combination of Tsukamoto, Bundy, Allan, Gilb ’416;
- (4) proposed substitute claims 21–40 are unpatentable as obvious over the combination of Gilb ’155, Bundy, Allan, and Gilb ’942;
- (5) proposed substitute claims 21–24, 26–37, 39 and 40 (and corresponding original claims 1–4, 6–17, 19 and 20) are unpatentable as obvious over the combination of Timony and Bundy;
- (6) proposed substitute claim 23 (and corresponding original claim 3) is unpatentable as obvious over the combination of Timony, Bundy, and Gilb ’416; and
- (7) proposed substitute claims 32 and 39 (and corresponding original claims 12 and 19) are unpatentable as obvious over the combination of Timony, Bundy, and Gilb ’942.

Accordingly, because Patent Owner has not satisfied all statutory and regulatory requirements for proposed substitute claims 21–39, we *deny* Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claims 21–39. Because Patent Owner has satisfied all statutory and regulatory requirements for proposed substitute claim 40, and Petitioner has not demonstrated unpatentability of this claim by a preponderance of

evidence, we *grant* Patent Owner’s Revised Contingent Motion to Amend as to proposed substitute claim 40.

IV. CONCLUSION⁶

Claims	35 U.S.C. §	References / Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–19	112(a)	Written Description	1–19	
20	112(b)	Indefiniteness		20
1–19	102	Brekke ’370	1–19	
1–20	103	Gilb ’155, Bundy, Allan	1–11, 13–18, 20	12, 19
12, 19	103	Gilb ’155, Bundy, Allan, Gilb ’942		12, 19
*1, 2, 4, 6–17, 19, 20	103	Tsukamoto, Bundy, Allan		1, 2, 4, 6–17, 19, 20

⁶ 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. §	References / Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
*3	103	Tsukamoto, Bundy, Allan, Gilb '416		3
*1–4, 6– 17, 19, 20	103	Timony, Bundy		1–4, 6–17, 19, 20
*3	103	Timony, Bundy, Gilb '416		3
*12, 19	103	Timony, Bundy, Gilb '942		12, 19
Overall Outcome			1–20	

* The asterisks indicate that the subject claims and bases were analyzed in Section III in conjunction with corresponding proposed substitute claims.

Revised Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	21–40
Substitute Claims: Motion to Amend Granted	40
Substitute Claims: Motion to Amend Denied	21–39
Substitute Claims: Not Reached	

V. ORDER

Upon consideration of the record, it is:

ORDERED that claims 1–20 of U.S. Patent No. 10,316,510 B2 are unpatentable;

FURTHER ORDERED that Patent Owner's Revised Contingent Motion to Amend is *granted* as to proposed substitute claim 40;

FURTHER ORDERED that Patent Owner's Revised Contingent Motion to Amend is *denied* as to proposed substitute claims 21–39; 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.

PGR2019-00063
Patent 10,316,510 B2

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